GLENDALE UNIFIED SCHOOL DISTRICT
223 North Jackson Street
Glendale, California 91206
(818) 241-3111

BOARD OF EDUCATION
AGENDA

April 2, 2019
Meeting No. 26
Regular Meeting

GLENDALE UNIFIED SCHOOL DISTRICT
223 North Jackson Street
Glendale, California 91206
(818) 241-3111

BOARD OF EDUCATION MEETING NO. 26
Administration Center

April 2, 2019

"Preparing our students for their future."

Please Note Times

4:30 P.M. - **Opening,**
Presentation,
Public Communications,
Student Board Member Report,
Information,

Closed Session

7:30 P.M. - **Regular Meeting,**
Public Communications,
Action, Consent Calendar,
Reports

In accordance with the Americans with Disabilities Act (ADA) the District will provide accommodations, with reasonable advanced notice, for any individual with a disability needing to participate in the Board Meeting and/or access the information herein. Please contact the Glendale Unified School District Public Information Office to request such accommodations.
In accordance with the Brown Act revisions; public records relating to a Board meeting agenda item that are distributed to at least a majority of Board members less than 72 hours before a regular meeting, may be inspected by the public at the District administrative offices during regular business hours (8:00 a.m. to 4:00 p.m.).

AGENDA

ITEM **PAGE**

A. OPENING – 4:30 P.M.

1. Call to Order and Roll Call

2. Pledge of Allegiance led by Arianna Dominguez, a 4th grade student from Edison Elementary School

3. Certification of Compliance

To accommodate the requirement of Government Code Section 54954.2 in accordance with the Brown Act revisions; the agenda for the meeting was posted on the bulletin board in the Administration Center and the Glendale Unified School District website 72 hours prior to this meeting.

4. Approval of Agenda Order

B. PRESENTATION

1. 47th Annual Masonic Employee Recognition Awards 9

Members of the Glendale and La Crescenta Masonic Lodges will present the Masonic Employee Recognition Awards. This is the 47th annual presentation of these recognition awards to outstanding district employees. This presentation is scheduled as an activity of Public Schools Month, which was founded in 1920 by the Grand Lodge of Free and Accepted Masons of California to celebrate the contribution of public schools to the American Way of Life.

C. COMMUNICATIONS FROM PUBLIC

1. Public Communications

ADDRESSING THE BOARD OF EDUCATION—An individual or group representative may address the Board of Education on any agenda item or subject within its jurisdiction by completing a request card. Speakers are requested to state their name prior to speaking to the Board. Not more than five minutes may be allotted to each speaker and no more than twenty minutes to each subject, except by unanimous consent of the Board of Education. A Speaker's allotted time cannot be deferred to another speaker. Board Members may question the speaker but there will be no debate or decision. The Interim Superintendent may refer the matter to the proper department for review. A student's parent/guardian, or a student if age 18 or older, may request that the minutes exclude the student's directory information, as defined in Education Code 49061, or a parent/guardians' personal information, as defined in Education Code 49073.2. The request to exclude such information shall be made in writing to the secretary or clerk of the Board.

D. STUDENT BOARD MEMBER REPORT

1. Student Board Member Sophia James will report on activities and events happening at the schools around the District.

E. INFORMATION

1. Acknowledgements of Service 12

The resignations and retirements of the employees listed have been accepted by the Assistant Superintendent, Human Resources, as effective and final per Board Policy 4117.2, 4217.2, and 4317.2, and are being reported to the Board of Education for its information.

2. California Next Generation Science Standards Implementation Update – High School 14

This report will provide the Board of Education with an update on the progress of implementing the Next Generation Science Standards with particular focus on plans for high school implementation.

3. Proposed New Course of Study Outlines for Use in High Schools in the Areas of Career Technical Education and Visual and Performing Arts 17

The proposed course of study outlines (Robotics 3-4; 3D Design and Manufacturing; Principles of Engineering and Manufacturing 3-4 Honors; Introduction to Engineering Design Technology 1-2; Honors Photography 3-4; Photography Foundations 1-2; and Photography Seminar Honors) are submitted for review and discussion by the Board of Education. The course outlines have been reviewed for content and evaluated by the members of the Career Technical Education and Visual and Performing Arts Curriculum Study Committees. The Secondary Education Council has reviewed the information and made a recommendation of approval of the course outlines to the Board of Education.

E. INFORMATION - continued

4. Proposed New and Revised Course of Study Outlines for Use in Middle and High Schools in the Area of Mathematics **72**

The proposed course of study outlines (Math 8A Summer Acceleration; Integrated Math IIIA Accelerated; Integrated Math III; Integrated Math IIIB/Precalculus Accelerated; Precalculus; Precalculus Honors) are submitted for review and discussion by the Board of Education. The course outlines have been reviewed for content and evaluated by the members of the Mathematics Curriculum Study Committees. The Secondary Education Council has reviewed the information and made a recommendation of approval of the course outlines to the Board of Education.

5. Proposed New and Revised Board Policies Relating to Personnel, Instruction, and Administration **251**

This report will provide the Board of Education with information on the need to create new or revise existing Board Policies (BP) 4121 (Temporary Contract/Substitute Personnel); BP 6142.91 (Reading/Language Arts Instruction); BP 6142.94 (History-Social Science Instruction); BP 6170.1 (Transitional Kindergarten); BP 6177 (Summer School); and BP 2121 (Superintendent Contract) as recommended by the California School Boards Association (CSBA) and to comply with Education Code and federal and state laws.

6. Board of Education Annual Organization Meeting **273**

Tuesday, April 16, 2019, the annual organization meeting takes place.

F. CLOSED SESSION

1. Instructing designated representative, Dr. Kelly King, Interim Superintendent of Schools, regarding collective bargaining matters pursuant to Government Code §54957.6.

2. Personnel matters relating to the appointment, employment or evaluation of school based and non-school based district management positions pursuant to Government Code §54957.

3. Personnel matters relating to the discipline, dismissal and release of school-based employees pursuant to Government Code §54957.

4. Conference with Legal Counsel - Anticipated Litigation – Initiation of litigation pursuant to section 54956.9(c): Two potential cases

5. Public Employment - Government Code §54957
Title: Superintendent of Schools

G. RETURN TO REGULAR MEETING

1. Call to Order

H. COMMUNICATIONS FROM PUBLIC

1. Public Communications

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I. ACTION

1. Award of Bid No. 180-18/19 for the Roosevelt Middle School Walk-in Freezer 278

The Interim Superintendent recommends that the Board of Education award Bid No. 180-18/19 for the Roosevelt Middle School Walk-in Freezer project to SS+K Construction, Inc. in the amount of $97,960.00.

2. Approve List of Prequalified Contractors from which Request for Proposal on Lease-Leaseback Projects May be Solicited 279

The Interim Superintendent recommends that the Board of Education approve the list of Prequalified Contractors from which Request for Proposals on Lease-Leaseback projects may be solicited over the next two (2) years.

3. Resolution No. 22 for Utilization of the Informal Bidding under the California Uniform Public Construction Cost Accounting Act (CUPCCAA) for New Construction, Maintenance, and Repairs 280

The Interim Superintendent recommends that the Board of Education approve Resolution No. 22 for utilization of the informal bidding under the California Uniform Public Construction Cost Account Act (CUPCCAA) for new construction, maintenance, and repairs.

4. Approval of Budget Adjustment for the Hoover High School Pool Expansion and Renovation Project 284

The Interim Superintendent recommends that the Board of Education approve a Budget Adjustment for the Hoover High School Pool Expansion and Renovation Project in the amount of $5,000,000, funded by Developer Fees and Measure S funds.

5. Approval of Project Authorization No. 23 with NAC Architecture for Architectural Services at Hoover High School Pool Expansion and Renovation Project 289

The Interim Superintendent recommends that the Board of Education approve Project Authorization No. 23 with NAC Architecture for Architectural Services at the Hoover High School Pool Expansion and Renovation project in the amount of $862,250.00, funded by Developer Fees and Measure S – Hoover High School Pool Expansion and Renovation project funds.

6. Resolution No. 21 – Opposing the Proposed Transfer of Territory to the La Canada Unified School District 294

The Interim Superintendent recommends that the Board of Education adopt Resolution No. 21 – Reaffirming its commitment to oppose the proposed transfer of territory to the La Canada Unified School District.

I. ACTION - continued

7. Board of Education Meeting Schedule 2019-2020 **298**

The Interim Superintendent recommends that the Board of Education approve its Board meeting schedule for the 2019-2020 school year.

8. Approval of Secondary Standards-Aligned English Language Arts/English Language Development Instructional Materials Adoption **299**

The Interim Superintendent recommends that the Board of Education approve the five-year adoption of the College Board *SpringBoard* program for English Language Arts and English Language Development for Grade 6-12 students, with the additional supplement of three literary novels per student, beginning in the 2019-2020 school year.

J. CONSENT CALENDAR

All items under Consent Calendar are considered to be of a routine nature and are acted on with one motion. Any recommendation may be removed from the Consent Calendar at the request of any Board Member and placed under Action.

1. Minutes **302**

The Interim Superintendent recommends that the Board of Education approve the Minutes, as listed.

a. Regular Meeting No. 24 March 12, 2019
b. Special Meeting No. 25 March 26, 2019

2. Certificated Personnel Report No. 15 **315**

The certificated report recommends approval of the following:

A change of maternity leave of absence, extension of maternity leaves of absence, health leaves of absence, a change of health leave of absence, extension of health leaves of absence, family & medical leaves of absence, change of family & medical leaves of absence, extension of family & medical leaves of absence, an opportunity leave of absence, additional assignments, release - temporary employees, elections, elections hourly/daily, additional compensation, transportation authorizations, revision to previous personnel reports, personal services agreements and a conference/workshop/meeting authorization.

3. Classified Personnel Report No. 14 **332**

The classified report recommends approval of the following:

Medical leave of absence; change of medical leave of absence; extension of medical leave of absence; family & medical leave of absence; extension of family & medical leave of absence; maternity leave of absence; change of maternity leave of absence; extension of maternity leave of absence; parental leave of absence; change of parental leave of absence; ; election from eligibility list; termination - probation; deceased; additional assignment temporary - at established rate of pay; change of assignments; revisions to previous board reports; election of classified hourly substitutes; election of classified/non classified hourly substitutes; and personal services agreements.

4. Warrants **344**

The Interim Superintendent recommends that the Board of Education approve Warrants totaling $3,113,610.39 for March 6, 2019 through March 27, 2019.

5. Purchase Orders **345**

The Interim Superintendent recommends that the Board of Education approve Purchase Orders totaling $3,445,109.98 for the period of February 25, 2019 through March 15, 2019.

J. CONSENT CALENDAR - continued

6. Appropriation Transfer and Budget Revision Report 369

Budget revisions and transfers reflect changes to existing budget appropriations necessitated by increases or decreases to previously established income and expenditure accounts. The Education Code requires Board of Education approval of all budget revisions and the transfer of funds between major expenditure accounts.

7. Approval of Extension of Contract for Fire Extinguisher Inspection 374

The Interim Superintendent recommends that the Board of Education approve the extension of the contract with Sheldon Fire Extinguisher Co., Inc. for the inspection of District fire extinguishers for the amount of not to exceed $22,000 per year.

8. Consolidated Programs School Plans for Student Achievement (SPSAs) Addendum 375

The Interim Superintendent recommends that the Board of Education approve the amended 2018-2019 Consolidated Programs School Plans for Student Achievement (SPSA) for schools participating in one or more state/federal programs.

9. Approval of Supplementary Textbook for Use in High Schools in the Area of English 376

The Interim Superintendent recommends that the Board of Education approve the supplementary textbook, My Mother's Voice, for use in high schools in the area of English. The book has been reviewed for content and evaluated by members of the English Curriculum Study Committee.

10. Approval of New Course of Study Outlines for Use in Middle and High Schools in the Areas of Career Technical Education and Visual and Performing Arts 377

The Interim Superintendent recommends that the Board of Education approve new course of study outlines (Stage and Video Production 1-2; Studio Art Seminar Honors; Cinematography 1-2; Cinematography 3-4; and Cinematography 5-6 Honors) for use in middle and high schools in the areas of Career Technical Education and Visual and Performing Arts.

11. Approval of New, Revised, or Retired Board Policies Relating to Students and Instruction 418

The Interim Superintendent recommends that the Board of Education approve new, revised, or retired Board Policies (BP) 5119 (Students Expelled From Other Districts); BP 5144 (Discipline); BP 5146 (Married, Pregnant, and Parenting Students); BP 6000 (Concepts and Roles); BP 6152 (Class Assignment); BP 6190 (Evaluation of the Instructional Program); and BP 6112.1 (School Day-Minimum Requirements) as recommended by the California School Boards Association (CSBA) and to comply with Education Code and federal and state laws.

12. Acceptance of DonorsChoose Awards 441

The Interim Superintendent recommends that the Board of Education accept funding from DonorsChoose to support projects submitted by Marshall Elementary School and Rosemont Middle School.

13. Agreement with Pepperdine University 443

The Interim Superintendent recommends that the Board of Education approve a Directed Teaching Agreement between Glendale Unified School District and Pepperdine University and that the Assistant Superintendent, Human Resources, be authorized to execute the agreement.

14. Acceptance of Every Kid Counts College Savings Account Grant 450

The Interim Superintendent recommends that the Board of Education accept the Every Kid Counts College Savings Grant award in the amount of $197,915.

J. CONSENT CALENDAR - continued

15. Acceptance of Gifts **452**

The Interim Superintendent recommends that gifts to the District be accepted and that letters of appreciation be written to the donors.

K. REPORTS AND CORRESPONDENCE

1. Board

2. Interim Superintendent

L. ADJOURNMENT

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

PRESENTATION REPORT NO. 1

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Superintendent's Office

SUBJECT: **47th Annual Masonic Employee Recognition Awards**

Members of the Glendale and La Crescenta Masonic Lodges will present the Masonic Employee Recognition Awards. This is the 47th annual presentation of these recognition awards to outstanding District employees. It is the longest running program of its kind statewide. This presentation calls public attention to April being Public Schools Month, which was founded in 1920 by the Grand Lodge of Free and Accepted Masons of California, to celebrate the contribution of public schools to the American way of Life. Masonic Lodges through California and across America continue to support the public schools. This report provides the Board of Education with the list of Masonic Award honorees for the 2018-2019 school year.

Glendale Unified School District 2019 Masonic Award Recipients

First Name	Last Name	School/Department	Position
Roobina	Aghakianest	Roosevelt Middle School	Educational Assistant II
Marisela	Amigon	College View School	Cook/Baker Provisional
Valentina	Apelilan	R.D. White Elementary School	EAIS
Marie	Azizilorestani	Wilson Middle School	Sr. Administrative Secretary
Richelle	Bailon	Assessment & Accountability	Typist Clerk II
Nitika	Batra	Rosemont Middle School	Psychologist
Amy	Besoli	Crescenta Valley High School	Teacher Math
Kathryn	Borjal	Horace Mann Elementary School	Administrative Secretary
Karla	Bringas	Valley View Elementary School	Teacher 3rd Grade
Melinda	Burkhart	Lincoln Elementary School	Teacher 1st Grade
Jennifer	Capehart	Hoover High School	Teacher P.E.
Maria	Choto	Edison Elementary School	Custodian
Grace	Danial	John Marshall Elementary School	Yard Duty Lead
Lucila	Davies	Mountain Avenue Elementary School	Administrative Secretary
Ken	Davis	Crescenta Valley High School	Maintenance Engineer
Stella	Davodian	Financial Services	Account Clerk III
Araksi	Der-Barseghian	Cerritos Elementary School	Administrative Secretary
Rubina	Dereghishian	Glendale High School	Educational Assistant
Jennifer	Diaz	Fremont Elementary School	Psychologist
Vinh	Do	Educational Technology (ETIS)	Network Technician
Michael	Dorsett	Dunsmore Elementary School	Custodian
April	Faieta	Mark Keppel Elementary School	Teacher
Aleen	Farhadian	Verdugo Woodlands Elementary School	Typist Clerk II
Clayton	Fey	Mark Keppel Elementary School	Custodian II
Frank	Fox	Roosevelt Middle School	Teacher Music/Science
Chie	Fujie	Verdugo Woodlands Elementary School	Teacher 3/4 Grade Japanese
Grace	Galindo	Daily High School	Educational Assistant
Amy	Gentile	John Muir Elementary School	Teacher
Maria	Gharibian	Hoover High School	Attendance Clerk
Taylor	Gillaspie	Monte Vista Elementary School	Custodian
Janet	Goliger	Mountain Avenue Elementary School	P.E. Teacher
Ashley	Goze	Lincoln Elementary School	LVN
Michelle	Green	Student Support Services	Coordinator III/Health Services
Aileen	Grigorian	Early Education & Extended Learning	Head Teacher
Luis	Guevara	Dunsmore Elementary School	Teacher
Vartoush	Haghverdian	Student Support Services	Attendance Clerk
Dr. Michelle	Hartounian	Special Education	Psychological Services Provider
Pearl	Hernandez	Cerritos Elementary School	Teacher
Rhonda	Holguin	Glenoaks Elementary School	Custodian
Dr. Nancy	Hong	Educational Services	Coordinator I/FLAG Programs
Barbara	Howard	Planning & Development	Construction Manager

Glendale Unified School District 2019 Masonic Award Recipients

Alanna	Jespersen	Fremont Elementary School	Speech Language Assistant
Jackie	Jones	Franklin Elementary School	Typist Clerk II
Deneil	Jurado	Edison Elementary School	Teacher Music
Virginia	Karanfilian	R.D. White Elementary School	Teacher 4th Grade
Lusik	Kazarian	Early Education & Extended Learning	Education Assistant I
Melina	Keshish	Nutrition Services Department	Clerk III
Annette	Klujian	Toll Middle School	Typist Clerk II
Sharyn	Kramer	College View School	Custodian I
Anthony	Lane, Jr.	John Muir Elementary School	Sub Assistant One-on-One
Caroline	Lau	Glenoaks Elementary School	Teacher 2nd Grade
Allison	Lee	Toll Middle School	Teacher Korean FLAG
Tom	Lewis	Horace Mann Elementary School	SAI Teacher
Rosa	Madatyan	La Crescenta Elementary School	Cafeteria Manager
Armond	Mailan	Planning & Development	Construction Manager
Hilda	Markarian	Student Support Services	Clerk II
Suzanne	McDonnell	Jefferson Elementary School	Teacher
Arevik	Nersesyan	Balboa Elementary School	Administrative Secretary
Aimee Joy	Nicolas	Columbus Elementary School	LVN/Attendance Clerk
Heather	Odell	Columbus Elementary School	Teacher
Krista	Perez	Facility & Support Operations	Assistant Operations Coord.
Ritan	Petrosian	Nutrition Services Department	Cafeteria Worker II
Daniela	Pino	Franklin Elementary School	Teacher 3rd Grade Italian
Antonia	Piscitelli-Carrasco	Daily High School	Teacher
Amanda	Price	Educational Technology (ETIS)	Administrative Secretary
Conrad	Pruitt	Clark Magnet High School	Teacher
Armando	Ramirez	Jefferson Elementary School	Custodian
Dr. Debra	Rinder	Special Education	Executive Director, Special Ed
Nancy	Ritthamel	Rosemont Middle School	Teacher Special Education
Suzanne	Savage	La Crescenta Elementary School	Teacher 5/6 Grade
Jeff	Severa	Wilson Middle School	Teacher
Naira	Soghomonyan	Nutrition Services Department	Cook/Baker
Sairy	Stepanian	Human Resources	Human Resources Analyst
Patricia	Telles	Glendale High School	Teacher, Special Education
Annette	Vanilian	Valley View Elementary School	Administrative Secretary
Karine	Varuzhanyan	Clark Magnet High School	Registrar
Narine	Yapundjian	Balboa Elementary School	Teacher 5/6 Grade
Anna	Yegiyants	John Marshall Elementary School	Teacher
Amy	Yniguez	Monte Vista Elementary School	Teacher 5th Grade

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

INFORMATION REPORT NO. 1

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED BY: Dr. Cynthia M. Foley, Assistant Superintendent, Human Resources/Director of Classified Personnel

SUBJECT: ACKNOWLEDGEMENTS OF SERVICE

The resignations and retirements of the following employees have been accepted by the Assistant Superintendent, Human Resources, as effective and final per Board Policy 4040, and are being reported to the Board of Education as information only - no action required:

Resignations:

1.	Afshar Yeganeh Rajabi, Shahriar Technology Support Technician Educational Technology Information Systems	Effective 3/05/19
2.	Gasparyan, Karine Education Assistant I Edison Elementary School	Effective 3/15/19
3.	Karapetyan, Mary Education Assistant I John Muir Elementary School	Effective 2/14/19
4.	Mack, Tynisha Custodian I Maintenance Center	Effective 2/26/19
5.	Tuff, Katerina Custodian I Rosemont Middle School	Effective 3/18/19

Retirements:

1.	Crowther, Rich A. Health Teacher Glendale High School	Effective 6/13/19 25 years of service
2.	Ophoven, Barbara 1st Grade Teacher Franklin Elementary	Effective 6/13/19 9 years of service
3.	Ritthamel, Nancy L. Special Education Teacher Rosemont Middle School	Effective 6/13/19 31 years of service
4.	Walker, Carla T. Principal Marshall Elementary	Effective 6/29/19 30 years of service

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

INFORMATION REPORT NO. 2

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Dr. Chris Coulter, Director, Teaching & Learning
PREPARED BY:	Shawna Metcalf, Science Specialist, Teaching & Learning
SUBJECT:	**California Next Generation Science Standards Implementation Update - High School**

Background

With the adoption of the California Next Generation Science Standards (CA NGSS), the State has ushered in a new era of science education designed to prepare all students for the 21st century. Science and engineering are inquiry-based, problem-solving endeavors that require more than just rote memorization of discrete facts. Both knowledge and practice are essential components of scientific literacy. This shift in pedagogy aligns with the shifts currently taking place with the adoption of the California State Standards in Mathematics, English Language Arts, and Literacy.

The CA NGSS are designed to ensure that all students actively engage in the scientific and engineering processes as they deepen their understanding of core ideas. By the end of 12th grade, students should have gained sufficient knowledge to engage in scientific discourse and to be critical consumers of scientific information in their everyday lives. It is especially important to note that the above goals are for all students. A CA NGSS aligned K-12 science program should prepare all students for their futures, not just those who pursue careers in these fields or those who continue on to higher education.

The High School implementation of CA NGSS is complex. While the K-8 implementation is heavily guided by the California Department of Education (CDE), direction and guidance regarding implementation at the high school level is limited. Before schools and districts can fully implement the CA NGSS in grades 9-12, they must organize the high school grade-banded performance expectations into courses. The performance expectations represent the minimal assessable standards for which all students should be held accountable.

High School Course Models

There are three main course models suggested in the California Science Framework:

- Four-Course Discipline Specific Model
- Three-Course Model (Earth & Space Science Integrated)
- Three-Course Fully Integrated Model

Four-Course Discipline Specific Model
The High School Four-Course Model is based on the Science Domains Model in which one course is assigned to one domain of the CA NGSS: life science (LS), physical science (PS), and Earth and space science (ESS). The physical science performance expectations have been further subdivided to define a chemistry course and a physics course. On the surface, this model appears to be similar to current courses; however, the actual content within each course, the incorporation of three-dimensional learning, and the need for all courses to be taken is very different.

Three-Course Model (Earth & Space Science Integrated)
The three-course model combines all high school performance expectations into three courses. To highlight the nature of Earth and space science (ESS) as an interdisciplinary pursuit with crucial importance in California, each of the three courses presents an integration of ESS and one of the other high school domains. In each course, the integration adds value to both domains in the pair, with each providing an engaging motivation for and a deeper insight into the other. ESS phenomena can serve as an engaging motivation for studying the other domains while understanding of each domain provides deeper insight into processes in ESS. The three courses have been explicitly titled to emphasize this synergy:

- Living Earth: Integrating Biology and Earth Science
- Chemistry in the Earth System: Integrating Chemistry and Earth Science
- Physics of the Universe: Integrating Physics and Earth and Space Science

Three-Course Fully Integrated Model
The fully integrated model incorporates all three domains within each year and increases in depth and complexity each subsequent year. This model was presented as an appendix in the California Science Framework and not as a standalone chapter.

State Testing

The California Science Test (CAST) is part of California's system of assessments called the California Assessment of Student Performance and Progress (CAASPP). With the release of the Fall 2018 California School Dashboard, CDE has officially signaled to the field that the results of the new science assessment and CAA-Science (California Alternate Assessment), ***will be included as a state measure*** in the future. The CAST measures what

students know and can do using the California Next Generation Science Standards (CA NGSS), which focus on understanding the scientific concepts found in the life sciences, earth and space sciences, and physical sciences. These standards integrate disciplinary core ideas, science and engineering practices, and crosscutting concepts to help students understand how science works in the natural world.

At the high school level, the CAST is given to each student one time at the completion of their CA NGSS course of study. Unlike previous End of Course exams designed to assess student performance in a single subject area, the CAST is all encompassing and measures each student's understanding of all three dimensions of CA NGSS at the high school level. In order to maximize student success on this assessment, GUSD needs to implement an equitable high school program that provides students with the necessary three dimensional experiences in all science domains prior to taking the assessment.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

INFORMATION REPORT NO. 3

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Felix Melendez, Executive Director, Secondary Education
SUBJECT:	**Proposed New Course of Study Outlines for Use in High Schools in the Areas of Career Technical Education and Visual and Performing Arts**

The proposed course of study outlines (Robotics 3-4: 3D Design and Manufacturing; Principles of Engineering and Manufacturing 3-4 Honors; Introduction to Engineering Design Technology 1-2; Honors Photography 3-4; Photography Foundations 1-2; and Photography Seminar Honors) are submitted for review and discussion by the Board of Education. The course outlines have been reviewed for content and evaluated by the members of the Career Technical Education and Visual and Performing Arts Curriculum Study Committees. The Secondary Education Council has reviewed the information and made a recommendation of approval of the course outlines to the Board of Education.

HIGH SCHOOLS

Department:	**Career Technical Education**
Course Title:	Robotics 3-4: 3D Design & Manufacturing Honors
Grade Level(s):	10-12
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	Yes, “g” General Elective credits
Course Credits:	10
Recommended Prerequisite:	Robotics 1-2: Introduction to Engineering and Manufacturing

Recommended Textbook(s):	Haas VF / HS Series CNC Machine Programming Workbook, Author: Haas Automation, Publisher: Haas Automation, Edition: 2006 Machining Fundamentals, Author: John R. Walker and Bob Dixon, Publisher: The Goodheart-Willcox Company, Inc., Edition: 10th Edition, 2019
Course Overview:	Robotics 3-4: 3D Design & Manufacturing Honors is the concentrator course (2nd year) in a three course sequence for the Manufacturing and Product Development Industry Sector. The course deepens the skills and knowledge of an engineering student within the context of efficiently creating the products all around us. Students use Computer Aided Design (CAD) experience through the use of Computer Aided Manufacturing (CAM) software. CAM transforms a digital design into a program that Computer Numerical Controlled (CNC) mills, 3D Printers, and laser cutting machines use to transform raw material into a product designed by a student.
Department:	**Career Technical Education**
Course Title:	Principles of Engineering and Manufacturing 3-4 Honors
Grade Level(s):	10-11
School(s) Course Offered:	Crescenta Valley High School
UC/CSU Approved (Y/N, Subject):	Pending, "g" College Prep Elective credits
Course Credits:	10
Recommended Prerequisite:	1. Introduction to Engineering Design Technology 2. Grade level math and science

Recommended Textbook(s): Parametric Modeling with Autodesk Fusion 360, SDC Publications, ISBN-13: 978-1630571993, ISBN-10: 1630571997
Principles of Applied Engineering, Pearson, ISBN-13: 978-0-13-470189-9, ISBN-10: 0-13-470189-5

Course Overview: This is the second in a series of three courses in the Engineering and Manufacturing Technology (E&MT) Pathway. It is a "concentrator" course intended to further student knowledge of the engineering profession, especially as it pertains to the design and production of electromechanical devices. This is an academically rigorous course that requires students to master both theory and application. In addition to completing hands-on projects, students will be required demonstrate their knowledge via examination. The first semester of the Principles of Engineering and Manufacturing (PE&M) course begins with augmenting the students' skills in the use of computer aided design software and the production of technical drawings. Later the first semester, students will build on their basic understanding of mechanical and electrical systems by incorporating additional concepts, including basic structural principles, material science, and manufacturing processes. The course continues in the second semester with more advanced topics in electromechanical power transmission, and an introduction to systems engineering. Students will learn to use systems modeling software, and incorporate more advanced machine control programming techniques. By the conclusion of the second year, students will be able to conceive, describe, document, and then construct complex computer-controlled electromechanical systems, such as industrial robotics.

Department: **Career Technical Education**

Course Title: Introduction to Engineering Design Technology 1-2

Grade Level(s): 9-10

School(s) Course Offered: Crescenta Valley High School

UC/CSU Approved (Y/N, Subject):	Pending, "g" College Prep Elective credits
Course Credits:	10
Recommended Prerequisite:	Grade level math and science
Recommended Textbook(s):	Parametric Modeling with Autodesk Fusion 360, SDC Publications, ISBN-13: 978-1630571993, ISBN-10: 1630571997 Principles of Applied Engineering, Pearson, ISBN-13: 978-0-13-470189-9 ISBN-10: 0-13-470189-5
Course Overview:	This is the first in a series of three courses in the Engineering and Manufacturing Technology (E&MT) Pathway. It is an exploratory course intended to introduce students to the engineering profession, in general, with a specific emphasis on electromechanical product design. The first semester of the Introduction to Engineering Design Technology (IEDT) course begins with developing the students' skills in design thinking, sketching techniques, measurement, and statistical analysis. Students will also learn the basics of solid modeling and technical drawing production. The course continues in the second semester with an introduction to mechanical systems, electrical circuits, and concludes with machine control programming skills. By the conclusion of the first year, students will be able to conceive, describe, document, and then construct simple computer controlled electromechanical devices, such as an automated guided vehicle (AGV).

Department: **Career Technical Education / Visual and Performing Arts**

Course Title:	Honors Photography 3-4
Grade Level(s):	10 - 12

School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Yes, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	B or better in Photography 1-2 This course is a recommended prerequisite for AP Studio Arts; Art Seminar
Recommended Textbook:	Focus on Photography, ISBN 10: 0-87192-721-7 The Visual Experience, ISBN: 978-08719-2627-2
Course Overview:	This course is designed for advanced photography students who wish to push their creative potential by exploring and experimenting with the ideas and practices of 21st century art. Students will focus on the connections between conceptual and technical aspects of their photographic practice and develop personal themes. Emphasis is placed on understanding of concept and technique, critique processes, evaluation utilizing the Elements and Principle of Art Making, research of art historical figures, and professional practice. Students are required to maintain a sketchbook, which will include weekly drawing assignments and preliminary studies of projects. In addition to creating portfolio artworks, all assignments throughout the course will require students to analyze, critique, and discuss the meaning and purpose of various artworks and how the artists employ the elements of art and principles of design to communicate meaning. The course will culminate with the completion of a digital and physical portfolio of artwork, artist statement, and resume.

Department: **Career Technical Education / Visual and Performing Arts**

Course Title: Photography Foundations 1-2

Grade Level(s): 9-12

School(s) Course Offered: Hoover High School

UC/CSU Approved (Y/N, Subject): Pending, "f" Fine Arts credit

Course Credits: 10

Recommended Prerequisite: This course is a recommended prerequisite for Photography 3-4 and AP Photography

Recommended Textbook: Focus on Photography, ISBN 10: 0-87192-721-7
The Visual Experience, ISBN: 978-08719-2627-2

Course Overview: This course will introduce the student to Photography as an artistic medium for personal expression as well as a commercial medium. The basic use of cameras (35 mm and digital), film, darkroom development and digital imaging will be taught. Composition, communication, and critical thinking will be combined with continual self and class evaluation. Students will be exposed to historical and cultural uses of photography with the goal of incorporating these concepts into their own work. Students will explore careers in photography performing these roles. Students will complete this course with the key technological skills appropriate for occupations in the arts industry. Students will prepare a portfolio of their original works for college application, job application and/or personal collection. Photo 1-2 fulfills the F requirement, Career Prep graduation requirement, and Elective/G requirements (consecutively).

Department: Career Technical Education / Visual and Performing Arts

Course Title: Photography Seminar Honors

Grade Level(s): 11-12

School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Yes, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	Photo 1-2 and AP Studio Art or Honors Photography 3-4
Recommended Textbook:	Focus on Photography, ISBN 10: 0-87192-721-7 The Visual Experience, ISBN: 978-08719-2627-2
Course Overview:	Studio Art Seminar Honors is a coursed designed to provide students in the Studio Art pathway a fourth year course to work on specific projects and work-based learning opportunities in career training. This course is designed to allow fourth-year studio art students the chance to build their portfolio for college applications, internships, and professional presentation. Assignments will focus on visual problem solving, creative thinking and self-expression. Students will continue development of portfolio by pursuing an area of focus (subject, topic/theme or genre), and continued development of their artistic voice and style in a variety of selected media. This area of focus will be a yearlong, in-depth study. By the end of this course it is expected that students will have a cultivated portfolio that showcases the breadth of their artistic skills and interests, as well as their ability to sustain a more in-depth creative exploration. Students are required to maintain a sketchbook, which will include weekly drawing assignments and preliminary studies of projects. In addition to creating portfolio artworks, all assignments throughout the course will require students to analyze, critique, and discuss the meaning and purpose of various artworks and how the artists employ the elements of art and principles of design to communicate meaning and feeling. This class is project based and hands on. Emphasis is placed on understanding of critique processes, evaluation utilizing the Elements and Principle of Art Making, research of art historical

figures, and professionalism of finish product. The class will culminate with a gallery exhibition developed, organized, and executed by the students.

Glendale Unified School District School

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Robotics 3-4: 3D Design & Manufacturing Honors
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	10-12
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	Yes, "g" General Elective credits
Course Credits:	10
Recommended Prerequisite:	Robotics 1-2: Introduction to Engineering and Manufacturing
Recommended Textbook(s):	Haas VF / HS Series CNC Machine Programming Workbook, Author: Haas Automation, Publisher: Haas Automation, Edition: 2006 Machining Fundamentals, Author: John R. Walker and Bob Dixon, Publisher: The Goodheart-Willcox Company, Inc., Edition: 10th Edition, 2019
Course Overview:	Robotics 3-4: 3D Design & Manufacturing Honors is the concentrator course (2nd year) in a three course sequence for the Manufacturing and Product Development Industry Sector. The course deepens the skills and knowledge of an engineering student within the context of efficiently creating the products all around us. Students use Computer Aided Design (CAD) experience through the use of Computer Aided Manufacturing (CAM) software. CAM transforms a digital design into a program that Computer Numerical Controlled (CNC) mills, 3D Printers, and laser cutting machines use to transform raw material into a product designed by a student.

First Semester-Course Content

Unit 1: **Machine Shop Safety** (*2 weeks*)

STANDARDS
Anchor Standards: 6.2, 6.3, 6.4, 6.7
Pathway Standard: B7.1, B10.1
Common Core Standards: S-ID-1, S-IC-6

A. In this unit, general lab safety is covered as well as personal protective equipment and safety precautions before, during, and after the machining process. General lab safety instruction includes lessons about evacuation routes and procedures, maintaining a clean and orderly workspace, use of compressed air, and locations of first-aid kits and fire extinguishers. The lesson on personal protective equipment discusses eye and ear protection, proper work attire, respiratory protection, and entanglement hazards. After the general safety and personal protective equipment lessons, students are taught safety practices used before machining. Students then learn about safety precautions during machining such as avoiding distractions, maintaining one operator in control, and keeping hands away from machines that are powered on. All students must pass a safety test before being allowed to work in the lab.

B. Students are frequently presented with quizzes and test questions. The questions are typically true/false, multiple choice, or multiple selection in nature and often include written questions, visual diagrams and interactive web-based activities.

Unit 2: **Foundational Mathematics** (*1 week*)

STANDARDS
Anchor Standard: 5.1, 5.2,
Pathway Standard: B3.3, B7.4
Common Core Standards: 11-12.10, F-IF-4

A. The foundational mathematics unit includes numerous lessons and exercises on mathematical concepts and techniques necessary for performing measurements and estimations and for performing calculations in a manufacturing environment in general. For that reason, the unit begins with instruction on the basic skills of rounding decimal numbers and arithmetic order of operations. Although students have already learned these low level skills in prior math classes, the review reinforces a strong understanding and builds student confidence to a point where these simple mathematical operations can be applied quickly and mentally in a manufacturing environment, without the need to refer to a textbook or notes.

B. Students are frequently presented with quizzes and test questions. The questions are typically true/false, multiple choice, or multiple selection in nature and often include written questions, visual diagrams and interactive web-based activities.

Unit 3: **Applied Geometry and Trigonometry** *(2 weeks)*

STANDARDS
Anchor Standard: 5.1, 5.2,
Pathway Standard: B3.3, B7.4
Common Core Standards: C-14, RSTL-11-12.3

A. The applied geometry and trigonometry unit provides students a solid foundation of mathematical knowledge necessary for interpreting engineering drawings. The unit begins with instruction on geometric concepts of parallel, perpendicular, and bisecting lines, and then moves to defining polygons and calculating perimeter, and then defining circles and calculating circumference, diameter, and radius. Finally, students learn about the unit circle, and how to recognize standard position angles, and how to find the coordinates of points along the unit circle which occur at standard position angles. By building knowledge and skills in geometry and trigonometry, students are better prepared to interpret engineering drawings and perform calculations needed to find unknown dimensions, locations, or measurements.

B. Students are frequently presented with quizzes and test questions. The questions are typically true/false, multiple choice, or multiple selection in nature and often include written questions visual diagrams and interactive web-based activities.

Unit 4: **Measuring Tools** *(5 weeks)*

STANDARDS
Anchor Standard: 8.1, 8.7, 10.1, 10.2, 11.1
Pathway Standard: B1.0, B1.2, B2.4, B3.3, B7.4, B11.0, B11.5
Common Core Standards: S-ID-1, WS-11.12.8

A. In the Measuring Tools Unit students learn every workpiece must be designed and manufactured accurately to size within close limits. The student gains insight on how careful measuring of the workpiece is necessary to insure proper fit and satisfactory operation of each part when it is assembled with other parts. Inaccurate and careless measurements are worthless. A good design engineer and manufacture must be responsible for accurate work. Students must be able to use measuring tools with speed and accuracy as discussed in this unit.

B. Students are each given a unique machined and 3d printed components and are asked to perform various measurements such as length, thickness, and diameter on different geometric features of the component. Students record their measurements to a page. Each student then exchanges their component with one

given to a different student, and performs the activity again, independently taking measurements of a different component. The students compare notes with each other, and clear up any points of discrepancy or confusion by demonstrating the technique used to measure and to read the measurement, and validating their procedure with the instructor.

Unit 5: **Engineering Drawing Interpretation** *(3 weeks)*

STANDARDS
Anchor Standard: 2.1, 2.2, 2.5, 3.6, 5.3,
Pathway Standard: B1.0, B1.1, B1.4
Common Core Standards: N-Q-2, N-Q-3

A. In this unit, students learn how to interpret engineering drawings and the role they play in manufacturing both in conjunction with and aside from digital solid model data. The unit begins with an overview of ANSI and ISO as two different standards organizations, each with fundamentally different standards for presenting model data views in an engineering drawing. Students also learn how to read and interpret other drawing attributes such as the title block, notes, callouts, and line styles. The unit then teaches different methods of dimensioning including location and datum dimensioning and where each is applicable. Finally, tolerancing is discussed in concept, style, and interpretation. Students learn classical unilateral, bilateral, and block tolerancing styles and learn a basic introduction to geometric dimensioning and tolerancing as defined by the ASME Y14.5-2009 standard. Finally, students learn how tolerance can affect the fitment of mating pieces and why tolerance must be considered to prevent ambiguous fitment when either a clearance fit or interference fit is desired.

B. Students are provided a tangible three-dimensional model of an object featuring multiple surfaces, edges, steps, and holes. The students then determine which orientation to classify as the front view, and proceed to sketch it by hand along with the other five orthographic projections. Students sketch the projected views following both ANSI third-angle and ISO first-angle standards. The drawings are checked for accuracy in relative scale and for proper representation of the part using geometry lines and hidden lines. The forward approach to drawing creation beginning with the 3D model assists students in developing the spatial skills needed to visualize a 3D component from its representation as 2D views when following the reverse approach of interpreting provided engineering drawings in later coursework.

Unit 6: **CNC Tools and Speed and Feed Calculation** *(2 weeks)*

STANDARDS
Anchor Standard: 3.1, 4.5, 7.4, 10.1
Pathway Standard: B2.5, B3.3, B7.4, B10.1
Common Core Standards: S-ID-1, RSL 11-12.4. RSIT 11-12.7.

A. This unit begins with an overview of the various types of commonly-used tools found in CNC machining such as end mills, drills, taps, and corner rounding tools. Types of tool materials such as carbide and high speed steel are discussed as well as tool geometry including the number of cutting flutes. The theory of chip formation in the cutting process is briefly discussed, to the extent necessary to understand how chip load is affected by other cutting parameters such as feed and speed. Common cutting speeds measured in units of surface feet per minute for various materials are presented, and students build an understanding of how and why cutting speeds are driven by material properties. Students learn and practice using the mathematical equations for calculating speed and feed rate in both milling and turning operations. Finally, students learn how to calculate tapping operation feed rates based upon spindle speed and thread pitch.Students are frequently presented with quizzes and test questions. The questions are typically true/false, multiple choice, or multiple selection in nature and often include written questions as well as visual diagrams.

B. Unit Assignment: Revise product proposal to include the development steps, tools and equipment in creating the selected object. Proposal will explain the cutting speeds utilized and reasons why those cutting speeds were selected.

Unit 7: **3-Axis CNC Milling Machine Setup and Operation** *(7 weeks)*

STANDARDS
Anchor Standard: 1.0, 2.1, 2.3, 4.1, 4.4, 5.1, 5.2, 9.2, 9.7, 10.3
Pathway Standard: B2.0, B2.1, B2.2, B5.9, B6.1, B10.0, B10.1, B10.4
Common Core Standards: SEP-5, A-CED-2, G-CO-2

A. In this unit, students learn how to safely and effectively setup and operate a Haas CNC mill in depth. The unit begins with an overview of machine kinematics including definition and direction of the three axes of motion. Students then learn about the nine organizational groupings of keys on the Haas control panel and how each is effectively used in the setup and operation of the machine, and take an in depth look at the operational modes such as edit, memory, and handle jog. Students learn and demonstrate pre-startup procedures such as checking coolant, oil, grease, and air pressure levels, perform the machine powerup and reset procedure, and initiate a spindle warm up program. After learning about the control panel and how to power on the machine, students practice basic manual operations such as loading, changing, and unloading tools, and handle jogging the machine in each of the three axes. After the workpiece is setup and offsets are

determined, students use machine control editor to insert and alter G and M program codes both from a manuscript as well as from an external data storage device, and demonstrate how to simulate a program in graphics mode on the control.

B. Through the skills assessment checklist, students demonstrate their practical knowledge and skills while operating the CNC milling machine. When students are ready to demonstrate their skills, the instructor joins him or her standing at the CNC milling machine in the lab for a one-on-one interview and assessment of skills. The interview and skills assessment typically takes place over four class sessions spanning over a period of approximately 7 weeks. Eight primary modules from Unit 7 are addressed on the checklist: machine motion, control panel layout and organization, machine start-up procedure, basic manual operations, edit capabilities, program entry, and program run. Each proficiency check prompt is given to the student verbally during the interview and assessment, and the student is not allowed the use of any notes or references during the assessment. Students must pass every proficiency item to a satisfactory level to earn the industry-recognized certification for this unit. A passing mark indicates that the student has demonstrated confidence with the information they communicate or the skill they demonstrate to the instructor.

Second Semester-Course Content

Unit 8: **3-Axis CNC Milling Machine Programming** *(7 weeks)*

STANDARDS
Anchor Standard: 1.0, 2.1, 2.3, 4.1, 4.4, 5.1, 5.2, 9.2, 9.7, 10.3
Pathway Standard: B5.9, B6.1, B10.0, B10.1, B10.4
Common Core Standards: SEP-6, A-CED-2, G-CO-2

A. In the milling machine programming unit, students learn the fundamental G and M codes used to command the motions and operations of the Computer Numerically Controlled milling machine. A primary curricular aide used during instruction for this unit is the Haas Mill Programming Workbook and Immerse2Learn interactive web-based material. Students begin with a positioning exercise to check for understanding of Cartesian coordinates and to demonstrate the difference between absolute and incremental positioning techniques. Program structure is presented highlighting standard sets of commands used at the beginning and end of each program and operation. Then, students learn the commands for linear and circular interpolation and the syntax of each before completing an exercise in which they write a program to command a cutting tool to follow a drawn part profile with both linear and circular features. Once students are familiar with all the major elements of the CNC mill programming language, they complete a project to hand-code a five-operation program to produce a part specified by a provided engineering drawing. The proficiencies students gain in

this unit comprise the industry-recognized certificate in 3-Axis CNC Milling Machine Programming.

B. In this assignment, students apply their knowledge of CNC machine programming in the G and M code language by hand-programming a part specified by a printed engineering drawing and produced on the 3-Axis vertical CNC milling machine. Students may use either the machine control or a simple text editor to write the code, but are not allowed to generate the code by any automated CAM software or process. Students may collaborate with each other to some degree, however their programs must reflect significant individual effort and time spent. Development, refinement, and test-running of the program code on a simulator typically occurs over approximately seven 45-minute class periods from start to finish of the assignment. While developing the program code comprises one assignment on its own, setting up and running the program on the machine is a separate assignment detailed in Unit 7 above.

Unit 9: **2.5D Toolpath Strategies** *(5 weeks)*

STANDARDS
Anchor Standard: 1.0, 2.1, 2.3, 4.1, 4.4, 5.1, 5.2, 9.2, 9.7, 10.3
Pathway Standard: B5.9, B6.1, B10.0, B10.1, B10.4
Common Core Standards: ETS1.A, ETS1.B, ETS1.C

A. Students learn how to use advanced Computer-Aided Manufacturing (CAM) software to import solid model data from a Computer-Aided Design (CAD) program to create advanced toolpaths which are then posted as thousands of lines of G code used to control the machine. Students learn how to select toolpath cutting strategies based upon part geometry and the types of tools used. I The difference between constant-engagement (high speed) toolpaths and traditional toolpaths is emphasized, and students gain an understanding of the shortcomings of traditional toolpaths in producing parts with tight-radius pocket features. For each operation, speeds and feed rates are analyzed in depth using an advanced calculation tool, which builds upon experience gained in Unit 6. Students learn how to adjust cutting parameters such as stepover and depth to maximize material removal rates while ensuring the strength and capabilities of the machine and cutting tool are utilized to their fullest extents, but not exceeded. After optimizing cycle times for efficiency, students gain a sense of understanding that in a production environment, the time it takes to produce a part is directly related to the economics of the company's business model and to the price point of the product sold to a distributor or to the end consumer.

B. MasterCAM Program: In this assignment, students are given a solid CAD model of a part with a variety of features that can be created using 2.5D machining strategies. Students must select and apply the appropriate tooling, toolpath strategies and order of operations to produce the part from raw material of a specified size. Within each operation, students must determine and apply the

appropriate depths, cutting increments, stepover distances, and toolpath entry and exit styles. The total estimated cycle time is analyzed as well as the cycle time for each machining operation, and speeds and feed rates are optimized using an advanced calculation tool.

Unit 10: **3D Toolpath Strategies** *(4 weeks)*

STANDARDS
Anchor Standard: 1.0, 2.1, 2.3, 4.1, 4.4, 5.1, 5.2, 9.2, 9.7, 10.3
Pathway Standard: B5.9, B6.1, B10.0, B10.1,B10.3, B10.4
Common Core Standards: ETS1.A, ETS1.B, ETS1.C

A. This unit expands upon the previous by teaching students how to produce advanced toolpath strategies which utilize simultaneous motion of all three axes. Students quickly realize that the variety and detail of parts that can be produced using 3D strategies far surpasses what is possible using 2.5D strategies. The abilities and limitations of cutting tools to produce certain geometric features using various approaches is discussed, and the concepts of tolerance and surface finish quality are presented as factors which are inversely proportional to production time and cost. Students run 3D virtual simulations of the 3D toolpaths and make comparisons between a virtually-machined component and the original solid model to determine what areas may need different or additional finishing strategies applied. The concept of rest-machining is introduced and applied, and the simulation is repeated through multiple iterations until proper results are achieved. Once the part is programmed, verified, and optimized, students produce it from raw materials on the 3-axis CNC milling machine and check for proper outcomes.

B. The 3D part is machined with adaptive roughing strategies using a flat end mill and a variety of 3D contouring and surfacing strategies using a ball end mill. All programming will be done through MasterCAM software. Students need to apply different types of finishing toolpaths to areas of different 3D geometry such as conical and spherical surfaces as well as surfaces of uniform cross section whose curve appears in a cross section taken in the XZ or YZ plane.

Unit 11: **Manufacturing as a Career** *(4 weeks)*

STANDARDS
Anchor Standard: 11.1, 11.2, 11.4
Pathway Standard: B1.4, B3.3, D1.0, D1.1, D10.0, D10.2
Common Core Standards: ETS2, ETS2.A, ETS2.B

A. In this unit, students come to realize that entering a career in manufacturing is not about the grungy repetitive, monotonous work of decades past, but involves highly skilled occupations that take place in very clean, high-tech environments and require a great variety of knowledge and skills to perform successfully.

Students also realize that highly skilled individuals in the manufacturing industry can earn wages considerably higher than in many other industries. Students conduct research on various types of manufacturing employers and occupations and report back with their findings. Additionally, students develop a personal resume indicating their skills and certifications gained through the class. Students gain valuable insight into manufacturing as a career either through a field trip to a manufacturing facility or by a professional in the manufacturing industry visiting the class as a guest speaker.

B. Professional Resume: In this assignment, students use word processing software to write and format a professional resume that can later be used to assist in gaining entry level employment in the manufacturing industry sector. The resume lists the student's occupational objective, educational experience, software skills, hands-on skills, and certifications. The resumes are checked for proper spelling, grammar, diction, and formatting.

Final Project/Exam:

1. Students will download 10 solid part files from Titan academy and program tool paths with MasterCAM. Once approved by the instructor, students will machine multiple operation parts on a Haas CNC -mill. This hands on task will serve as the course final. In addition, students further develop and enhance their Manufacturing and Product Design Notebooks and Portfolios. Students exhibit their work and reflect on their learning before a panel of industry partners.
2. Assignments: Update Professional Resume and Cover Letter- Each student updates her/his professional resume and cover letter for inclusion in her/his Manufacturing and Product Development portfolios.
3. Professional Interview- At the conclusion of the course, students engage in a formal interview with a manufacturing partner and receive feedback on their skills and abilities.
4. Exhibition of Learning –Each student prepares and delivers an exhibit of her/his learning and accomplishments to a panel of industry partners. The exhibition of learning features evidence of growth in college and career readiness, student reflections on learning, as well as the final project and samples of work featured in the student's course notebook and portfolio.

Additional Course Materials:
Title: Immerse2Learn
Author/Editor/Compiler: i2L
Affiliated Institution or Organization: US Dept of Labor
URL: http://web.immerse2learn.com/web/my- login/

Title: OHSA
Author/Editor/Compiler: Various Contributors - US Department of Labor
Affiliated Institution or Organization: US Dept of Labor
URL: https://www.osha.gov/

Glendale Unified School District School

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Principles of Engineering and Manufacturing 3-4 Honors
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	10-11
School(s) Course Offered:	Crescenta Valley High School
UC/CSU Approved (Y/N, Subject):	Pending, "g" College Prep Elective credits
Course Credits:	10
Recommended Prerequisite:	1. Introduction to Engineering Design Technology 2. Grade level math and science
Recommended Textbook(s):	Parametric Modeling with Autodesk Fusion 360, SDC Publications, ISBN-13: 978-1630571993, ISBN-10: 1630571997 Principles of Applied Engineering, Pearson, ISBN-13: 978-0-13-470189-9, ISBN-10: 0-13-470189-5
Course Overview:	This is the second in a series of three courses in the Engineering and Manufacturing Technology (E&MT) Pathway. It is a "concentrator" course intended to further student knowledge of the engineering profession, especially as it pertains to the design and production of electromechanical devices. This is an academically rigorous course that requires students to master both theory and application. In addition to completing hands-on projects, students will be required demonstrate their knowledge via examination. The first semester of the Principles of Engineering and Manufacturing (PE&M) course begins with augmenting the students' skills in the use of computer aided design software and the production of technical drawings. Later the first semester, students will build on their basic understanding of mechanical and electrical systems by incorporating

additional concepts, including basic structural principles, material science, and manufacturing processes. The course continues in the second semester with more advanced topics in electromechanical power transmission, and an introduction to systems engineering. Students will learn to use systems modeling software, and incorporate more advanced machine control programming techniques. By the conclusion of the second year, students will be able to conceive, describe, document, and then construct complex computer-controlled electromechanical systems, such as industrial robotics.

First Semester-Course Content

Unit 1**:** Introduction to Reverse Engineering and Parametric Modeling *(6 weeks)*

STANDARDS
CTE Anchor Standards: 2.4, 4.1, 4.2, 5.4
CTE Pathway Standards (Engineering & Architecture; Manufacturing & Product Dev**.)**

- Engineering Design (B), Engineering Technology (C): C2.1, C2.2, C3.1, C3.2, C3.3, C5.1, C4.1, C4.2, C5.2, C5.4, C5.5, C6.1, C6.2
- Machining & Forming Tech. (B), Product Innovation & Design (D): D1.1, D1.2, D4.2

Common Core ELA: AS.W.2, AS.W.8, AS.SL.4, AS.L.6, 9-10.W.2.d, 9-10.RST.4, 9-10.RST.8
Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3, S.ID.1, S.ID.4, S.ID.6, S.ID.6c, S.ID.7, S.ID.8
NGSS HS: HS.ETS.1.4

- DCI: ETS1.B
- SEP**:** Obtaining, Evaluating, and Communicating Information; Defining problems; and Developing and Using Models
- CCC: Structure and Function

Unit 1 exposes students to the application of engineering principles and practices needed to successfully "reverse engineer" a relatively complex mechanical device. Reverse engineering involves disassembling and analyzing a product or system in order to understand and document the visual, functional, and/or structural aspects of its design. They will perform a functional analysis to hypothesize the overall function and sequential operations of the product's component parts and assess the inputs and outputs of the process(es) involved in the operation of the product. Students will physically disassemble the product to document the constituent parts, their properties, and their interaction and operation. After carefully documenting these aspects of the visual, functional, and structural aspects of the product, students will assess the strengths and weaknesses of the product and the manufacturing process by which it was produced. Finally, students will be able to fully model the device using computer aided design (CAD) software and be able to scale its components in size.

At the completion of Unit 1, Students will be able to:

1. Identify and describe the visual principles and elements of design apparent in a natural or man-made object.
2. Describe the process of reverse engineering.

3. Explain the various reasons to perform reverse engineering including discovery, documentation, investigation, and product improvement.
4. Explain how the visual elements and principles of design affect the aesthetics and commercial success of a product.
5. Perform a functional analysis of a product in order to determine the purpose, inputs and outputs, and the operation of a product or system.
6. Perform a structural analysis of a product in order to determine the materials used and the form of component parts as well as the configuration and interaction of component parts when assembled.

Unit Assignment:
At the conclusion of unit one, students will have created a solid model of a real-world product that has multiple and varied interchangeable parts, as they did for the project in unit 4 of the first year, only now it will have greater complexity, requiring the use of many more of the solid modeling functions in CAD software. The modeled product will be able to be scaled up or down, and reproduced at a different size.

Unit 2: **Engineering Documentation** *(8 weeks)*

STANDARDS
CTE Anchor Standards: 2.4, 4.1, 4.2, 5.4
CTE Pathway Standards (Engineering & Architecture; Manufacturing & Product Dev**.)**

- Engineering Design (B), Engineering Technology (C): C2.1, C2.2, C3.1, C3.2, C3.3, C5.1, C4.1, C4.2, C5.2, C5.4, C5.5, C6.1, C6.2, C7.1, C7.2, C8.1, C8.2, C9.1, C9.2, C9.3
- Machining & Forming Tech. (B), Product Innovation & Design (D):

Common Core ELA: AS.L.6, 9-10.W.2.d, 9-10.RST.4
Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3
NGSS HS: HS.ETS.1.4

- DCI: ETS1.B
- SEP**:** Obtaining, Evaluating, and Communicating Information; Defining problems; and Developing and Using Models
- CCC: N/A

Unit 2 will enhance students' basic knowledge of technical drawing representations learned in year one of the pathway to include the creation of alternate (section and auxiliary) views and appropriate dimensioning and annotation of technical drawings. Students will also be introduced to the reality of variation in dimensional properties of manufactured products. They will learn the appropriate use of dimensional tolerances and alternate dimensioning methods to specify acceptable ranges of the physical properties in order to meet design criteria. Students will apply this knowledge to create engineering working drawings that document measurements collected during a reverse engineering process. These skills will also allow students to effectively document a proposed new design. Students will use 3D computer modeling software to model the assembly of the consumer product, as such a model can be used to replicate functional operation and provide virtual testing of product design.

At the completion of Unit 2, Students will be able to:

1. Identify line types (including construction lines, object lines, hidden lines, and center lines) used on a technical drawing per ANSI Line Conventions and Lettering and explain the purpose of each line.
2. Identify general rules for dimensioning on technical drawings used in standard engineering practice.
3. Identify and differentiate between size dimensions and location dimensions.
4. Identify and correctly apply chain dimensioning or datum dimensioning methods to a technical drawing.
5. Identify dimensioning standards commonly used in technical drawing.
6. Identify the shapes of two-dimensional cross sections of three dimensional objects.
7. Identify, define and explain the proper use of a section view in technical drawing.
8. Read and interpret a hole note to identify the size and type of hole including through, clearance, blind, counter bore, and countersink holes.
9. Identify and differentiate among limit dimensions, a unilateral tolerance, and a bilateral tolerance.
10. Differentiate between clearance and interference fit.
11. Explain each assembly constraint (including mate, flush, insert, and tangent), its role in an assembly model, and the degrees of freedom that it removes from the movement between parts.
12. Generate section views using CAD according to standard engineering practice.
13. Dimension a section view of a simple object or part according to a set of dimensioning standards and accepted practices.
14. Annotate (including specific and general notes) working drawings according to accepted engineering practice. Include dimensioning according to a set of dimensioning rules, proper hole and thread notes, proper tolerance annotation, and the inclusion of other notes necessary to fully describe a part according to standard engineering practice.
15. Create specific notes on a technical drawing to convey important information about a specific feature of a detailed object, and create general notes to convey details that pertain to information presented on the entire drawing (such as units, scale, patent details, etc.)
16. Model and annotate (with a hole note) through, clearance, blind, counter bore, and countersink holes.
17. Compare the effect of chain dimensioning and datum dimensioning on the tolerance of a particular specified dimension.
18. Determine the specified dimension, tolerance, upper limit, and lower limit for any given dimension and related tolerance (or any distance that is dependent on given dimensions) shown on a technical drawing.
19. Determine the allowance between two mating parts of an assembly based on dimensions given on a technical drawing.
20. Identify the type of fit given a drawing, a description, or a physical example of two mating parts.
    1. Create assemblies of parts in CAD and use appropriate assembly constraints to create an assembly that allows correct realistic movement among parts. Manipulate the assembly model to demonstrate the movement.

2. Create a CAD assembly drawing. Identify each component of the assembly with identification numbers and create a parts list to detail each component using CAD

Unit Assignment:
This key student project involves the production of a full set of professional-grade engineering drawings for a (student created) mechanical assembly of greater complexity then as yet encountered. These drawings will require a much greater degree of detail then any previous drawing produced by the students. The mechanical parts in the assembly will carry much more stringent requirements for both accuracy and precision, with drawings produced that must reflect this increased attention to detail.

Unit 3: **Intro to Computer Aided Manufacturing** *(4 weeks)*

STANDARDS
CTE Anchor Standards: 2.4, 4.1, 4.2, 5.4
CTE Pathway Standards (Engineering & Architecture; Manufacturing & Product Dev**.)**
- Engineering Design (B), Engineering Technology (C): B7
- Machining & Forming Tech. (B), Product Innovation & Design (D): B1, B2, B3, B10, B11, D4, D6

Common Core ELA: N/A
Common Core Math: N/A
NGSS HS: N/A

Unit 3 introduces students to material forming, machining and additive manufacturing processes. Students will learn to determine what manufacturing processes are appropriate for a given application and then select material and set-up machine tools accordingly to produce a mechanical part to specifications. Students will learn to write computer numerical control (CNC) programs that will guide machine tools.

At the completion of Unit 3, students will be able to:
1. Use engineer design knowledge to analyze products with flaws and use solid modeling software to improve the design.
2. Select the appropriate manufacturing process when given a production problem and identify the process that a given machine would perform to bring the product into existence.
3. Determine the appropriate speed rate for a given material using a tool with a given diameter.
4. Determine the feed rate for a given material using a tool with a given diameter.
5. Read and interpret G & M codes and create numerical code using a CAM program.
6. Transfer the drawings made in CAD to a CAM program and verify the planned creation of a mechanical part using CAM simulation software, then produce the parts using the corresponding machines tools.

Unit Assignment:
The Unit 3 key project will include the production of a an appropriately complex physical part that was designed as a solid model by the students using CAD software and then imported into CAM software for the purposes of CNC milling via a series of student programmed tool paths.

Second Semester-Course Content

Unit 4: **Introduction to Materials and Structures** *(4 weeks)*

STANDARDS
CTE Anchor Standards: 2.4, 4.1, 4.2, 5.4
CTE Pathway Standards (Engineering & Architecture; Manufacturing & Product Dev**.)**
- Engineering Design (B), Engineering Technology (C): B4.1, B4.2, B4.3, B4.4, B4.5, B5.1, B5.2, B5.3, B5.4, B5.5
- Machining & Forming Tech. (B), Product Innovation & Design (D): N/A

Common Core ELA: AS.W.2, AS.W.8, AS.SL.4, AS.L.6, 9-10.W.2.d, 9-10.RST.4, 9-10.RST.8
Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3, S.ID.1, S.ID.4, S.ID.6, S.ID.6c, S.ID.7, S.ID.8
NGSS HS: HS.ETS.1.4
- DCI: ETS1.B
- SEP**:** Obtaining, Evaluating, and Communicating Information; Defining problems; and Developing and Using Models
- CCC: Structure and Function

Unit 4 introduces students to relevant material properties for engineering purposes and the calculations necessary to determine the forces acting on structures when they are in static equilibrium. In this unit student will conduct tests on various material to determine whether a design is reliable, safe, and predictable in function. Student will learn the two major categories: destructive testing and nondestructive testing.
At the completion of Unit 2, Students will be able to:

1. Investigate specific material properties related to common mechanical devices.
2. Conduct investigative non-destructive material property tests on selected common household products. Property testing conducted to identify continuity, ferrous metal, hardness, and flexure.
3. Create free body diagrams of objects, identifying all forces acting on the object.
4. Mathematically locate the centroid of structural members.
5. Calculate moment of inertia of structural members.
6. Differentiate between scalar and vector quantities.
7. Identify magnitude, direction, and sense of a vector, and calculate the X and Y components given a vector.
8. Calculate moment forces given a specified axis.
9. Use equations of equilibrium to calculate unknown forces.
10. Use the method of joints strategy to determine forces in the members of a statically determinate truss.

Unit Assignment:
At the conclusion of unit four, student will engage in a bridge building competition using inexpensive material. The student projects will then be load-tested to determine the strength of the structures.

Unit 6: **Advanced Machine Control** *(8 weeks)*

STANDARDS
CTE Anchor Standards: 2.4, 4.1, 4.2, 5.4
CTE Pathway Standards (Engineering & Architecture; Manufacturing & Product Dev**.)**
- Engineering Design (B), Engineering Technology (C): B8.1, B8.2, B8.3, B8.4, B8.5, B8.6
- Machining & Forming Tech. (B), Product Innovation & Design (D): N/A

Common Core ELA: N/A
Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3, S.ID.1, S.ID.4, S.ID.6, S.ID.6c, S.ID.7, S.ID.8
NGSS HS: HS.ETS.1.4
- DCI: ETS1.B
- SEP**:** Obtaining, Evaluating, and Communicating Information; Defining problems; and Developing and Using Models
- CCC: Structure and Function

Unit six builds upon previous knowledge students gained in the final unit of the first year in the Engineering and Manufacturing Technology Pathway. Student will learn to plan and code more sophisticated machine control routines.
At the completion of Unit 6, Students will be able to:

1. Create detailed flow charts and write pseudocode for planning purposes
2. Create system control programs that utilize flowchart logic with comments
3. Choose appropriate inputs and output devices based on the needs of a given design.
4. Design and create a control system based on give criteria and constraints.
5. Upload debugged code to a microprocessor for execution.

Unit Assignment:
At the conclusion of unit six, student will have completed a microprocessor controlled test bed, integrating motor and servos with various sensors, that will be able to accomplish an instructor defined challenge, such as the well-known "marble sorter" project (from the Project Lead the Way™ *Principles of Engineering* course).

Unit 7: **Final Project** *(8 weeks)*

The final project in the second year of the pathway requires students to work together in small groups to apply everything they have learned to date toward developing a solution for a "problem scenario" that will be assigned to them by the course instructor. The project criteria will be very similar in nature to those found at FIRST Robotics competitions. These competitions typically involve semiautonomous vehicles with electromechanical capabilities designed to solve a designated set of problems.

End of Course Assessment:
The Principles of Engineering and Manufacturing (H) end of course assessment will be a comprehensive examination. The assessment covers learning objectives from each unit from both semesters.

Glendale Unified School District School

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Introduction to Engineering Design Technology 1-2
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	9-10
School(s) Course Offered:	Crescenta Valley High School
UC/CSU Approved (Y/N, Subject):	Pending, "g" College Prep Elective credits
Course Credits:	10
Recommended Prerequisite:	Grade level math and science
Recommended Textbook(s):	Parametric Modeling with Autodesk Fusion 360, SDC Publications, ISBN-13: 978-1630571993, ISBN-10: 1630571997 Principles of Applied Engineering, Pearson, ISBN-13: 978-0-13-470189-9 ISBN-10: 0-13-470189-5
Course Overview:	This is the first in a series of three courses in the Engineering and Manufacturing Technology (E&MT) Pathway. It is an exploratory course intended to introduce students to the engineering profession, in general, with a specific emphasis on electromechanical product design. The first semester of the Introduction to Engineering Design Technology (IEDT) course begins with developing the students' skills in design thinking, sketching techniques, measurement, and statistical analysis. Students will also learn the basics of solid modeling and technical drawing production. The course continues in the second semester with an introduction to mechanical systems, electrical circuits, and concludes with machine control programming skills. By the conclusion of the first year, students will be able to conceive, describe, document, and then construct simple computer controlled electromechanical devices, such as an automated guided vehicle (AGV).

First Semester-Course Content

Unit 1: **Introduction to The Design Process** (*4 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B6.0 Employ the design process to solve analysis and design problems.

- B6.1 Understand the steps in the design process.
- B6.2 Determine what information and principles are relevant to a problem and its analysis.
- B6.3 Choose between alternate solutions in solving a problem and be able to justify the choices made in determining a solution.
- B6.4 Translate word problems into mathematical statements when appropriate.
- B6.5 Demonstrate the process of developing multiple details, within design constraints, into a single solution.
- B6.6 Construct a prototype from plans and test it.
- B6.7 Evaluate and redesign a prototype on the basis of collected test data.

Common Core ELA: AS.W.2, AS.W.8, AS.SL.4, AS.L.6, 9-10.W.2.d, 9-10.RST.4, 9-10.RST.8
Next Generation Science Standards:
HS.ETS.1.4

- DCI: ETS1.B
- SEP: Obtaining, Evaluating, and Communicating Information; Defining
- problems; and Developing and Using Models

Unit one introduces students to the design process that engineers use to develop innovative solutions to real problems. At the completion of Unit 1, Students will be able to:

1. Identify the steps in an engineering design process and describe the activities involved in each step of the process.
2. Identify and describe a variety of brainstorming techniques and rules for brainstorming.
3. Generate and document multiple ideas or solution paths to a problem through brainstorming.
4. Describe the design process used in the solution of a particular problem and reflect on all steps of the design process.

Unit Assignment: At the conclusion of unit one, student will be to engage in product design thinking. The key student project includes the design and production of a real world product, such a game that includes a set of rules, games pieces and a playing board. Project assessment includes adherence to rubric of criteria and successful presentation via "product testing" by classmates.

Unit 2: **Developing Sketching Skills** (*5 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B2.0 Demonstrate the sketching process used in concept development.

- B2.1 Understand the process of producing proportional two- and three-dimensional sketches and designs.
- B2.2 Apply sketching techniques to a variety of architectural and engineering models.
- B2.3 Present conceptual ideas, analysis, and design concepts using freehand graphic communication techniques.

Common Core Math: G.MG.1, N.Q.1 , N.Q.2, , N.Q.3
NGSS HS: HS.ETS.1.4

- DCI: ETS1.B
- SEP: Obtaining, Evaluating, and Communicating Information; Defining problems; and Developing and Using Models
- CCC: N/A

Unit two develops student understanding of the purpose and practice of visual representation and communication within the engineering profession via technical sketching and drawing. Students build skill and gain experience in representing three-dimensional objects in two dimensions. Students will create various technical representations used in visualization, exploring, communicating, and documenting design ideas throughout the design process, and they will understand the appropriate use of specific drawing views (including isometric, oblique, perspective, and orthographic projections). They progress from creating free hand technical sketches using a pencil and paper to developing engineering drawings according to accepted standards and practices that allow for universal interpretation of their design.

At the completion of Unit 2, Students will be able to:

1. Identify and define technical drawing representations including isometric, orthographic projection, oblique, and perspective views.
2. Identify the proper use of each technical drawing representation including isometric, orthographic projection, oblique, and perspective views.
3. Apply tonal shading to enhance the appearance of a pictorial sketch and create a more realistic appearance of a sketched object.
4. Hand sketch isometric views of a simple object or part at a given scale using the actual object, a detailed verbal description of the object, a pictorial view of the object, or a set of orthographic projections.
5. Hand sketch 1-point and 2-point perspective pictorial views of a simple object or part given the object, a detailed verbal description of the object, a pictorial view of the object, and/or a set of orthographic projections.

6. Hand sketch orthographic projections at a given scale and in the correct orientation to fully detail an object or part using the actual object, a detailed verbal description of the object, or a pictorial and isometric view of the object.
7. Determine the minimum number and types of views necessary to fully detail a part.

Unit Assignment: At the conclusion of unit two, students will be able to fully describe a product that would be manufactured. The key student project includes the design of an interlocking puzzle cube with a variety geometrically unique pieces. Students will be assessed through their submission of a series of "engineering notebook" entries that must conform to industry standards for such documents.

Unit 3: **Engineering Units, Measurements and Statistics** (*5 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B7.0 Understand industrial engineering processes, including the use of tools and equipment, methods of measurement, and quality assurance.

- B7.1 Know the structure and processes of a quality assurance cycle.
- B7.4 Estimate and measure the size of objects in both Standard International and United States units.

Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3, S.ID.1, S.ID.4, S.ID.6, S.ID.6c, S.ID.7, S.ID.8

- **NGSS HS:** HS.ETS.1.4
- **DCI:** ETS1.B

Unit three familiarizes students with appropriate practices and the applications of measurement (using both U. S. Customary and SI units) and statistics within the discipline of engineering. Students will learn appropriate methods of making and recording measurements, including the use of dial calipers, as they come to understand the ideas of precision and accuracy of measurement and their implications on engineering design. The concepts of descriptive and inferential statistics are introduced as methods to mathematically represent information and data and are applied in the design process to improve product design, assess design solutions, and justify design decisions. Students are also provided with practice in unit conversion and the use of measurement units as an aid in solving practical problems involving quantities. A spreadsheet program is used to store, manipulate, represent, and analyze data, thereby enhancing and extending student application of these statistical concepts. At the completion of Unit 3, Students will be able to:

1. Distinguish between precision and accuracy of measurement.
2. Measure linear distances (including length, inside diameter, and hole depth) with accuracy using a scale, ruler, or dial caliper and report the measurement using an appropriate level of precision.

3. Convert quantities between units in the SI and the US Customary measurement systems.
4. Calculate statistics related to central tendency including mean, median, and mode.
5. Calculate statistics related to variation of data including (sample and population) standard deviation and range.
6. Use statistics to quantify information, support design decisions, and justify problem solutions.
7. Use a spreadsheet program to store and manipulate raw data, perform calculations using formulas, and create and display a histogram to represent a set of data.
8. Use function tools within a spreadsheet program to calculate statistics for a set of data including mean, median, mode, range, and standard deviation.

Unit Assignment: At the conclusion of unit three, student will produce the design from unit 2 and be able to determine the level of quality of the "manufactured" parts. The key student assignment includes the analysis of the measured quality of the parts produced. Assessment for this project involves meeting all the product criteria and requirement for the design.

Unit 4: **Introduction to Computer Modeling** (*6 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B1.0 Communicate and interpret information clearly in industry-standard visual and written formats.

- B1.2 Describe the current industry standards for illustration and layout.
- B1.3 Draw flat layouts of a variety of objects by using [CAD] tools and techniques
- B1.4 Organize and complete an assembly drawing using information collected from detailed drawings.

Common Core ELA: G.MG.1, N.Q.1, N.Q.2, N.Q.3
Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3, S.ID.1, S.ID.4, S.ID.6, S.ID.6c, S.ID.7, S.ID.8
NGSS HS:
HS.ETS.1.4

- DCI: ETS1.B
- SEP: Developing and Using Models
- CCC: Structure and Function

Unit four introduces students to solid modeling using computer aided design (CAD) software. Students will obtain a basic fluency in geometric concepts that are essential in the modern design process. Students will use these concepts, as well as physical properties

to solve a variety of problems including computation of surface area, weight, and volume in order to provide cost estimates for related materials based on physical property observations. At the completion of Unit 4, Students will be able to:

1. Identify types of polygons including a square, rectangle, pentagon, hexagon, and octagon, as well as differentiate between inscribed and circumscribed shapes.
2. Identify and differentiate geometric constructions and constraints (such as horizontal lines, vertical lines, parallel lines, perpendicular lines, colinear points, tangent lines, tangent circles, and concentric circles) and the results when applied to sketch features within a 3D solid modeling environment.
3. Define the term "physical property" and identify the properties of length, volume, mass, weight, density, and surface area as physical properties and distinguish between the meanings of the terms weight and mass.
4. Solve real world and mathematical problems involving area and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, right prisms, cylinders, and spheres.
5. Create three-dimensional solid models of parts within CAD from sketches or dimensioned drawings using appropriate geometric and dimensional constraints and model features and generate basic engineering drawings based on their solid models

Unit Assignment: At the conclusion of unit four, students will have created a solid model of a real-world product that has multiple and varied interchangeable parts. The key student project includes the production of a full set of engineering drawings that represents this product.

Second Semester-Course Content

Unit 5: **Introduction to Mechanical Systems** (*6 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B5.0 Understand how the principles of force, work, rate, power, energy, and resistance relate to mechanical, electrical, fluid, and thermal engineering systems.

- B5.3 Compare and explore the six simple machines and their applications.
- B5.5 Formulate and solve problems by using the appropriate units applied in mechanical, electrical, fluid, and thermal engineering systems.

NGSS HS:
HS.ETS.1.4

- DCI:
- SEP:
- CCC:

Unit five introduces students to the simple machines (levers, pulleys, etc.) and the principle of mechanical advantage. Students will go on to analyze the function of more complex machines through their understanding of the basic mechanisms. At the completion of Unit 5, Students will be able to:

1. Determine the mechanical advantage of mechanisms that employ the six simple machines (levers, incline planes, wheel and axles, screws, pulleys and wedges).
2. Compute drive ratios in mechanisms that use gear trains, pulley drives and sprocket systems to determine speed and torque.
3. Design, create and test demonstration gear trains, pulley drives and sprocket systems.
4. Compute efficiency determine the trade-off involved in mechanical systems.
5. Design, create and test a demonstration complex machine.

Unit Assignment:
At the conclusion of unit five, students will demonstrate their understanding of how mechanisms can be made more efficient through manipulating the trade-offs between force and distance in the design of mechanical systems. The key student project includes the creation of a "Rube Goldberg machine" that accomplished an everyday task. Assessment will involve evaluating the students' analysis of their project's mechanical principles.

Unit 6: **Introduction to Electric Circuits** (*4 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B3.0 Identify the fundamentals of the theory, measurement, control, and applications of electrical energy, including alternating and direct currents.

- B3.2 Analyze relationships between voltage, current, resistance, and power related to direct current (DC) circuits.
- B3.3 Calculate, construct, measure, and interpret both AC and DC circuits.
- B3.5 Calculate loads, currents, and circuit-operating parameters.
- B3.6 Classify and use various electrical components, symbols, abbreviations, media, and standards of electrical drawings.
- B3.7 Analyze, repair, or measure electrical and electronic systems, circuits, or components using appropriate electronic instruments.
- B3.8 Predict the effects of circuit conditions on the basis of measurements and calculations of voltage, current, resistance, and power.

NGSS HS:
HS.ETS.1.4

- **DCI:**
- **SEP:**
- **CCC:**

Unit six introduces students to basic electrical theory and circuits. Students will use Ohm's Law and Kirchhoff's Law to solve for unknown quantities in series, parallel, and series-parallel low-voltage DC circuits. At the completion of Unit 5, Students will be able to:

1. Use Ohm's Law to solve electrical equations involving voltage, current, and resistance.
2. Verify previous calculations by building the electric circuits with electronic components on a breadboard before using a digital multi-meter to measure actual voltage and current.
3. Demonstrate understanding of electronic symbols by interpreting existing and creating new electronic schematics.
4. Add electrical power to mechanical devices using DC motors.

Unit Assignment:
At the conclusion of unit six, students will be assessed by formal examination.

Unit 7: **Introduction to Machine Control** (*10 weeks)*

STANDARDS
CTE Pathway (Engineering Technology) Standards:
B8.0 Understand fundamental control system design and develop systems that complete preprogrammed tasks.

- B8.1 Identify the elements and processes necessary to develop a controlled system that performs a task.
- B8.2 Demonstrate the use of sensors for data collection and process correction in controlled systems.
- B8.3 Perform tests, collect data, analyze relationships, and display data in a simulated or modeled system using appropriate tools and technology.
- B8.4 Program a computing device to control systems or process.
- B8.5 Use motors, solenoids, and similar devices as output mechanisms in controlled systems.
- B8.6 Assemble input, processing, and output devices to create controlled systems capable of accurately completing a preprogrammed task.

B10.0 Design and construct a culminating project effectively using engineering technology.

- B10.1 Use methods and techniques for employing all engineering technology equipment appropriately.
- B10.2 Apply conventional engineering technology processes and procedures accurately, appropriately, and safely.
- B10.3 Apply the concepts of engineering technology to the tools, equipment, projects, and procedures of the Engineering Technology Pathway.

Common Core ELA: AS.W.2, AS.W.8, AS.SL.4, AS.L.6, 9-10.W.2.d, 9-10.RST.4, 9-10.RST.8
Common Core Math: G.MG.1, N.Q.1, N.Q.2, N.Q.3, S.ID.1, S.ID.4, S.ID.6, S.ID.6c, S.ID.7, S.ID.8
NGSS HS: HS.ETS.1.4

Unit seven introduces students to the basics of machine control through the programming of microcontrollers and the integration of sensors and actuators into mechanical systems. Students will begin with creating a program flow before deciding how sensors can provide inputs and how actuators (like motors) can receive outputs.

At the completion of Unit seven, Students will be able to:

1. Design a theoretical automated mechanical system by defining all inputs, outputs and decisions using a flow chart, and then convert the flow chart into pseudo code instructions.
2. Use variables and functions to write simple programs in the C computer language to be uploaded to a microprocessor.
3. Integrate various sensors, motors and servos into a mechanical system that is controlled by a microprocessor.
4. Design and build a demonstration autonomous vehicle.

The final project for students in this course will require them to use all the skills from this and the earlier units in this course. Student will be given a problem that will require them to use the design process to develop a concept for an automated guided vehicle (AGV). Students will create sketches, solid models, write the code, and then plan the construction of this AGV. Student will be evaluated against a set of performance criteria for their project. The criteria will consist of functions for the AGV to complete, such as autonomous navigation through an obstacle course, or following a pre-defined path, etc.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval.)*

Department:	Career Technical Education / Visual and Performing Arts
Course Title:	Honors Photography 3-4
Course Code:	(Educational Services will assign course number ***after*** Board Approval)
Grade Level(s):	10 - 12
School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Yes, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	B or better in Photography 1-2 This course is a recommended prerequisite for AP Studio Arts; Art Seminar
Recommended Textbook:	Focus on Photography, ISBN 10: 0-87192-721-7 The Visual Experience, ISBN: 978-08719-2627-2
Course Overview:	This course is designed for advanced photography students who wish to push their creative potential by exploring and experimenting with the ideas and practices of 21st century art. Students will focus on the connections between conceptual and technical aspects of their photographic practice and develop personal themes. Emphasis is placed on understanding of concept and technique, critique processes, evaluation utilizing the Elements and Principle of Art Making, research of

art historical figures, and professional practice. Students are required to maintain a sketchbook, which will include weekly drawing assignments and preliminary studies of projects. In addition to creating portfolio artworks, all assignments throughout the course will require students to analyze, critique, and discuss the meaning and purpose of various artworks and how the artists employ the elements of art and principles of design to communicate meaning. The course will culminate with the completion of a digital and physical portfolio of artwork, artist statement, and resume.

First Semester-Course Content

Unit 1: **Tell Me A Story** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.6; 2.1; 2.2; 2.4; 4.1; 4.2
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.6 & A2.3

A. Photography is a visual language that is applicable to all visual art areas. In this unit students will use photography to create a personal narrative. Students will use language and the prior knowledge learned in Photo 1-2, including the elements of art/principles of design. Students will use vocabulary associated with the use of value, line, texture, shape, balance, movement, repetition, contrast, etc. to create a photo essay. Students will learn how editing and sequencing images creates meaning.

B. Students will create a photo narrative in 5-7 images. Students will be required to use photography as a tool to convey larger concepts and production ideas in the form of visual storytelling. Students will write an artist statement and present their work for critique. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion.

Unit 2: **Investigation** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.6; 2.1; 2.2; 2.4; 4.1; 4.2
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.7; A2.3; A2.4; A3.4; A5.6; A8.4

A. Research is the foundation for creating meaningful photographic projects. Students will learn a variety of research techniques and apply them to their project. Students

will examine the historic and current cultural aspects of their chosen theme and apply what they have learned to a series of photographs (7-10 images).

B. Students will choose a personal theme to research and create a body of work based on the concepts and techniques learned during the process of independent research. Students will analyze and prioritize their images by focusing on technical and aesthetic qualities and use Photoshop to edit their images. Students will write an artist statement and present their work for critique. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion.

Unit 3: **Connection** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts. Standards 2.1, 2.3, 3.3, 5.1 & 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A2.6, A2.7, & A2.9

A. This unit establishes the framework needed for students to compose and communicate conceptual ideas using photographic imagery. Compositional rules and visual vocabulary will allow students to determine artistic intent and facilitate the development of individual artistic style and voice. Students will be able to identify and design content for specific audiences while considering how historical and cultural elements affect message and meaning.

B. Students will develop a thematic body of work that connects their work to contemporary cultural issues. Students will write an artist statement on the connections between the conceptual and technical aspects of their artwork and the historic and current cultural understanding of their chosen theme. Students will analyze and prioritize their images by focusing on technical and aesthetic qualities and use Photoshop to edit their images. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion.

Unit 4: **Website Portfolio** *(2-3 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.3; 2.2; 2.3; 3.1; 3.3; 3.4; 4.2; 4.5; 5.1; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.7; A2.3; A2.4; A2.6; A3.4; A5.6; A8.4

A. Students will receive an overview of the different programs available for creating an online portfolio (Google Slides, Weebly, WordPress for tech savvy students, etc.) Lecture presentation and student research will investigate the many types of offerings and organization techniques employed in artists websites. Discussions will center around analysis of user-friendly effectiveness, consistency, flow, clarity of artists voice. Students will choose several models as guidelines and select a program to create an online portfolio. Students will also learn about display, photography and documentation of art work.

B. Students will gather all art work from present, and past art classes, or self-generated works. With individual and peer assessment, students will choose a minimum of 10 works of art to begin an online portfolio. All work will be professionally photographed and manipulated to upload onto the chosen format. Students will organize the images into a unifying flow, and draft and upload a personal artist's statement to complete the narrative. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

Second Semester-Course Content

Unit 5: **Identity** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.4; 2.1; 2.3; 2.5; 3.3; 4.1; 4.2; 4.5; 5.1
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.7; A2.3; A2.4; A2.6; A3.4; A5.6; A8.4

A. Students will study historic and contemporary photographic self-portraits that challenge our concept of traditional portraiture. Through visual motivation and lecture, students will analyze how artists have effectively applied the elements and principals of design to examine the idea of personal identity.

B. Using student driven choice of materials, students will create a photographic artwork that examines their identity. Students will write an artist statement on the connections between the conceptual and technical aspects of their artwork and the historic and current cultural understanding of portraiture. Students will analyze and prioritize their images by focusing on technical and aesthetic qualities and use Photoshop to edit their images. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion

Unit 6: **Personal Theme** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.4 & 5.1
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.9 & A2.2

A. In this unit students will focus on their personal artistic practice and identify a personal theme that runs throughout their work and practice. Students will use brainstorming exercises and research to further examine their theme and create photographic images that create a completed thematic portfolio of 15 images.

B. Students will complete a process of brainstorming that will lead them to their personal theme. Students will gather all prior work that focuses on their personal theme and create new work to "complete" the body of work. Students will write an artist statement explaining their personal theme, including conceptual and technical aspects as well as cultural and personal connections. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion.

Unit 7: **Alternative Processes** *(2-3 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.6, 2.1 & 4.2
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.7, A2.5, A4.6 & A8.2, A8.4

A. Students will be introduced to a variety of alternative processes, both digital and analog, that they can choose to investigate for this unit. Students will work independently to master the process they have selected. Students will use research skills to write an artist statement about their work that includes a history of the process and its cultural connections.

B. Students will be introduced to the history of alternative processes and their technical aspects. Students will research the process of their choice and create a work of art using that process in a contemporary way. Students will present their work to the class and give a short demonstration on the process. A rubric will be used for assessing craftsmanship and conceptual clarity.

Unit 8: **Portfolio Presentation** *(4-5 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.3; 2.2; 2.3; 3.1; 3.3; 3.4; 4.2; 4.5; 5.1; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.7; A2.3; A2.4; A2.6; A3.4; A5.6; A8.4

A. Students will discuss the advantages and limitations of digital and physical portfolios. Discussion will focus on the photographer's presence as a professional. Students will receive a review of the different programs available for creating an online portfolio. Students will update their websites created at the close of semester one and create a physical portfolio of 15-20 photographic images.

B. Students will edit 15-20 photographic images to represent themselves as a photographer. Students will organize the images into a unifying flow, and draft and an updated personal artist's statement and resume to complete the narrative. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval.)*

Department:	Career Technical Education / Visual and Performing Arts
Course Title:	Photography Foundations 1-2
Course Code:	(Educational Services will assign course number after Board Approval)
Grade Level(s):	9-12
School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Pending, "f" Fine Arts credit
Course Credits:	10
Recommended Prerequisite:	This course is a recommended prerequisite for Photography 3-4 and AP Photography
Recommended Textbook:	Focus on Photography, ISBN 10: 0-87192-721-7 The Visual Experience, ISBN: 978-08719-2627-2

Course Overview: This course will introduce the student to Photography as an artistic medium for personal expression as well as a commercial medium. The basic use of cameras (35 mm and digital), film, darkroom development and digital imaging will be taught. Composition, communication, and critical thinking will be combined with continual self and class evaluation. Students will be exposed to historical and cultural uses of photography with the goal of incorporating these concepts into their own work. Students will explore careers in photography performing these roles. Students will complete this course with the key technological skills appropriate for occupations in the arts industry. Students will prepare a

portfolio of their original works for college application, job application and/or personal collection. Photo 1-2 fulfills the F requirement, Career Prep graduation requirement, and Elective/G requirements (consecutively).

First Semester-Course Content

Unit 1: **Elements/Principles of Art and Design** *(4 weeks)*

STANDARDS
National Arts
Standards 1.1; 1.2; 1.4 & 2.1
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.2; A1.3; A1.6 & A2.3

A. Photography is a visual language that is applicable to all visual art areas. In this unit students will use photography to explore the elements of art/principles of design. Students will use vocabulary associated with the use of value, line, texture, shape, balance, movement, repetition, contrast, etc. Students will learn how the manipulation of these elements/principles in art can create meaning and support expression. This unit focuses on establishing visual proficiency for illustrating concepts that are applicable to a variety of art and design fields.

B. Students will create photographs of a variety of subjects that demonstrate a basic understanding of the elements of art/principles of design. Students will be introduced to Photoshop as an editing software and a basic workflow. Students will also be required to use photography as a tool to convey larger concepts and production ideas in the form visual storytelling. Students will describe, analyze and critique an historical photograph. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion.

Unit 2: **Light & Motion** *(4 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.1; 1.2; 1.4 & 1.6
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.2; A1.3; A1.6 & A4.3

A. Shutter Speed and Aperture are the foundations for creating photographs. In this unit students will learn the functions of camera technology and how light is used to create and manipulate photographic imagery.

B. Students will be introduced to the functions of SLR and DSLR cameras and create photographs that show motion using a variety of shutter speeds and the proper coordinating aperture. Students will analyze and prioritize their images by focusing on technical and aesthetic qualities and use Photoshop to edit their images. Students will describe, analyze and critique photographs of motion throughout history and technological developments in photography equipment. A rubric will be used for assessing craftsmanship and conceptual clarity, while verbal critique will offer collaborative analysis and discussion.

Unit 3: **Aperture and Point of View** *(4 weeks)*

STANDARDS
Visual and Performing Arts
Standards 2.1, 2.3, 3.3, 5.1 & 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A2.6, A2.7, & A2.9

A. This unit establishes the framework needed for students to compose and communicate conceptual ideas using photographic imagery. Compositional rules and visual vocabulary will allow students to determine artistic intent and facilitate the development of individual artistic style and voice. Students will be able to identify and design content for specific audiences while considering how historical and cultural elements affect message and meaning.

B. Students will develop a body of work that expresses the concept of the symbolic self-portrait, incorporates the rule of thirds and uses aperture to distinguish focal point. Students will analyze and prioritize their images by focusing on technical and aesthetic qualities and use Photoshop to edit their images. Students will describe, analyze and critique conceptual portraiture. Students will interpret the symbolic self-portraits made by their peers and critique their use of visual language. Students will learn to utilize a variety of communication methods and persuasive techniques while utilizing critique methods to reflect upon their processes.

Unit 4: **Color** *(4 weeks)*

STANDARDS
Visual and Performing Arts
Standards 2.4 & 4.5
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.2, A2.3 & A4.4

A. This unit focuses on the use of color in digital and traditional photography. Using their knowledge of basic elements of art, students will delve deeper into color theory and the ways in which light and color can be manipulated to achieve artistic effects and enhance meaning.

B. Students will analyze how color can affect the aesthetic value of an image and develop a body of work that uses color as visual language. Students will analyze and prioritize their images by focusing on technical and aesthetic qualities and use Photoshop to edit their images that best communicate their interpretation of the project. Students will use academic vocabulary to describe, analyze, and critique the photographs made by their peers, focusing on their use of color and visual language.

Unit 5: **Advertising** *(4 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.4, 2.1 & 2.5
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.3, A2.9 & A2.9

A. This unit focuses on building visual literacy. It includes close and thoughtful "readings" of works from a variety of media so students can expand their observation and reflective thinking skills, form connections to many aspects of human experience, and foster an expanded concept of literacy. This process encourages students to carefully consider and articulate the choices they make in their own development as artists and thinkers.

B. Students will create print advertisements for a chosen product, business, or service, using persuasive techniques and visual language designed to appeal to specific target audiences. In critique, students will pitch their idea to the product company and articulate how the target audience will be affected by the persuasive technique. A rubric will be used for assessing proficiency and students will participate in verbal critique with peer input.

Second Semester-Course Content

Unit 6: **Portraiture** *(5 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.1; 1.2; 1.4 & 5.1
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.2; A1.3; A1.9 & A2.2

A. This unit focuses on how to operate as a freelance portrait photographer. Students will learn about business and copyright law in relation to photography. Students will also learn about the different styles of portraiture, the history of portraiture, and lighting techniques specific to portraiture.

B. Students will go through the process of creating a freelance business and branding their business by creating business cards, letterhead, and a website. Students will have a friend or family member "hire" them for studio and environmental portraits that they will edit and create prints. Students will describe, analyze and critique historical and contemporary portraiture. A rubric will be used for assessing proficiency and students will participate in verbal critique with peer input.

Unit 7: **Photojournalism** *(4 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.1; 1.2 & 5.1
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A21., A2.3, A3.3, & A5.7

A. Building on prior knowledge regarding documentary photography, students will learn about the role of the photojournalist in our society. Students will learn the language of journalism and approaches to creating photo essays. Students will analyze and critique the various ways they have used photographs, text, and design elements to convey their story.

B. Students will analyze current newspaper article layouts, use of photography, angle, and level of information. Acting as journalist and photojournalist, students focus on an event, location, or person, and create a newspaper article that communicates a story using photographs and text. In mid-critique and final critique students will act as editor and proof their fellow student's articles in preparation for press, giving

feedback on strengths and weaknesses using the unit vocabulary. A rubric will be used for assessing proficiency and students will participate in verbal critique with peer input.

Unit 8: **Appropriation/Montage** *(3 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.6, 2.1 & 4.2
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.7, A2.5, A4.6 & A8.4

A. Students will learn about various techniques for conceptualizing and creating singular images out of multiple sources. Students will learn about the history of photo manipulation, montage, and appropriation. Students will learn about current laws regarding Usage and the Artist's Right to Collage.

B. Students will sketch their design ideas and previsualize their projects. Students will use Photoshop to create photomontages using appropriated and original imagery to create a surrealistic narrative. A rubric will be used for assessing proficiency and students will participate in verbal critique with peer input.

Unit 9: **Black & White Analog Photography** *(6 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.6, 2.1 & 4.2
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.7, A2.5, A4.6 & A8.2, A8.4

A. This unit introduces students to film and darkroom technology. Students will learn the history of the photogram and film photography. Students will learn how to use manual SLR cameras, how to develop film, and how to print in the darkroom.

B. Students will create photograms using objects that range in dimensionality and translucency. Students will use black and white film to create a personal project focused on an aspect of the theme: Black and White. A rubric will be used for assessing proficiency and students will participate in verbal critique with peer input.

Unit 10: **Conceptual Art** *(4 weeks)*

STANDARDS
Visual and Performing Arts
Standards 1.1; 1.2; 1.4, 5.4 & 5.1
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.2; A1. A2.6, A2.8, A2.9, A4.6 & A5.2

A. This unit focuses on artmaking where the concept or idea involved in the work take precedence over traditional aesthetic and material concerns. Students will learn about the history of Conceptual Art and look at the work of contemporary conceptual photographers.

B. Students will complete a process of brainstorming that will lead them to an essential question. Students will create a conceptual project based on their essential question. Students will present their project to the class and answer questions from their peers and teacher. A rubric will be used for assessing proficiency.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval.)*

Department:	Career Technical Education / Visual and Performing Arts
Course Title:	Photography Seminar Honors
Course Code:	(Educational Services will assign course number *after* Board Approval)
Grade Level(s):	11-12
School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Yes, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	Photo 1-2 and AP Studio Art or Honors Photography 3-4
Recommended Textbook:	Focus on Photography, ISBN 10: 0-87192-721-7 The Visual Experience, ISBN: 978-08719-2627-2
Course Overview:	Studio Art Seminar Honors is a coursed designed to provide students in the Studio Art pathway a fourth year course to work on specific projects and work-based learning opportunities in career training. This course is designed to allow fourth-year studio art students the chance to build their portfolio for college applications, internships, and professional presentation. Assignments will focus on visual problem solving, creative thinking and self-expression. Students will continue development of portfolio by pursuing an area of focus (subject, topic/theme or genre), and continued development of their artistic voice and style in a variety of selected media. This area of focus will be a yearlong, in-depth study. By the end of this course it is expected that students will have a cultivated

portfolio that showcases the breadth of their artistic skills and interests, as well as their ability to sustain a more in-depth creative exploration. Students are required to maintain a sketchbook, which will include weekly drawing assignments and preliminary studies of projects. In addition to creating portfolio artworks, all assignments throughout the course will require students to analyze, critique, and discuss the meaning and purpose of various artworks and how the artists employ the elements of art and principles of design to communicate meaning and feeling. This class is project based and hands on. Emphasis is placed on understanding of critique processes, evaluation utilizing the Elements and Principle of Art Making, research of art historical figures, and professionalism of finish product. The class will culminate with a gallery exhibition developed, organized, and executed by the students.

First Semester-Course Content

Unit 1: **Portfolio Review/ Proposal Development** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.1; A1.2; A1.3; A1.7; A1.9; A2.2; A2.3; A2.4; A2.6; A2.7; A2.8; A3.1; A3.4; A4.6; A5.2; A5.3; A5.6; A7.1; A7.5 A8.1

A. Students will meet with teacher for individual review of portfolio, and discuss student interests and areas for further development and study. This discussion will be an opportunity to inform and direct an emphasis for their year-long project (this may be specific subject matter, topic/theme, genre or formal problem that they wish to explore further). After stating the focus and their intent/desired outcomes for this project, students will select media and techniques they will need to learn/improve.

B. Once their project proposal is drafted, students will create an image board and have a formal conference with their teacher for feedback and approval. Once approved, students will create a project calendar of projected dates for completion of the various stages of each artwork: conception/planning/sketching, execution, critique and revision, completed works. Students will also execute the first of the series of art works which will serve as a "thesis statement", and a spring board point for remaining portfolio works. Students will present their proposal, and initial art work in small groups for critique, the group will offer collaborative analysis and discussion.

Unit 2: **Executing the Series (First Semester Works)** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.1; A1.2; A1.3; A1.5; A1.7; A1.8; A2.2; A2.3; A2.4; A2.6; A2.7; A2.8; A2.9; A3.2; A3.4; A4.3; A4.6; A5.2; A5.3; A5.4; A5.6; A7.1; A8.4

A. The unit provides students with the necessary framework to guide the execution of their subsequent 3-5 artworks. They will meet with their teacher to first review potential techniques that they must practice/master in order to execute the desired style of artwork. After, executing various practice assignments in their sketchbooks each student will then refer to their image board for additional resources to determine the content of their 1st semesters' series of artworks. In these works, students will further examine how the application of elements and principles of design supports individual voice and the clarifies the communication of the intended story/meaning.

B. Once the proposals have been finalized and approved students may begin the execution of the artworks, applying and expanding upon the concepts developed in their first thesis work. Throughout this each stage of this process students will meet regularly with the teacher for progress critiques. Bi-weekly small group critiques will also be held in order to receive peer feedback. The process will be repeated for artworks 2, 3, 4, etc... As the series develops it is expected that many students will expand or alter the course of their work, thus building acuity, and intentions for this series. Students will participate in a written self-evaluation, classroom critique, and rubric-based assessments to reflect upon their designs.

Unit 3: **Expanding Ideas/ Mentors and Masters** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.1; A1.2; A1.3; A1.5; A1.7; A1.9; A2.2; A2.3; A2.4; A2.6; A3.1; A3.2; A3.4; A3.6; A4.4; A5.3; A5.6; A5.7; A7.1; A8.1; A8.4; A8.5

A. This unit establishes the framework needed for students to further develop an understanding of importance of masters and mentors, and the powerful influence and learning from studying other creatives. Students will research and explore 3

artists as mentors, and discuss and analyze works of art by these chosen masters to develop a greater understanding of how these artists manipulate the elements and principles of design to communicate a powerful art aesthetic. Lecture will provide a foundation for a long and rich history of artists looking to masters and mentors for guidance and motivation. Students will research a brief history of their subject's lives, focusing on key pieces of information which helped to form the artists creative vision and direction. Students will delve into theses artists lives, what influences their artmaking, what if any lasting impact have these artists had on the world of art, and what specific aspects of these artists works are the students intending to emulate? Students will present their findings in both written and visual format.

B. Students will create a research paper and educate their audience regarding their mentor artists. Students will execute 1-2 artworks that respond to the discoveries made in study of their mentor subjects. Students will narrow and refine the pieces by concentrating on a specific concepts or processes. Influence my come from symbolism, iconography, and content, and/ or technical aspects, and/or application of the elements and principles of art. Students will create a presentation format which includes a written and visual component, as well as participate in a written self-evaluation, classroom critique, and rubric- based assessment to reflect upon their designs.

Unit 4: **Public Art and Competitions –Presentation and Professional Practice** *(2-3 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.1; A1.2; A1.3; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; 2.6; A3.1; A3.2; A3.4; A4.2; A4.3; A4.4; A5.6; A5.7; A8.4, A8.5

A. This unit provides students with the opportunity to investigate the skill set necessary for understanding the boundaries and standards required for submission in a visual arts competition. Students will survey current available open calls and competitions, local, national, or international, and make application. Competitions may require conformity to a specified theme, or may have a more open-ended constraint. Students will develop title and artist statement to elaborate on intention and creative interpretation of the theme. Students must consider how does the work relate to the premise, or answer the listed requirements? What processes will best show their personal skill level and convey their message most appropriately?

B. Students will investigate and participate in a local, national, or international competition by creating a work of art which reflects a given premise or theme. In

considering content, students will explore the relationship between their personal style, potential thematic social issues, and examine how an artist can strike a balance between satisfying personal expression whilst communicating universal message. Students will select a preferred media and create an art work for submission to the competition. Students will develop an artist's statement which explains the inspiration, and meaning of the work, and how it expresses the given theme. Students will photograph and prepare the photo and the art work for submission. Students will participate in collaborative critique and rubric assessments to reflect upon their designs.

Second Semester-Course Content

Unit 5: **Review and Focus for Semester 2 Body of Work** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway
Standards A1.1; A1.2; A1.3; A1.5; A1.7; A1.8; A2.2; A2.3; A2.4; A2.6; A2.7; A2.8; A2.9; A3.2; A3.4; A4.3; A4.6; A5.2; A5.3; A5.4; A5.6; A7.1; A8.4

A. Students analyze then synthesize their work from first semester and decide on next steps for their final body of work. Discussions with the teacher review and cement findings. Afterwards the students create an outline and timeline. They make a list of materials and tools required. Class discussions commence where students share their progress and artwork with the class and receive feedback. Decisions are made as to the media and process while fine-tuning the major themes. Midway through the quarter the class will have a critique in which each student displays and presents their work, what their expectations were at the beginning of the process and how their results shifted their art practice. After this mid-point critique each student has a discussion with the teacher to outline next steps and specific goals for the rest of the year

B. In response to their previous work and shifting interests, students will choose a piece of their own artwork from 1st semester and write a visual analysis examining the conceptual, aesthetic and process-based decisions that went into the work's creation. From this analysis, students generate a new piece of artwork using a different media and/or process, while seeking to maintain the conceptual basis behind the original work. The goals of this assignment are to emphasize critical thinking and analysis of their art work, refine and expand their technical abilities,

and demonstrate their capability to communicate an idea, theme or emotion. One-on-one discussions with the teacher and group brainstorming refine each student's ideas and goals. what their expectations were at the beginning of the process and how their results shifted their art practice. Students will continue to fill out their portfolio by creating an additional 2 works which reflect this new growth and awareness. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

Unit 6: **Career Development** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.5; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; A2.6; A3.2; A3.5; A4.3; A4.6; A5.2; A5.3; A5.6; A5.7; A7.1; A7.2; A7.3; A7.5; A8.4; A8.6

A. Where can studying Art or Design take you? What kinds of careers exist for those who study creative subjects at high school? While becoming an architect, fine artist, sculptor or gallery assistant is an option for those who study Art or Design, there are many other careers available for those who are able to envision, design and create beautiful and/ or functional things. Art education propels people towards creative and unexpected destinations – many of which have not even been discovered yet. This unit introduces students to the vast number of related careers available in the arts. Students will hear from professionals in a variety of fields, and prepare formal professional materials necessary for entering the professional world. Summative assessments and written/verbal critique will allow students to analyze and improve their work.

B. Students will utilize "The Art Careers Project", to research careers in the creative fields. Students will begin to understand the process of branding oneself by creating a presentation which highlights their personal style, skills, and achievements. Guest speakers will provide students an avenue to delve and question professionals as to what skills they look for in potential employees. Students will create a resume, cover letter, and business, postcard with the intention of presenting this package to a professional organization i.e. a local gallery, advertising agency, interior designer, etc... A rubric will be used for assessing proficiency and students will participate in a written self-evaluation, and verbal critique with peer input.

Unit 7: **Gallery Exhibition** *(4-6 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.5; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; A2.6; A3.2; A3.5; A4.3; A4.6; A5.2; A5.3; A5.6; A5.7; A7.1; A7.2; A7.3; A7.5; A8.4; A8.6

A. The previous April, students will have visited a both a local museum and gallery exhibitions to both view art and evaluate curatorial strategies, specifically, how the artworks are displayed, their order and grouping, the lighting, the color of the walls and shape of gallery, text and titles, and analysis of the catalog or publications. Afterword a group discussion will underscore the connections and relationships to installing and curating their own exhibition. The students will use their journal and sketchbook entries, and on-site photos contributions to discussions and notes. Written/verbal critique, and public feedback will allow students to analyze and improve their work.

B. Students will select 5-8 of their strongest portfolio works and professionally mount for school gallery exhibition. The students will curate and hang a final group show which will include the organization of a formal opening. Students will be responsible for designing an online and paper invitation, evites, and other social media advertising, snacks, music, awards, and after show dismantling. Students will draft a statement of purpose about their work detailing process, siting influences, concepts, and use of materials. A rubric will be used for assessing proficiency and students will participate in a written self-evaluation, and verbal critique with peer input.

Unit 8: **Final Portfolio Presentation** *(3 weeks)*

STANDARDS
Visual and Performing Arts Standards 1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway Standards A1.2; A1.3; A1.5; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; A2.6; A3.2; A3.5; A4.3; A4.6; A5.2; A5.3; A5.6; A5.7; A7.1; A7.2; A7.3; A7.5; A8.4; A8.6

A. Students will receive an overview of the different programs available for creating an online portfolio (Google Slides, Weebly, WordPress for tech savvy students, etc.…)

Lecture presentation and student research will investigate the many types of offerings and organization techniques employed in artists websites. Discussions will center around analysis of user-friendly effectiveness, consistency, flow, clarity of artists voice. Students will choose several models as guidelines and select a program to create an online portfolio. Students will also learn about display, photography and documentation of art work. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

B. Students will gather all art work from present, and past art classes, or self-generated works. With individual and peer assessment, students will choose a minimum of 10 works of art to begin an online portfolio. Students will organize the images into a unifying flow, and draft and upload a personal artist's statement to complete the narrative. Students will present their artist statement, and online portfolio in conjunction with 10-15 physical works. Students will invite administration, family, and other staff members to their presentation. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

INFORMATION REPORT NO. 4

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Felix Melendez, Executive Director, Secondary Education
SUBJECT:	**Proposed New and Revised Course of Study Outlines for Use in Middle and High Schools in the Area of Mathematics**

The proposed course of study outlines (Math 8A Summer Acceleration; Integrated Math IIIA Accelerated; Integrated Math III; Integrated Math IIIB/Precalculus Accelerated; Precalculus; Precalculus Honors) are submitted for review and discussion by the Board of Education. The course outlines have been reviewed for content and evaluated by the members of the Mathematics Curriculum Study Committees. The Secondary Education Council has reviewed the information and made a recommendation of approval of the course outlines to the Board of Education.

MIDDLE SCHOOLS

Department:	**Mathematics**
Course Title:	Math 8A Summer Acceleration (Summer Bridge A)
Course Code:	3140J8/3141J8
School(s) Course Offered:	Roosevelt, Rosemont, Toll, Wilson
UC/CSU Approved (Y/N, Subject):	No
Course Credits:	Full Year (10) (Summer only)
Recommended Prerequisite:	Math 7 *and* teacher recommendation
Recommended Textbook:	enVisionmath2.0: Accelerated Grade 7, Pearson

Course Overview: This course is intended for students wishing to accelerate to Math 8B/Integrated I Accelerated in 8th grade, after completing Math 7 with an A and a teacher recommendation. This course covers half of the year-long Math 8 standards, as defined by California State Standards. Topics included are irrational numbers, exponent rules, graphing proportional relationships, solving one variable equations and inequalities, properties of transformations, properties of lines, and volume of circular solids. Placement in Math 8B/Integrated I Accelerated is dependent upon passing Math 8A Summer Acceleration with the grade of A or B. The standards covered in this course are 8th grade standards that were covered in Math 7/8A Accelerated.

HIGH SCHOOLS

Department:	**Mathematics**
Course Title:	Integrated Math IIIA – Accelerated (Summer Bridge B) ***CPM**
Course Code:	3515J/3516J
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	No
Course Credits:	10, Full Year, elective credit Summer School only
Recommended Prerequisite:	Integrated Math II, teacher approval
Recommended Textbook:	Core Connections Integrated III Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al, CPM Educational Program Second Edition, Version 5.0

Course Overview:	Integrated Mathematics IIIA Accelerated is the summer bridge course for students who have completed Integrated II and would like to accelerate into Integrated IIIB/Precalculus Accelerated the following year. Integrated IIIB/Precalculus is a year and a half course. Along with this course, students will have completed all the standards in Integrated III and Precalculus in one summer and one school year. This course will strengthen and build on students' previous knowledge from Integrated Mathematics I and II standards. This course will focus on polynomial expressions and functions, quadratic functions and equations, rational functions and equations, radical functions and equations.

Department: **Mathematics**

Course Title:	Integrated Math IIIA – Accelerated (Summer Bridge B) ***HMH**
Course Code:	3515JH/3516JH
School(s) Course Offered:	Crescenta Valley High School, Hoover High School
UC/CSU Approved (Y/N, Subject):	No
Course Credits:	10, Full Year, elective credit, Summer School only
Recommended Prerequisite:	Integrated Math II, teacher approval
Recommended Textbook:	California Integrated Mathematics 3 Timothy D. Kanold, Edward B. Burger, Juli K. Dixon, Matthew R. Larson, Steven J. Leinwand Houghton Mifflin Harcourt 2015
Course Overview:	Integrated Mathematics IIIA Accelerated is the summer bridge course for students who have completed Integrated II and would like to accelerate into Integrated IIIB/Precalculus Accelerated the

following year. Integrated IIIB/Precalculus is a year and a half course. Along with this course, students will have completed all the standards in Integrated III and Precalculus in one summer and one school year. This course will strengthen and build on students' previous knowledge from Integrated Mathematics I and II standards. This course will focus on polynomial expressions and functions, quadratic functions and equations, rational functions and equations, radical functions and equations.

Department: **Mathematics**

Course Title: Integrated Math III ***CPM**

Course Code: 3513D/3514D

School(s) Course Offered: Glendale High School, Clark Magnet High School

UC/CSU Approved (Y/N, Subject): Y, "c" Mathematics

Course Credits: Full Year (10)

Recommended Prerequisite: Integrated Math II A/B

Recommended Textbook: Core Connections Integrated III
Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al, CPM Educational Program
Second Edition, Version 5.0

Course Overview: Integrated Mathematics III aims to apply and extend what students have learned in previous courses by focusing on finding connections between multiple representations of functions, transformations of different function families, finding zeros of polynomials and connecting them to graphs and equations of polynomials, modeling periodic phenomena with trigonometry,

and understanding the role of randomness and the normal distribution in making statistical conclusions.

On a daily basis, students in this course use problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments justifying their thinking. Under teacher guidance, students learn in collaboration with others while sharing information, expertise, and ideas.

The course is well balanced between procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (extension and transference). The lessons in the course meet all of the content standards, including the "plus" standards, of Appendix A of the *Common Core State Standards for Mathematics*. The course imbeds the CCSS Standards for Mathematical Practice as an integral part of the lessons in the course.

Department:	**Mathematics**
Course Title:	Integrated Math III ***HMH**
Course Code:	3513DH, 3514DH
School(s) Course Offered:	Crescenta Valley High School, Hoover High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated Mathematics II
Recommended Textbook:	California Integrated Mathematics 3

Timothy D. Kanold, Edward B. Burger, Juli K. Dixon,
Matthew R. Larson, Steven J. Leinwand
Houghton Mifflin Harcourt, 2015

Course Overview: Integrated Mathematics III aims to apply and extend what students have learned in previous courses by focusing on finding connections between multiple representations of functions, transformations of different function families, finding zeros of polynomials and connecting them to graphs and equations of polynomials, modeling periodic phenomena with trigonometry, and understanding the role of randomness and the normal distribution in making statistical conclusions.

On a daily basis, students in this course use problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments justifying their thinking. Under teacher guidance, students learn in collaboration with others while sharing information, expertise, and ideas.

The course is well balanced between procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (extension and transference). The lessons in the course meet all of the content standards, including the "plus" standards, of Appendix A of the *Common Core State Standards for Mathematics*. The course imbeds the CCSS Standards for Mathematical Practice as an integral part of the lessons in the course.

Department: **Mathematics**

Course Title: Integrated Math IIIB/Precalculus Accelerated ***CPM/CPM**

Course Code: 3517D, 3518D

School(s)
Course Offered: Glendale High School

UC/CSU Approved

(Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated II/IIIA Accelerated or Integrated II + (Summer) Integrated Math IIIA Accelerated
Recommended Textbook:	Core Connections Integrated III Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al, CPM Educational Program Second Edition, Version 5.0 Precalculus Josea Eggink, Samantha Falkner, Emily Kaffel, Mark Ray, Jeanne Villeneuve, Karen Wooton, Erin Yao CPM Educational Program Third Edition
Course Overview:	Integrated Mathematics IIIB/Precalculus Accelerated is part two of a two-part compacted math series. Following Integrated Mathematics II/IIIA Accelerated, this course provides students with instruction in the second half of the content of the Integrated Math III and all of the course content for Precalculus. This compression is designed as the single point of acceleration at the high school level as recommended by the California Mathematics Framework. This course is aligned to the California Common Core State standards for high school mathematics and supports the Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of the mathematical relationships and concepts needed to succeed in higher level math courses. In addition to covering the second half of Integrated III standards, this course meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to

several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

The course is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson. With the emergence of new technology, many lessons have moved beyond a traditional handheld device and are written with Desmos eTools as an integral component. The curriculum contains several key labs and hands-on activities to introduce and connect concepts, with an emphasis on modeling.

A focus on algebra is woven throughout the course. Students investigate equivalent expressions and practice setting up word problems right from the start. Students use algebra to manipulate inverse, composite, and piecewise-defined functions as well as investigate characteristics of functions and transformations of functions. Students continue rewriting expressions, solving complicated equations and systems, and use algebra to solve word problems. Algebraic manipulation is practiced throughout the rest of the course as students work with limits, rates of change, trigonometric expressions, complex numbers, series, conic sections, and area under the curve.

Careful consideration was given to the sequencing of the concepts in the course to allow for mastery over time while meeting the content standards of a 4th year course with focus on the 4th year math standards: algebra, functions, trigonometry, complex numbers, conic sections, probability, vectors, and matrices.

In addition to the second half of Integrated III standards, this courses covers the same material as Precalculus Honors, by adding and adds rates of change, limits and area under the curve to the standard Precalculus course.

Department:	**Mathematics**
Course Title:	Integrated Math IIIB/Precalculus Accelerated ***CPM/Cengage**
School(s) Course Offered:	Clark Magnet High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated II/IIIA Accelerated or Integrated II + (Summer) Integrated Math IIIA Accelerated
Recommended Textbook:	Core Connections Integrated III Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al, CPM Educational Program Second Edition, Version 5.0 Precalculus: Mathematics for Calculus James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition
Course Overview:	Integrated Mathematics IIIB/Precalculus Accelerated is part two of a two-part compacted math series. Following Integrated Mathematics II/IIIA Accelerated, this course provides students with instruction in the second half of the content of the Integrated Math III and all of the course content for Precalculus. This compression is designed as the single point of acceleration at the high school level as recommended by the California Mathematics Framework. This course is aligned to the California Common Core State standards for high school mathematics and supports the Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of the mathematical

relationships and concepts needed to succeed in higher level math courses.

In addition to covering the second half of Integrated III standards, this course meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

In addition to the second half of Integrated III standards, this courses covers the same material as Precalculus Honors, by adding and adds rates of change, limits and area under the curve to the standard Precalculus course.

Department:	**Mathematics**
Course Title:	Integrated Math IIIB/Precalculus Accelerated ***HMH/Cengage**
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Hoover High School, Crescenta Valley High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, mathematics "c"
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated II/IIIA Accelerated

Recommended Textbook:

California Integrated Mathematics 3
Timothy D. Kanold, Edward B. Burger, Juli K. Dixon, Matthew R. Larson, Steven J. Leinwand
Houghton Mifflin Harcourt
2015

Precalculus: Mathematics for Calculus
James Stewart, Lothar Redlin, Saleem Watson
Cengage Learning
Seventh Edition

Course Overview: Integrated Mathematics IIIB/Precalculus Accelerated is part two of a two-part compacted math series. Following Integrated Mathematics II/IIIA Accelerated, this course provides students with instruction in the second half of the content of the Integrated Math III and all of the course content for Precalculus. This compression is designed as the single point of acceleration at the high school level as recommended by the California Mathematics Framework. This course is aligned to the California Common Core State standards for high school mathematics and supports the Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of the mathematical relationships and concepts needed to succeed in higher level math courses.

In addition to covering the second half of Integrated III standards, this course meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

In addition to the second half of Integrated III standards, this courses covers the same material as Precalculus Honors, by adding and adds rates of change, limits and area under the curve to the standard Precalculus course.

Department: **Mathematics**

Course Title: Precalculus (*Formerly Math Analysis)* ***CPM**

School(s) Course Offered: Glendale High School

UC/CSU Approved (Y/N, Subject): Y, "c" Mathematics

Course Credits: Full Year (10)

Recommended Prerequisite: Integrated III

Recommended Textbook: Precalculus
Josea Eggink, Samantha Falkner, Emily Kaffel, Mark Ray, Jeanne Villeneuve, Karen Wooton, Erin Yao
CPM Educational Program
Third Edition

Course Overview: Precalculus meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

The course is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson. With the emergence of new technology, many lessons have moved beyond a traditional handheld device and are written with Desmos eTools as an integral component. The curriculum contains several key labs and hands-on activities to introduce and connect concepts, with an emphasis on modeling.

A focus on algebra is woven throughout the course. Students investigate equivalent expressions and practice setting up word problems right from the start. Students use algebra to manipulate inverse, composite, and piecewise-defined functions as well as investigate characteristics of functions and transformations of functions. Students continue rewriting expressions, solving complicated equations and systems, and use algebra to solve word problems. Algebraic manipulation is practiced throughout the rest of the course as students work with limits, rates of change, trigonometric expressions, complex numbers, series, conic sections, and area under the curve.

Careful consideration was given to the sequencing of the concepts in the course to allow for mastery over time while meeting the content standards of a 4th year course. The book is designed to be a year-long course and allows teachers to choose topics that fit the needs of their students. One option using this text is a course that focuses on the 4th year math standards: algebra, functions, trigonometry, complex numbers, conic sections, probability, vectors, and matrices. Another option is a course that focuses on Calculus readiness with topics such as rates of change, limits, and area under the curve.

Department: **Mathematics**

Course Title: Precalculus (*Formerly Math Analysis)* ***Cengage**

School(s)

Course Offered:	Clark Magnet High School, Crescenta Valley High School, Hoover High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated III
Recommended Textbook:	Precalculus: Mathematics for Calculus James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition
Course Overview:	Precalculus is a 4th year high school mathematics course to solidify and explore deeper concepts and content that students have seen before as well as introducing some new concepts to help prepare them for more advanced mathematics. This course meets all the Common Core state standards for a fourth-year of high school mathematics and is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson and chapter.

Department: **Mathematics**

Course Title:	Precalculus Honors (*Formerly Honors Math Analysis)* ***CPM**
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics

Course Credits: Full Year (10)

Recommended Prerequisite: Integrated III

Recommended Textbook: Precalculus
Josea Eggink, Samantha Falkner, Emily Kaffel, Mark Ray, Jeanne Villeneuve, Karen Wooton, Erin Yao
CPM Educational Program
Third Edition

Course Overview: Precalculus meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

The course is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson. With the emergence of new technology, many lessons have moved beyond a traditional handheld device and are written with Desmos eTools as an integral component. The curriculum contains several key labs and hands-on activities to introduce and connect concepts, with an emphasis on modeling.

A focus on algebra is woven throughout the course. Students investigate equivalent expressions and practice setting up word problems right from the start. Students use algebra to manipulate inverse, composite, and piecewise-defined functions as well as investigate characteristics of functions and transformations of

functions. Students continue rewriting expressions, solving complicated equations and systems, and use algebra to solve word problems. Algebraic manipulation is practiced throughout the rest of the course as students work with limits, rates of change, trigonometric expressions, complex numbers, series, conic sections, and area under the curve.

Careful consideration was given to the sequencing of the concepts in the course to allow for mastery over time while meeting the content standards of a 4th year course with focus on the 4th year math standards: algebra, functions, trigonometry, complex numbers, conic sections, probability, vectors, and matrices.

This courses covers the same material as Precalculus and adds rates of change, limits and area under the curve.

Department:	**Mathematics**
Course Title:	Precalculus Honors (*Formerly Honors Math Analysis)* ***Cengage**
School(s) Course Offered:	Clark Magnet High School, Crescenta Valley High School, Hoover High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, mathematics "c"
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated III
Recommended Textbook:	Precalculus: Mathematics for Calculus James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition

Course Overview: Precalculus is a 4th year high school mathematics course to solidify and explore deeper concepts and content that students have seen before as well as introducing some new concepts to help prepare them for more advanced mathematics. This course meets all the Common Core state standards for a fourth-year of high school mathematics and is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson and chapter.

This courses covers the same material as Precalculus and adds rates of change, limits and area under the curve.

Glendale Unified School District

Middle School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Math 8A Summer Acceleration (Summer Bridge A)
Course Code:	3140J8/3141J8
School(s) Course Offered:	Wilson, Toll, Roosevelt, Rosemont
UC/CSU Approved (Y/N, Subject):	No
Course Credits:	Full Year (10) (Summer only)
Recommended Prerequisite:	Math 7 *and* teacher recommendation
Recommended Textbook:	*enVisionmath2.0: Accelerated Grade 7*, Pearson
Course Overview:	This course is intended for students wishing to accelerate to Math 8B/Integrated I Accelerated in 8th grade, after completing Math 7 with an A and a teacher recommendation. This course covers half of the year-long Math 8 standards, as defined by California State Standards. Topics included are irrational numbers, exponent rules, graphing proportional relationships, solving one variable equations and inequalities, properties of transformations, properties of lines, and volume of circular solids. Placement in Math 8B/Integrated I Accelerated is dependent upon passing Math 8A Summer Acceleration with the grade of A or B. The standards covered in this course are 8th grade standards that were covered in Math 7/8A Accelerated.

Course Content:

Unit 1: **Real Numbers** *(6 days)*

STANDARDS
8.NS.1, 8.NS.2, 8.EE.2, 8.EE.3, 8.EE.4

A. As stated on page 80C of the Teacher Edition:
In this unit, students make the connection that repeating decimals are rational numbers because they can be written as fractions. Students explore irrational numbers and recognize perfect squares. They learn that real numbers are either rational or irrational, and compare and order rational and irrational numbers. Students evaluate square and cube roots and extend this knowledge by solving equations using square roots and cube roots. They multiply and divide exponential expressions with the same base and multiply exponential expressions with different bases. Students use properties of exponents to simplify expressions. Students will perform operations with numbers in scientific notation.

B. Sample Activity and Assignment:
Students will participate in a 3-Act Math Task where they view a video of heart beats on a heart monitor. Students then must determine a mathematical question they can ask and answer based on the video and what information they must find to solve the problem. While engaging in this task, students will estimate the answer to the question of how many times one's heart beats in a decade. Students must use exponent rules, scientific notation, and operations with scientific notation to determine and justify their estimates.

Unit 2: **Analyze and Solve Linear Equations** *(5 days)*

STANDARDS
8.EE.7a, 8.EE.7b, 8.EE.5, 8.EE.6

A. As stated on page 384C of the Teacher Edition:
In this topic, student collect like terms from one or both sides of an equation to solve problems using the Distributive Property and inverse operations. Student determine whether an equation has zero, one, or infinitely many solutions. Student compare proportional relationships by computing unit rates and using linear graphs, equations and tables. They find relationships between proportional relationships and slope of a line. Students extend their understanding of linear equations to include non-zero y-intercepts, leading to equations in the form of $y = mx + b$.

B. Sample Activity and Assignment:
At the end of the unit, students will be given a performance assessment which includes student comparing the cost of renting a climbing wall from two different companies. One company's costs are represented in a graph, while the other's cost is represented in a table. Students need to determine which company is most cost effective and defend their answer.

Unit 3: **Congruence and Similarity** *(5 days)*

STANDARDS
8.G.1a, 8.G.1b, 8.G.1c, 8.G.3, 8.G.2, 8.G.4, 8.G.5

A. Students learn to translate a figure and identify and verify the transformation, and its properties. Students describe sequences of transformations, as well as identify center of rotation and angle of rotation. Students make sense of dilations and make sense of scale factors. Students use what they have learned about transformations to understand and verify similarity and congruency of figures. Students learn about the relationship of angles formed by parallel lines and a transversal, as well as using this information to determine missing measurements of the interior and exterior angles of a triangle.

B. Sample Assignments:
1. Students will use the online graphing program Geogebra to explore similarity and congruence of figures and describe the sequences performed.
2. Students will cut out L shaped pieces and perform a series of transformations on a coordinate plane and record the position of each of the vertices of the original and the transformed figures.

Unit 4: **Solving Problems Involving Surface Area and Volume** *(4 days)*

STANDARDS
8.G.9

A. As described on page 716C of the Teacher Edition:
Students determine the surface area of a cones and cylinders by decomposing the shape into a net. The surface are of a sphere is calculated through examination of the relationship between the surface area of a cone and the surface area of a sphere. Students find the volume of a cone by applying a similar procedure to the volume of a right prism. Students examine the differences and similarities between the formulas for volumes of cones and cylinders and between the formulas for the volumes of cones and spheres.

B. Sample Assignment:
Students participate in a 3-Act Math task where they must predict whether the contents of a given flask (shaped like a cone with a cylinder on top) will fit into a given cylinder. Students must determine that they need to know the dimensions of both containers, as well as recognize that the flask has a smaller cone (the tip of the imaginary cone) removed and replaced by a cylinder. Students will need to decompose the flask into two solids.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math IIIA – Accelerated (Summer Bridge B)
Course Code:	3515J/3516J
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	No
Course Credits:	10, Full Year, elective credit Summer School only
Recommended Prerequisite:	Integrated Math II, teacher approval
Recommended Textbook:	*Core Connections Integrated III* Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al CPM Educational Program Second Edition, Version 5.0
Course Overview:	Integrated Mathematics IIIA Accelerated is the summer bridge course for students who have completed Integrated II and would like to accelerate into Integrated IIIB/Precalculus Accelerated the following year. Integrated IIIB/Precalculus is a year and a half course. Along with this course, students will have completed all the standards in Integrated III and Precalculus in one summer and one school year. This course will strengthen and build on students' previous knowledge from Integrated Mathematics I and II standards. This course will focus on polynomial expressions and functions, quadratic functions and equations, rational functions and equations, radical functions and equations.

Course content:

Unit 5: **Inverses and Logarithms**

STANDARDS
F-BF.3, F-BF-4, F-BF.4a, F-LE.4, F-LE.4.2, I-IF.7e

A. Reversing is an important theme in the early part of this chapter. The first section introduces the concept of inverse relations. Students learn that reversing, or working backward to undo the action of a function, can create a new function. They explore multiple representations of functions and their inverses, and recognize that many functions have inverses that are not functions. In the second, students determine inverses of parent functions. They learn that the inverse of an exponential function is a logarithm. Reversing is emphasized once again as they learn how to convert exponential equations into logarithmic form, and vice versa. Students investigate the new family of logarithmic functions $f(x) = \log_b(x)$ for different values of b, test values on their calculators to determine the base the calculators work in, and learn to graph transformations of $f(x) = \log(x)$.

Progression of Content:
This chapter adds to students' lists of parent functions, which will continue to expand with the addition of polynomial functions in Unit 8 and trigonometric functions in Unit 9.

B. Unit Assignment(s):
Mathematics Practices used in Unit 5:

- Students will look for and make use of structure and construct viable arguments as they develop and justify strategies for undoing functions and as they investigate different bases for logarithms..
- Students will use appropriate tools strategically and look for and make use of structure when they graph inverses of functions and write their equations.
- Students will look for and make use of structure as they verify inverses using multiple representations, and attend to precision as they restrict the domain of a function to ensure that its inverse is also a function.
- Students will construct viable arguments and critique the reasoning of others and look for and make use of structure as they apply their knowledge of parent graphs and inverses to learn about logarithms.
- Students will look for and make use of structure and express regularity in repeated reasoning as they learn the definition of logarithm and calculate the values of logarithms.
- Students will construct viable arguments and critique the reasoning of others, use appropriate tools strategically, and look for and make use of structure as they investigate logarithms with different bases.

Sample Activities:
Guess My Number Game - Students are asked to guess the number the teacher is thinking of based on the order of operations applied to the number and what the mystery number has ultimately transformed into. Students may or may not write an equation, but you may want to encourage them to do so as it will help when they progress to working with functions and inverses. Making sure that the idea of reversing, or undoing, comes up in the discussion of the "Guess My Number" game. You undo each step, reversing the original Order of Operations.

Graph the Inverse Function - Students will be looking at strategies for creating graphs of inverse functions. The first two graphs have functions that they are capable of finding the equation of their inverse functions but the third function does not lend itself to be solved for the inverse function. Teams could make a mini-table of some coordinates from the graph and then use it to help make a mini-table for the inverse graph. Students will soon discover that the line $y = x$ is the line of symmetry.

Unit 7: **Logarithms and Triangles**

STANDARDS
F-LE.3, F-LE.4, F-LE.4.1, F-LE.4.3, A-SSE.2, F-BF.1, F-IF.7e, G-SRT.9+, G-SRT.10+, G-SRT.11+

A. In this unit, students return to their work with logarithms to develop tools they can use when solving application problems involving exponential equations. In the first half of this unit, students investigate the family $y = \log(m^n)$ and discover the Power Property of Logarithms, which allows them to solve exponential equations by using logs to undo or rewrite the equation. Students generalize from number patterns to make conjectures about other properties of logarithms and then prove these properties. Furthermore, students develop and share strategies to write the equation of the exponential function with a given asymptote that passes through two given points. Then they use that equation to make predictions.

The remainder of this unit focuses on completing a tool kit for calculating missing parts of non-right triangles. Students identify the types of information needed to determine all of the missing sides and angles of a triangle. Through this exercise, students also identify triangles for which they do not yet have the tools to determine missing parts. Students notice that they *do* have enough tools to calculate the measures and side lengths of right triangles. This leads to the question, "*What if the triangle is not a right triangle?"* Students then develop the Law of Sines and Law of Cosines so that they have a complete set of tools to determine the other missing parts of any triangle (when sufficient information is provided).

The unit concludes with students looking at different application problems using triangles and identifying which tools are most useful in each situation. In addition, students investigates the ambiguous case of triangles: SSA. This lesson is offered for accelerated

classes or those that could benefit from a complete view of the relationships between the sides and angles of a triangle. Working through the problems of this lesson before you decide to use the lesson with your students is highly recommended.

Progression of Content:
The work with logarithms in this unit prepares students for future work in a pre-calculus course. Working with Law of Sines and Cosines and reviewing the use of right triangle trigonometry and special right triangles prepares students for working with the trigonometric family of functions in Unit 9.

B. Unit Assignment(s):

Mathematics Practices used in Unit 7:

- Students will look for and make use of structure and express regularity in repeated reasoning while they develop the Power Property of Logarithms, learn other properties of logs and how to rewrite equations with different bases.
- Students will make sense of problems and reason abstractly and quantitatively as they write the equation of an exponential function given two points and an asymptote.
- Students will make sense of problems and persevere in solving them, model with mathematics, and reason abstractly and quantitatively as they explore exponential functions with an asymptote other than $y = 0$ and apply logarithms to solve an exponential equation.
- Students will make sense of problems and persevere in solving them as they figure out what information they need to solve for parts of triangles. They will need to attend to precision as they communicate what they know and do not know.
- Students will look for and express regularity in repeated reasoning as they develop the ratios for the Law of Sines.
- Students will make sense of problems and persevere in solving them using the Law of Cosines.
- Students will attend to precision as they work with triangles involving the SSA relationship. They must also use appropriate tools strategically as they explore the ambiguous case of the Law of Sines.
- Students will reason abstractly and quantitatively as they make sense of problems and persevere in solving them. They will attend to precision as they solve the problems and communicate within their teams, labeling diagrams, attending to units, and calculating their answers accurately.

Sample Activities:
"The Case of the Cooling Corpse" - a problem in which students model the falling temperature of a corpse to establish time of death and solve a murder mystery. In order to solve the mystery, students will need to decide which information is relevant to solving the problem (e.g., body temperature, times listed on sign-in sheets, etc.). Students will need to write and solve a system of exponential functions, with a horizontal asymptote representing the room temperature, the independent variable as time, and the dependent variable as the temperature of the body.

Solving Triangles - This activity consists of eight independent triangle problems (suggestion is to assign one problem to a group of 3-4 students) that will provide students with a chance to consolidate their understanding of the various tools and strategies they have developed so far to solve triangle problems. Some problems may be solved using the Law of Sines, Law of Cosines, or a combination of both. Students will present their assigned problem to the entire class and their process for solving the assigned problem.

Unit 8: **Polynomials**

STANDARDS
A-APR.1, A-APR.2, A-APR.4, A-APR.6, A-APR.3, F-IF.4, F-IF.7c, N-CN.8+, N-CN.9+, A-SSE.2, A-CED.2, F-BF.1

A. In the first section, students will investigate the equation ↔ graph connections for polynomial functions. They will recognize that equations in factored form are much easier to sketch, and they will understand the relationship between the factors and the x-intercepts of the graph. Then, in the second section, they will develop an understanding of imaginary and complex numbers and recognize that polynomial functions can have complex roots. In the third and last section, they will learn to divide polynomials by a known factor to find other factors. This will allow them to determine complex and irrational roots of some cubic and quartic functions.

Progression of Content:
Students will build on their understanding of function families in Unit 9, where they study trigonometric functions and transform the graphs of sine and cosine functions. Students will use their algebra skills when they study rational expressions in Unit 11. Students will also use their algebra skills when they prove formulas for sums of series in Unit 10 and solve trigonometric identities in Unit 12.

B. Unit Assignment(s):
Mathematics Practices used in Unit 8:

- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they discuss factored form and describe the graphs of polynomials and their understanding of the stretch. Students will also look for and make use of structure as they draw graphs of polynomials.
- Students will look for and make use of structure as they continue their polynomial investigation. Students will also construct viable arguments and critique the reasoning of others as they consolidate their results on polynomials.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they develop their understanding of a stretch factor. Student will also model with mathematics as

they develop an equation for the roller coaster problem first introduced in the first lesson of Unit 8.

- Students will look for and make use of structure as they use polynomial division to determine factors of polynomials. Students will also construct viable arguments and critique the reasoning of others as they develop their understanding of polynomial division.
- Students will look for and make use of structure as they use complex roots to write equations of quadratic functions and express regularity in repeated reasoning as they identify polynomial identities to help them factor. Students will also look for and express regularity in repeated reasoning as they identify patterns in the sums and products of complex roots.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others when they determine all roots of a polynomial with a degree greater than two and when they determine all roots of a polynomial with a degree greater than two.

Sample Activities:
Polynomial Function Investigation - Students are instructed to look for, label, and describe the x-intercepts and "bounces" (double roots, although students will probably not use this term), the y-intercept, the number of turns, and the behavior of graphs for very large and very small x-values. They should share and discuss all of their graphs and their observations within their teams. The discussion should lead to conjectures and the creation of several new equations to try. Students are coming up with methods for determining the x- and y-intercepts, predictions about the numbers of crossings of the x-axis, and ideas for determining a reasonable window or maximum and minimum approximations.

Game of Polydoku - By treating division as a puzzle and using the organizational device of an area model, students can use logical reasoning to reverse the multiplication process and figure out a missing factor. Once they have worked through the process several times, they should be able to set up and solve their own division problems. This method is as efficient as (if not more efficient than) polynomial "long division" and you can use it to develop synthetic division if that is part of your curriculum. This game introduces polynomial division by challenging students to reverse the process of polynomial multiplication.

Unit 11: **Rational Expressions and Three-Variable Systems**

STANDARDS
A-APR.7+

A. In this chapter, students will focus on operations with rational expressions. Students did a function investigation in Unit 1 that previewed the investigation of rational expressions. Students learn a powerful method of simplifying rational expressions that uses properties of the number 1 and the properties of exponents. In a previous course,

students learned to solve a system of two linear equations in two variables, and they reviewed this topic in Chapter 3 of this text.

Progression of Content:
The remaining chapter requires students to use their algebra skills to solve trigonometric identities. In future courses, students may use matrices to solve systems of equations.

B. Unit Assignment(s):
Mathematics Practices used in Unit 11:

- Students will look for and make use of structure as well as look for and express regularity in repeated reasoning as they use the number 1 to understand rational expressions.
- Students will also look for and make use of structure as well as look for and express regularity in repeated reasoning as they connect multiplication and division of fractions to that of rational expressions.
- Students will look for and make use of structure as they make connections between adding and subtracting fractions and adding and subtracting rational expressions, and as they locate points in three-dimensional space. They will construct viable arguments and critique the reasoning of others as they justify their strategies.
- Students will continue to look for and make use of structure as well as look for and express regularity in repeated reasoning as they work with rational expressions. They will construct viable arguments and critique the reasoning of others as they investigate the closure of rational expressions under operations.
- Students will reason abstractly and quantitatively and look for and express regularity in repeated reasoning as they write the equation of a quadratic function by solving a system of three equations with three unknowns.

Sample Activity:
Giant One - Students are encouraged to rewrite rational expressions to create fractions that will reduce to one. The new expressions will be reduced to its simplest form. This strategy to rewrite will allow students to simplify rational expression after doing basic operations on the original expressions.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math IIIA – Accelerated (Summer Bridge B)
Course Code:	3515JH/3516JH
School(s) Course Offered:	Crescenta Valley High School, Hoover High School
UC/CSU Approved (Y/N, Subject):	No
Course Credits:	10, Full Year, elective credit, Summer School only
Recommended Prerequisite:	Integrated Math II, teacher approval
Recommended Textbook:	*California Integrated Mathematics 3* Timothy D. Kanold, Edward B. Burger, Juli K. Dixon, Matthew R. Larson, Steven J. Leinwand Houghton Mifflin Harcourt 2015
Course Overview:	Integrated Mathematics IIIA Accelerated is the summer bridge course for students who have completed Integrated II and would like to accelerate into Integrated IIIB/Precalculus Accelerated the following year. Integrated IIIB/Precalculus is a year and a half course. Along with this course, students will have completed all the standards in Integrated III and Precalculus in one summer and one school year. This course will strengthen and build on students' previous knowledge from Integrated Mathematics I and II standards. This course will focus on polynomial expressions and functions, quadratic functions and equations, rational functions and equations, radical functions and equations.

Course Content:

Unit 1: **Measurement and Modeling in Two and Three Dimensions**

STANDARDS
G-GMD.4, G-GMD.5, G-MG.1

A. Students will learn about cross sections and solids of rotation. They will utilize formulas to calculate the surface area of prisms, cylinders, pyramids, cones, and spheres. Students will work with geometric probability and scale factor. They will explore the differences between Euclidean and spherical geometry.

Major Topics:
Cross sections and solids of rotation
Formulas for the surface area of a prism, cylinder, pyramid, cone and sphere
Scale factor
Calculating density
Modeling to meet constraints

B. Unit Assignment(s):
At the end of this unit, students will complete a Math in Careers task relating to a scale model of a sphere. Critical skills include finding a scale factor and applying knowledge of spherical geometry. Students will experience how a model maker uses mathematics on the job.

Mathematical Practices Used in Unit:

- MP.1 - Students will make sense of problems when they use multiple formulas to find the surface area and/or volume of composite solids.
- MP.2 - Students must reason abstractly to visualize the cross sections of solids. Students relate the properties of three-dimensional figures (faces, vertices, and intersections of planes) and their rotational symmetry to help identify cross sections of solids. Students will use their knowledge of surface area of spheres and scale to find actual distances on the globe.
- MP.4 - Students represent real-world problems with mathematical models when they find the density of real-life objects as the weight or mass per unit of volume, and extend that idea to density to population density, or the population of a region per unit area of the region.
- MP.8- Students will decompose solids into two-dimensional shapes for finding surface area and determine shortcuts (formulas) for finding surface area of prisms and cylinders. Students will apply their knowledge of two- and three- dimensional figures to describe the transformation of figures by scale factor *a.*

Unit 2: **Polynomial Functions, Expressions, and Equations**

STANDARDS
F-IF.4, F-IF.4, A-APR.1, A-APR.2, A-APR.5, A-APR.6, A-SSE.2

A. Students will learn about transforming function graphs and inverses of functions. They will perform operations on polynomials. Student will expand their ability to solve equations by finding rational and complex solutions.

Major Topics:
Transforming function graphs and inverses of functions
Graphing cubic and polynomial functions
Operations with polynomials
Binomial theorem
Finding rational and complex solutions of polynomial equations

B. Unit Assignment(s):
After completing this unit, students will complete a performance task by evaluating and subtracting quadratic functions representing the labor force of the United States. Critical skills include evaluating polynomial functions and operations with polynomials.

Using data from the U.S. Census Bureau, the students will be provided with two functions for approximating the labor force, one for the total number of workers and one for the number of female workers. First, students will use the functions to calculate the two estimates for the number of workers. Next, students will work in pairs to write a polynomial function that models the number of male workers and will explain to another pair how they found their function. Finally, students will discuss, as a class, alternative strategies for determining the number of males without using the function they wrote.

Mathematical Practices Used in Unit:

- MP.1, MP.3 - Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they discuss factored form of a polynomial, describe the graphs of polynomials, and develop their understanding of polynomial division.
- MP.2, MP.7, MP.8 - Students will reason abstractly and quantitatively, look for and make use of structure, and look for and express regularity in repeated reasoning as they make connections between the transformations of quadratic functions and transformations of polynomial functions. Students will also understand the relationship between a function and its inverse.
- MP.7 - Students will also look for and make use of structure as they draw graphs of polynomials, and use polynomial division to determine factors of polynomials and how those factors relate to the zeros of the function.

Unit 3: **Rational Functions, Expressions and Equations**

STANDARDS
F-IF.7d, A-APR.7, A-REI.2

A. Students will learn about graphing rational functions. They will perform operations on rational expressions. Students will graph and solve rational equations.

Major Topics:
Graphing simple and complex rational functions
Adding, subtracting, multiplying and dividing rational functions
Solving rational equations

B. Unit Assignment(s):
After finishing this unit, students will complete a Math in Careers task by writing, analyzing, and graphing a function representing the concentration of acid in a mixture. Critical skills include representing real-world situations using rational functions, determining domain and range, and interpreting asymptotes.

Students will write a rule for a function that represents a specific acid and water mixture. Students will determine a reasonable domain for their function and explain to a partner. They will graph the function labeling the axes with the quantities they represent and indicate the axis scales. With a partner, a student will analyze the function's rule to determine the vertical and horizontal asymptotes and determine their relevance or irrelevance.

Mathematical Practices Used in Unit:

- MP.7, MP.8 - Students will look for and make use of structure as well as look for and express regularity in repeated reasoning as they connect multiplication and division of fractions to that of rational expressions, and make connections between adding and subtracting fractions and adding and subtracting rational expressions.
- MP.7 - Look for and make use of structure as they graph rational functions with the parameters a, b, h, and k.
- MP.3 - Students will construct viable arguments as they solve rational equations graphically to find the zeros of the function, and algebraically by rewriting an equivalent polynomial equation to solve the original rational equation.

Unit 4: **Radical Functions, Expressions and Equations**

STANDARDS
F-BF.4a, F-IF.7b, N.RN.1, A-REI.2

A. Students will learn about inverses of quadratic and cubic functions. They will graph square and cube root functions. Students will simplify and solve radical equations.

Major Topics:
Inverses of simple quadratic and cubic functions
Graphing square and cube root functions
Radical expressions and rational exponents
Simplifying radical expressions
Solving radical equations

B. Unit Assignment(s):
Upon finishing this unit, students will do a performance task in which they will take on the role of a nutritionist. Students will find a quadratic function that models BMI data. Critical skills include fitting a function to data, finding the appropriate domain and range, and finding the inverse of a function.

Given the median BMI measures for a group of boys, students will create a scatter plot for the data. They will find a quadratic regression model for the data and explain their model. Students will then work with a partner to determine the domain and its restrictions for both the data set and its inverse. Lastly, students will graph the inverse of the function and determine what it models.

Mathematical Practices Used in Unit:

- MP.1 - Students will make sense of problems and persevere in solving them as they use various strategies to solve radical equations, and to obtain extraneous solutions.
- MP.4 - Students will explore how a function and its inverse can both model a given real-world situation.
- MP.7 - Students will look for and make use of structure about how the various parameters, a, b, h, and k, affect the graph of a square-root and cubic function, in relation to a quadratic and cubic function respectively.

Unit 5: **Properties of Circles**

STANDARDS
G-C.1, G-C2, G-C.3, G-C.5, G-GMD.1, G-GPE.1

A. Students will learn relationships among inscribed angles, radii, chords, secants and tangents. They will derive and apply the formula for arc length and sector area and convert degree to radian measure.

Major Topics:

- Central, inscribed and circumscribed angles
- Relationship of radii to chords and tangents

- Tangents to a circle
- Radian measure
- Arc length and sector area

B. Unit Assignment(s):

After finishing this unit, students will complete a Math in Careers task by using knowledge of the properties of circles in the context of an astronomical event. Critical skills include modeling real world situations and applying theorems about tangents, secants and arc measures in a circle. With a partner, students will create a diagram to make sense of the problem and label the given information. Students will determine the best method to calculate the degree of the arc where the eclipse may be observed. Once the measure of the arc is known, students can calculate the length of the arc.

Mathematical Practices Used in Unit:

- MP.4 - Students will model with mathematics as they apply what they know to solve problems involving circles. For example, students will find the distance between the Space Station and Earth's horizon.
- MP.3 - Students construct viable arguments and critique the reasoning of others when they answer the question, "Is it possible for 50% of the Earth's equator to be within range of a satellite's signal?"
- MP.8 - Students will look for and express regularity in repeated reasoning to understand that the radian measure is the constant of proportionality between the length of an arc of a circle and its radius.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math III
Course Code:	3513D/3514D
School(s) Course Offered:	Glendale High School, Clark Magnet High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated Math II A/B
Recommended Textbook:	*Core Connections Integrated III* Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al CPM Educational Program Second Edition, Version 5.0
Course Overview:	Integrated Mathematics III aims to apply and extend what students have learned in previous courses by focusing on finding connections between multiple representations of functions, transformations of different function families, finding zeros of polynomials and connecting them to graphs and equations of polynomials, modeling periodic phenomena with trigonometry, and understanding the role of randomness and the normal distribution in making statistical conclusions. On a daily basis, students in this course use problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments justifying their

thinking. Under teacher guidance, students learn in collaboration with others while sharing information, expertise, and ideas.

The course is well balanced between procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (extension and transference). The lessons in the course meet all of the content standards, including the "plus" standards, of Appendix A of the *Common Core State Standards for Mathematics*. The course imbeds the CCSS Standards for Mathematical Practice as an integral part of the lessons in the course.

Key concepts addressed in this course are:

- Visualize, express, interpret and describe, and graph functions (and their inverses, in many cases). Given a graph, students will be able to represent the function with an equation, and vice-versa, and transform the graph, including the following function families: absolute value, exponential, linear, logarithmic, piecewise-defined, polynomial, quadratic, square root, trigonometric.
- Use of variables and functions to represent relationships given in tables, graphs, situations, and geometric diagrams, and recognize the connections among these multiple representations.
- Application of multiple algebraic representations to model and solve problems presented as real world situations or simulations.
- Solving linear or quadratic equations in one variable, systems of equations in two variables, and linear systems of equations in three or more variables.
- Use of algebra to rewrite complicated algebraic expressions and equations in more useful forms.
- Rewriting rational expressions and arithmetic operations on polynomials.
- The relationship between zeros and factors of polynomials.
- Operations with complex numbers, and solving quadratics with complex solutions.
- Applications of the Law of Sines and Law of Cosines.
- Modeling periodic phenomena with trigonometric functions.
- Calculating the sums of arithmetic and geometric series, including infinite geometric series.
- Concepts of randomness and bias in survey design and interpretation of the results.
- Use of a normal distribution to model outcomes and to make inferences as appropriate.
- Use of computers to simulate and determine complex probabilities.
- Use of margin of error and sample-to-sample variability to evaluate statistical decisions.
- Solving trigonometric equations and proving trigonometric identities.
- Understand logarithms and their inverse relationship with exponentials.
- Use logarithms to solve exponential equations.

Course Content:

Semester A

Unit 1: **Investigations and Functions** *(approximately 14 days)*

STANDARDS
F-IF.4, F-IF.7b, F-BF.1, A-APR.1

A. This unit starts a focus on investigation and justification that continues throughout the course as students formulate and investigate mathematical questions and create logical and convincing arguments to support their findings. Students use a graphing calculator to create multiple representations of a function, and review how to fully describe the graph of a function using precise mathematical language. Students are also introduced to the way a parent graph and parameters define a family of functions. Modeling mathematical problems is a big emphasis from the start.

Progression of Content:
The investigation strategies students have developed throughout the course, especially in this unit, will continue to be used and further elaborated in future units as they study logarithmic, inverse, polynomial, and trigonometric functions.

B. Unit Assignment(s):
Mathematics Practices used in Unit 1:
- Look for and Make Use of Structure as they determine which inputs and outputs are possible for each type of function.
- Construct Viable Arguments and Critique the Reasoning of Others as they determine the order for the function machines.
- Use Appropriate Tools Strategically as they learn features of the graphing calculator.
- Attend to Precision as they graph functions with asymptotes and use proper vocabulary when describing statistical data.
- Look for Regularity in Repeated Reasoning as they investigate a family of functions by changing a parameter.
- Reason Abstractly and Quantitatively as they model the relationship between height and volume of rectangular prisms.

Sample Activities:
Function Exploration - Each group of students will be given a radical function to fully investigate. They will make a complete graph and describe it using the following attributes: shape, line of symmetry, asymptotes, increasing or decreasing, x- and y-intercepts, domain and range, endpoints, maximum or minimum points, continuous or discrete, and whether or not it is a function. After all graphs have been presented to the class, a discussion will follow that will discuss the similarities and differences between the graphs.

Open Box - Modeling a geometric relationship, each group of students will be given six equally sized sheets of grid paper. They will cut the corners from the paper and fold it to make a box without a lid. After making several boxes, students will use multiple representations (table, diagrams and graph) to determine which box has the greatest volume. Students will then generalize their results by writing an equation to represent the volume with height x. Using technology, students will find the height of the box with the largest possible volume.

Unit 2: **Transformations of Parent Graphs** *(approximately 17 days)*

STANDARDS
F.BF.1, F.BF.3, F-IF.4, F-IF.5, F-IF.6, F-IF.7b, F-IF.7e, A-CED.2, A-SSE.1b, G-GPE.3.1

A. In this unit, students learn how to generate families of functions from parent functions. Students develop a general equation of form f(x) = a(x – h)^2 + k for the family of quadratic functions and learn to graph a parabola quickly by identifying its orientation, vertical stretch (or compression), and vertex. Students then continue to generalize families of functions by applying the same kinds of transformations to other parent functions, describing the role of the locator point (h, k) for each family of functions.

Progression of Content:
The idea of families of functions will be revisited several times throughout this course and the next. Each time students are introduced to a new parent functions (e.g., inverses and logarithmic functions in Unit 5), they will be asked to graph members of its family and write an equation in graphing form for the family. The members of a family of functions are all related to a parent function and to each other by a sequence of transformations. As students gain familiarity with the properties of new functions, they will build their ability to choose the appropriate function to model a particular relationship.

B. Unit Assignment(s):
Mathematical Practices used in Unit 2:
- Look for and Make Use of Structure when they graph quadratic functions and rewrite the equations of quadratic functions from standard form to graphing form; make connections between the transformations of parabolas and other parent graphs; apply knowledge of parabolas and other parent functions to identify the locator point (h, k) for different families of functions; explore odd and even functions; and complete the square for equations of parabolas and circles and identify the vertex or center and radius.
- Model with Mathematics as they write quadratic functions to represent relationships, check the reasonableness of their answers, and make predictions.
- Look for and Express Regularity in Repeated Reasoning as they explore transformations of graphs that are not functions.

Sample Activities:
Transforming Other Parent Graphs - Having transformed quadratic equations earlier in the chapter, students will now discover the transformations of five other parent graphs. Each group will organize their work into a poster that clearly shows: each parent graph, examples of transformations and each equation in graphing form. As a challenge for the other groups, each poster will also show a graph for which other teams need to write the equations and will give an equation for each of the other teams to graph.

Unit 3: **Solving and Inequalities** *(approximately 14 days)*

STANDARDS
A-APR.4, A-REI.2, A-REI.11, A-SSE.1b, A-SSE.2, A-CED.2, A-CED.3, F-BF.1, F-IF.4

A. In this unit, students are asked to think about or visualize the kinds and number of solutions that an equation, inequality, or system of equations or inequalities might have. Another main focus is the application of equations, inequalities, and systems to solve problems. Students will use graphing as a powerful method for solving equations and systems as well as for visualizing the solutions, then reverse the process, when given solutions and asked to visualize the graphs.

Progression of Content:
Students will return to the focus on solving and solutions in the first section of Unit 11, when they will extend their ideas to solving systems of equations with three variables. At the end of that section, they will return to the idea of applications of systems as they solve a system of three equations with three variables to determine the equation of a parabola, $y = ax^2 + bx + c$, that passes through three known points. One benefit of solving equations by graphing is that students soon face equations that they cannot solve using algebraic methods, so they need to use graphing to determine a solution. Graphing becomes a very powerful mathematical tool that students can use to solve polynomial equations in Unit 8 and trigonometric equations in Unit 9.

B. Unit Assignment(s):
Mathematics Practices used in Unit 3:

- Look for and Make Use of Structure as they choose methods for solving linear and nonlinear equations and inequalities.
- Attend to Precision when determining and verifying solutions graphically and algebraically.
- Model with Mathematics as they use systems of equations to model and analyze situations, including problems with constraints to determine an optimal solution.

Sample Activity:
How Tall is Harold? - After learning to solve systems of equations both algebraically and graphically, students are given a scenario in which foods in a food fight hit Harold in the head. Given information about the flight of the food and Harold's distance from the food, students will

model both graphically and algebraically and from their models, they will determine Harold's height.

Unit 4: **Normal Distributions and Geometric Modeling** *(approximately 14 days)*

STANDARDS
S-IC.1, S-IC.2, S-IC.3, S-IC.4, S-IC.5, S-IC.6, G-GMD.4, G-MG.1, G-MG.3

A. In this unit, students will begin their studies of the fundamentals of designing studies and experiments, as well as their limitations. The importance of random sampling for studies and random assignment for experiments is stressed. Students begin by looking at surveys, and gain experience with two common sources of bias in those surveys. Students will next perform an experiment to help them compare and contrast experiments with observational studies (such as opinion surveys), stressing distinctions between experiments and observational studies. Relative frequency histograms will record the data, and will be modeled with normal distributions. Finally, students focus on geometric modeling, looking at cross-sections and solids of revolution.

Progression of Content:
Designing studies and experiments and using normal density curves as models to calculate probabilities is important for Unit 6. In Unit 6, students begin to explore inferential statistics, using samples to make predictions about populations.

B. Unit Assignment(s):
Mathematics Practices used in Unit 4:
- Construct Viable Arguments and Critique the Reasoning of Others as they write research questions and consider issues of bias, explore convenience sampling and try to incorporate some level of random selection into their own sampling for their survey, and explore the differences between observational studies, surveys, and experiments.
- Model with Mathematics as they explore randomly selected samples and samples selected intentionally, explore the impact of a lurking variables, and compare relative frequency histograms to normal probability density models.
- Use Appropriate Tools Strategically as they create relative frequency histograms and explore statistics with their calculator.
- Reason Abstractly and Quantitatively as they continue to explore normal distributions and predict percentiles.

Sample Activities:
Conclusions from Studies - After learning about survey design, samples, randomness and bias, students will write their own survey questions. After gathering data, they will use histograms, percentile, and a normal probability density function to determine if their data is valid. They will then be given an opportunity to run an experiment, adjust the experiment, and re-evaluate their data.

How Can I Get That Cross-Section? - In order to show students that volumes of solids can be found using cross- sections, they are first asked to slice a cube to get different cross-sections. Students will be given a glob of clay that they must first make into a cube. Using dental floss to slice the cube, students will slice the cube to get 4 different cross-sections: a square, a rectangle that is not a square, a triangle, and a hexagon.

Unit 5: **Inverses and Logarithms** *(approximately 11 days)*

STANDARDS
F-BF.3, F-BF-4, F-BF.4a, F-LE.4, F-LE.4.2, I-IF.7e

A. Reversing is an important theme in the early part of this chapter. The first section introduces the concept of inverse relations. Students learn that reversing, or working backward to undo the action of a function, can create a new function. They explore multiple representations of functions and their inverses, and recognize that many functions have inverses that are not functions. In the second, students determine inverses of parent functions. They learn that the inverse of an exponential function is a logarithm. Reversing is emphasized once again as they learn how to convert exponential equations into logarithmic form, and vice versa. Students investigate the new family of logarithmic functions $f(x) = \log_b(x)$ for different values of b, test values on their calculators to determine the base the calculators work in, and learn to graph transformations of $f(x) = \log(x)$.

Progression of Content:
This chapter adds to students' lists of parent functions, which will continue to expand with the addition of polynomial functions in Unit 8 and trigonometric functions in Unit 9.

B. Unit Assignment(s):
Mathematics Practices used in Unit 5:

- Students will look for and make use of structure and construct viable arguments as they develop and justify strategies for undoing functions and as they investigate different bases for logarithms..
- Students will use appropriate tools strategically and look for and make use of structure when they graph inverses of functions and write their equations.
- Students will look for and make use of structure as they verify inverses using multiple representations, and attend to precision as they restrict the domain of a function to ensure that its inverse is also a function.
- Students will construct viable arguments and critique the reasoning of others and look for and make use of structure as they apply their knowledge of parent graphs and inverses to learn about logarithms.
- Students will look for and make use of structure and express regularity in repeated reasoning as they learn the definition of logarithm and calculate the values of logarithms.

- Students will construct viable arguments and critique the reasoning of others, use appropriate tools strategically, and look for and make use of structure as they investigate logarithms with different bases.

Sample Activities:
Guess My Number Game - Students are asked to guess the number the teacher is thinking of based on the order of operations applied to the number and what the mystery number has ultimately transformed into. Students may or may not write an equation, but you may want to encourage them to do so as it will help when they progress to working with functions and inverses. Making sure that the idea of reversing, or undoing, comes up in the discussion of the "Guess My Number" game. You undo each step, reversing the original Order of Operations.

Graph the Inverse Function - Students will be looking at strategies for creating graphs of inverse functions. The first two graphs have functions that they are capable of finding the equation of their inverse functions but the third function does not lend itself to be solved for the inverse function. Teams could make a mini-table of some coordinates from the graph and then use it to help make a mini-table for the inverse graph. Students will soon discover that the line $y = x$ is the line of symmetry.

Semester B

Unit 6: **Simulating Sampling Variability** *(approximately 12 days)*

STANDARDS
S-IC.1, S-IC.2, S-IC.4, S-IC.5, S-IC.6, S-MD.6+, S-MD.7+

A. This unit introduces students to techniques for computing complex probabilities through simulations. Students also begin working with inferential statistics and statistical hypothesis testing. Students will develop an understanding of counterintuitive probability problems by using area models or tree diagrams. Students learn how to use simulations to estimate complex probabilities. Students then investigate the concept of natural variation in samples and how that variation can be modeled and controlled through sample size. Students will use the concept of sample-to-sample variation from Unit 6.1 to perform informal hypothesis testing using margin of error in Unit 6.2. The section concludes with an introduction to statistical process control. Any system designed to detect rare events may be highly accurate but still have problems with false positives. In Unit 6.3, students will look at several such systems, such as HIV and drug tests, and decide whether the social cost of false positives is greater than the benefits of true positive results.

Progression of Content:
This unit provides an introduction to inferential statistics. Students will make statements about populations based on information obtained from a sample. They will study this topic more extensively if they take a formal course in statistics.

B. Unit Assignment(s):
Mathematics Practices used in Unit 6:

- Model with Mathematics as they simulate the probability of a newborn being a boy or girl; simulate the number of streaks they can expect in a random process; take a random sample of candies to understand margin of error; explore sample-to-sample variability by conducting a hypothesis test; and use simulations to determine if a manufactured part is within typical quality specifications.
- Attend to Precision as they evaluate the mean and margin of error from a data set, evaluate the results from their simulations, simulate the quality control process for a specific company.
- Use Appropriate Tools Strategically as they compare the effects of two treatments in an experiment, evaluate results of simulations, analyze decisions and strategies in situations that are counterintuitive.

Sample Activity:
AIDS in South Africa - Students will showcase their understanding of estimating sample-to-sample variability and conducting a hypothesis test. Given the claim of a drug manufacturing company, students will simulate 100 samples of 125 residents. They will determine the mean, margin of error, and determine if they can support the claim of the drug company. Students are asked if their margin of error is reasonable and then tell what must be done to make the margin of error smaller.

Unit 7: **Logarithms and Triangles** *(approximately 13 days)*

STANDARDS
F-LE.3, F-LE.4, F-LE.4.1, F-LE.4.3, A-SSE.2, F-BF.1, F-IF.7e, G-SRT.9+, G-SRT.10+, G-SRT.11+

A. In this unit, students return to their work with logarithms to develop tools they can use when solving application problems involving exponential equations. In the first half of this unit, students investigate the family y = log(mn) and discover the Power Property of Logarithms, which allows them to solve exponential equations by using logs to undo or rewrite the equation. Students generalize from number patterns to make conjectures about other properties of logarithms and then prove these properties. Furthermore, students develop and share strategies to write the equation of the exponential function with a given asymptote that passes through two given points. Then they use that equation to make predictions.

The remainder of this unit focuses on completing a tool kit for calculating missing parts of non-right triangles. Students identify the types of information needed to determine all of the missing sides and angles of a triangle. Through this exercise, students also identify triangles for which they do not yet have the tools to determine missing parts. Students notice that they *do* have

enough tools to calculate the measures and side lengths of right triangles. This leads to the question, *"What if the triangle is not a right triangle?"* Students then develop the Law of Sines and Law of Cosines so that they have a complete set of tools to determine the other missing parts of any triangle (when sufficient information is provided).

The unit concludes with students looking at different application problems using triangles and identifying which tools are most useful in each situation. In addition, students investigates the ambiguous case of triangles: SSA. This lesson is offered for accelerated classes or those that could benefit from a complete view of the relationships between the sides and angles of a triangle. Working through the problems of this lesson before you decide to use the lesson with your students is highly recommended.

Progression of Content:
The work with logarithms in this unit prepares students for future work in a pre-calculus course. Working with Law of Sines and Cosines and reviewing the use of right triangle trigonometry and special right triangles prepares students for working with the trigonometric family of functions in Unit 9.

B. Unit Assignment(s):
Mathematics Practices used in Unit 7:

- Students will look for and make use of structure and express regularity in repeated reasoning while they develop the Power Property of Logarithms, learn other properties of logs and how to rewrite equations with different bases.
- Students will make sense of problems and reason abstractly and quantitatively as they write the equation of an exponential function given two points and an asymptote.
- Students will make sense of problems and persevere in solving them, model with mathematics, and reason abstractly and quantitatively as they explore exponential functions with an asymptote other than $y = 0$ and apply logarithms to solve an exponential equation.
- Students will make sense of problems and persevere in solving them as they figure out what information they need to solve for parts of triangles. They will need to attend to precision as they communicate what they know and do not know.
- Students will look for and express regularity in repeated reasoning as they develop the ratios for the Law of Sines.
- Students will make sense of problems and persevere in solving them using the Law of Cosines.
- Students will attend to precision as they work with triangles involving the SSA relationship. They must also use appropriate tools strategically as they explore the ambiguous case of the Law of Sines.
- Students will reason abstractly and quantitatively as they make sense of problems and persevere in solving them. They will attend to precision as they solve the problems and communicate within their teams, labeling diagrams, attending to units, and calculating their answers accurately.

Sample Activities:
"The Case of the Cooling Corpse" - a problem in which students model the falling temperature of a corpse to establish time of death and solve a murder mystery. In order to solve the mystery, students will need to decide which information is relevant to solving the problem (e.g., body temperature, times listed on sign-in sheets, etc.) . Students will need to write and solve a system of exponential functions, with a horizontal asymptote representing the room temperature, the independent variable as time, and the dependent variable as the temperature of the body.

Solving Triangles - This activity consists of eight independent triangle problems (suggestion is to assign one problem to a group of 3-4 students) that will provide students with a chance to consolidate their understanding of the various tools and strategies they have developed so far to solve triangle problems. Some problems may be solved using the Law of Sines, Law of Cosines, or a combination of both. Students will present their assigned problem to the entire class and their process for solving the assigned problem.

Unit 8: **Polynomials** *(approximately 15 days)*

STANDARDS
A-APR.1, A-APR.2, A-APR.4, A-APR.6, A-APR.3, F-IF.4, F-IF.7c, N-CN.8+, N-CN.9+, A-SSE.2, A-CED.2, F-BF.1

A. In the first section, students will investigate the equation ↔ graph connections for polynomial functions. They will recognize that equations in factored form are much easier to sketch, and they will understand the relationship between the factors and the x-intercepts of the graph. Then, in the second section, they will develop an understanding of imaginary and complex numbers and recognize that polynomial functions can have complex roots. In the third and last section, they will learn to divide polynomials by a known factor to find other factors. This will allow them to determine complex and irrational roots of some cubic and quartic functions.

Progression of Content:
Students will build on their understanding of function families in Unit 9, where they study trigonometric functions and transform the graphs of sine and cosine functions. Students will use their algebra skills when they study rational expressions in Unit 11. Students will also use their algebra skills when they prove formulas for sums of series in Unit 10 and solve trigonometric identities in Unit 12.

B. Unit Assignment(s):
Mathematics Practices used in Unit 8:

- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they discuss factored form and describe the graphs of polynomials and their understanding of the stretch. Students will also look for and make use of structure as they draw graphs of polynomials.

- Students will look for and make use of structure as they continue their polynomial investigation. Students will also construct viable arguments and critique the reasoning of others as they consolidate their results on polynomials.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they develop their understanding of a stretch factor. Student will also model with mathematics as they develop an equation for the roller coaster problem first introduced in the first lesson of Unit 8.
- Students will look for and make use of structure as they use polynomial division to determine factors of polynomials. Students will also construct viable arguments and critique the reasoning of others as they develop their understanding of polynomial division.
- Students will look for and make use of structure as they use complex roots to write equations of quadratic functions and express regularity in repeated reasoning as they identify polynomial identities to help them factor. Students will also look for and express regularity in repeated reasoning as they identify patterns in the sums and products of complex roots.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others when they determine all roots of a polynomial with a degree greater than two and when they determine all roots of a polynomial with a degree greater than two.

Sample Activities:
Polynomial Function Investigation - Students are instructed to look for, label, and describe the x-intercepts and "bounces" (double roots, although students will probably not use this term), the y-intercept, the number of turns, and the behavior of graphs for very large and very small x-values. They should share and discuss all of their graphs and their observations within their teams. The discussion should lead to conjectures and the creation of several new equations to try. Students are coming up with methods for determining the x- and y-intercepts, predictions about the numbers of crossings of the x-axis, and ideas for determining a reasonable window or maximum and minimum approximations.

Game of Polydoku - By treating division as a puzzle and using the organizational device of an area model, students can use logical reasoning to reverse the multiplication process and figure out a missing factor. Once they have worked through the process several times, they should be able to set up and solve their own division problems. This method is as efficient as (if not more efficient than) polynomial "long division" and you can use it to develop synthetic division if that is part of your curriculum. This game introduces polynomial division by challenging students to reverse the process of polynomial multiplication.

Unit 9: **Trigonometric Functions** *(approximately 16 days)*

STANDARDS
F-TF.5, F-BF.1, F-IF.4, F-IF.7e, F-TF.2.1, F-TF.5, F-TF.2, F-BF.2.1, F-BF.3

A. In this chapter, students will extend their understanding of trigonometric ratios in right triangles to trigonometric functions. The unit circle is introduced as a representation of trigonometric relationships, and students explore the connections between the unit circle and graphs of trigonometric functions. They look at sine as the height, cosine as the base, and tangent as the slope of the hypotenuse of a right triangle within the unit circle. Students are often confused by the use of variables in trigonometric relationships. When they think of x as the horizontal coordinate in the unit circle, seeing the function y = sin(x) is confusing. For this reason, the notation y = sin(θ) appears through most of the first section. When investigating trigonometric functions whose periods are not 2π the transition is made to y = sin(x). In the second section, students investigate y = sin(x) and y = cos(x) as parent functions and explore their transformations. They develop understanding of the idea of period and its role in the general equation. By the end of the chapter, teams will be able to generate graphs from sinusoidal equations and vice versa.

Progression of Content:
In Unit 12, students will return to the study of trigonometry. They will solve trigonometric equations, learn reciprocal trigonometric functions, develop trigonometric identities, and further explore the connections between sine, cosine, and tangent.

B. Unit Assignment(s):
Mathematics Practices used in Unit 9:

- Students will model with mathematics as they determine how to create an equation to represent a periodic situation.
- Students will model measurement data with mathematics and reason abstractly and quantitatively as they validate their model. They will also look for and make use of structure as they create a sine graph to represent a situation.
- Students will look for and make use of structure and look for and express regularity in repeated reasoning as they make connections between different angles on the unit circle that have the same sine ratio.
- Students will use appropriate tools strategically as they find sine and cosine values. They will also look for and make use of structure and look for and express regularity in repeated reasoning as they make connections between the sine and cosine values of points on the unit circle and their x- and y-values on a coordinate graph.
- Students will use appropriate tools strategically, look for and make use of structure, and look for and express regularity in repeated reasoning as they apply the definition of a radian and learn how to convert between radian and degree measures.
- Students will use appropriate tools strategically, look for and make use of structure, and look for and express regularity in repeated reasoning as they complete key points on a unit circle using radian measures.
- Students will make sense of problems and persevere in solving them as they figure out how to create a graph of the tangent function. They will look for and make use of structure

and express regularity in repeated reasoning as they connect the tangent function to what they already know about the sine and cosine functions.

- Students will use appropriate tools strategically as they investigate transformations of trigonometric functions using technology. They will also look for and make use of structure and express regularity in repeated reasoning as they develop a general equation for the sine and cosine family of functions.
- Students will make sense of problems and persevere in solving them as they model a situation using a sine function. They will use appropriate tools strategically and look for and make use of structure as they identify the period of periodic functions and further investigate the general equation for sine functions.
- Students will use appropriate tools strategically, look for and make use of structure, and express regularity in repeated reasoning as they make graphs of sine functions and write equations from sine graphs.
- Students will model with mathematics and use appropriate tools strategically as they make connections between periodic graphs and their equations. Students will also look for and express regularity in repeated reasoning as they see that sine and cosine functions are horizontally shifted versions of each other.

Sample Activities:
Blood Drip Lab - Students either in their teams or as a class will conduct the lab with simulated blood dripping from an IV bag. This is a preview of transformations of sinusoidal functions, which students will explore in the next section. At that time, they will revisit this lesson's activity and write equations to model the curve that they create. They will investigate what are the different factors that play a role in how each sinusoidal graph differs from each other.

The Screamer Ferris Wheel - Students use a ferris wheel model to find the height in which a rider will need to either climb up or down from the ferris in the event of the ferris wheel halting. So by measuring the height of a car on the ferris wheel at different positions, students will be able to create the sine graph unknowingly.

Unit 10: **Series** *(approximately 19 days)*

STANDARDS
A-SSE.1a, A.SSE.2, A.SSE.4, A-APR.5+, A-APR.4

A. This unit provides an opportunity for students to use what they have learned during earlier units, and then extend their knowledge to new contexts. The development of formulas for sums of geometric and arithmetic series depends on the work with sequences students started in previous courses and further develops their skills with algebraic procedures. The development of the Binomial Theorem involves working with combinations, a topic from previous courses. The lesson on mathematical induction provides an introduction to this form of proof as well as practice with algebraic manipulation.

Progression of Content:
Using a graphical approach to develop a formula for the sum of an arithmetic series previews the use of the area of rectangles to calculate the area under curves in a later course. Summation notation and series will be developed further in precalculus and calculus.

B. Unit Assignment(s):
Mathematics Practices used in Unit 10:

- Students will make sense of problems and persevere in solving them as they determine how to calculate the sum of an arithmetic sequence, and they will look for and express regularity in repeated reasoning as they develop strategies that allow them to do this efficiently.
- Student will make sense of problems as they use geometric representations to represent arithmetic sequences and use them to calculate sums. They will also look for and express regularity in repeated reasoning as they begin to generalize their methods.
- Students will look for and make use of structure as they learn how to combine known series to form new ones. Additionally, they will look for and express regularity in repeated reasoning as they construct formulas for sums that have an unspecified number of terms.
- Student will look for and express regularity in repeated reasoning and attend to precision as they use summation notation to compute the sums of arithmetic sequences algebraically.
- Students will make sense of problems and persevere in solving them, and construct viable arguments and critique the reasoning of others as they explore proof by induction.
- Students will make sense of problems and persevere in solving them as they create a strategy for calculating the sums of geometric series. They will also reason abstractly and quantitatively as they solve problems using either sums of arithmetic series, geometric series, or both.
- Students will make sense of problems, model with mathematics, and look for and make use of structure as they use binomial probability models to represent and analyze situations.
- Students will look for and express regularity in repeated reasoning and look for and make use of structure as they describe patterns in Pascal's triangle and make connections between the patterns in the triangle and binomial expansions.
- Students will look for and express regularity in repeated reasoning to make sense of problems as they discover how the Binomial Theorem is related to the derivation of *e*.

Sample Activities:
Sum of an Arithmetic Series - Before getting to the general equation to find the sum of *k* terms in an arithmetic series, S(k)=t(1)+t(k)k2, students find the sum graphically. The visualization of forming a rectangle by stacking the first term and the last term of the series, and noticing that a rectangle with a base length of *k*/2 and a height equivalent to the first + last term is a way of finding the sum of the terms in the series.

Pascal's Triangle and the Binomial Theorem - During this activity, students connect two topics in mathematics that they may not think are related: counting combinations and equivalent algebraic expressions.

Unit 11: **Rational Expressions and Three-Variable Systems** *(approximately 12 days)*

STANDARDS
A-APR.7+, A-CED.2

A. In the first section of this chapter, students will focus on operations with rational expressions. Students did a function investigation in Unit 1 that previewed the investigation of rational expressions. Students learn a powerful method of simplifying rational expressions that uses properties of the number 1 and the properties of exponents. The last lessons in this chapter build upon and reinforce students' understanding of operations with rational numbers while developing procedures for operations with rational expressions. In the second section, students are introduced to the three-dimensional Cartesian coordinate system and are challenged with the task of graphing an equation with three variables. Students use hands-on graphing techniques and technology to help them visualize graphs of planes. In a previous course, students learned to solve a system of two linear equations in two variables, and they reviewed this topic in Chapter 3 of this text. At the end of Section 11.2, students extend these methods to develop a procedure for solving a system of three linear equations in three variables.

Progression of Content:
The remaining chapter requires students to use their algebra skills to solve trigonometric identities. The three-dimensional visualization in this chapter prepares students for visualizing intersections of planes with cones to form conic sections in future courses. In future courses, students may use matrices to solve systems of equations.

B. Unit Assignment(s):
Mathematics Practices used in Unit 11:

- Students will look for and make use of structure as well as look for and express regularity in repeated reasoning as they use the number 1 to understand rational expressions.
- Students will also look for and make use of structure as well as look for and express regularity in repeated reasoning as they connect multiplication and division of fractions to that of rational expressions.
- Students will look for and make use of structure as they make connections between adding and subtracting fractions and adding and subtracting rational expressions, and as they locate points in three-dimensional space. They will construct viable arguments and critique the reasoning of others as they justify their strategies.
- Students will continue to look for and make use of structure as well as look for and express regularity in repeated reasoning as they work with rational expressions. They will

construct viable arguments and critique the reasoning of others as they investigate the closure of rational expressions under operations.

- Students will look for and make use of structure when they graph on three-dimensional axes.
- Students will look for and make use of structure and use appropriate tools strategically when they solve a system of three equations with three variables algebraically and investigate the different ways three planes can intersect.
- Students will reason abstractly and quantitatively and look for and express regularity in repeated reasoning as they write the equation of a quadratic function by solving a system of three equations with three unknowns.

Sample Activities:
Giant One - Students are encouraged to rewrite rational expressions to create fractions that will reduce to one. The new expressions will be reduced to its simplest form. This strategy to rewrite will allow students to simplify rational expression after doing basic operations on the original expressions.

3-D Coordinate System - Students use cubes to build prisms in their three-dimensional system to help them visualize different points. Students will need cubes to build these prisms as well as isometric dot paper to represent their solutions. Using the dimensions of the prism, students can name the coordinate farthest from the origin on which the opposite corner is already lying on.

Unit 12: **Analytic Trigonometry** *(approximately 15 days)*

STANDARDS
F-IF.7e, F-TF.2.1, F-TF.9+

A. The intent of this chapter is to give students a strong exposure to analytical trigonometry that will prepare them to enter a pre-calculus or calculus course. The chapter centers on solving equations and asks students to think about the circumstances under which an equation is true. Section 12.1 focuses on equations that are sometimes true, giving students the tools to find all relevant solutions. Section 12.2 focuses on identities, that is, equations that are always true. Through the study of identities, students gain the understanding necessary to rewrite equations, which expands the range of equations they are able to solve.

Progression of Content:
By the end of this course, students will have completed trigonometric units which will prepare them for a fourth year in math, whether it be a trigonometric course or Precalculus.

B. Unit Assignment(s):
Mathematics Practices used in Unit 12:

- Students will construct viable arguments and critique the reasoning of others and attend to precision as they investigate trigonometric and other algebraic equations to determine under what conditions they are true, and as they investigate the Angle Sum and Difference Identities.
- Students will use appropriate tools strategically as they represent solutions in multiple ways. They will look for and make use of structure as they represent all of the solutions for trigonometric equations.
- Students will look for and make use of structure and attend to precision as they consider the inverses of trigonometric functions and their domains.
- Students construct viable arguments and critique the reasoning of others as well as attend to precision in their use of mathematical terms and notation and in their creation of graphs of the reciprocal trigonometric functions.
- Students will look for and make use of structure and attend to precision as they use graphs to discover trigonometric identities and apply the trigonometric identities to solve problems.

Sample Activities:
Carbon Copy to find inverses of Trigonometric Functions - Students will graph sine, cosine, and tangent functions on a resource page then use the "Carbon Copy" method to find the inverse graph of these three trigonometric functions. This is a method used in the activity mentioned in Unit 5: Graphing the Inverse Function Activity.The focus of this activity is for students recognize how the domain and range of these functions change. Students already know that the domain and range switch, but this is the first time that they see it in trigonometric functions.

Graphs of Reciprocal Trigonometric Functions - In this activity, students are introduced for the first time to the reciprocal trigonometric functions (secant, cosecant, and cotangent). For example, after graphing the sine function, students use the concept of reciprocals to graph y=1sinx to create the graph of the cosecant function. Using the new graph, student conduct a full investigation of this new function and make observations, including the fact that the x-intercepts of sine graph become vertical asymptotes for cosecant function. A similar process is done with the secant and cotangent functions.

Assignments, Student Engagement, and Assessments
Through the use of technology (including graphing calculators, Desmos, and etools embedded throughout the curriculum), whole class/pair/group discussions, and independent practice, students will deepen their understanding of the mathematical content standards covered in this course. Furthermore, each unit will have multiple investigative activities that will require students to synthesize the information from the current unit as well as previous units and will require them to use their problem solving skills. For each unit, students will be assigned daily classwork and daily homework. Group activities will be incorporated into classwork assignments. Students will often engage with fellow students in the investigative and modeling process. Teachers will encourage all students to participate and explore. Opting out of learning

will not be an option. While students are encouraged to construct their own viable arguments, they will also be encouraged to appraise those of others during discussion sessions.

Assessments

The instructional methods and strategies listed below support the delivery of this Integrated Mathematics I course with emphasis on group work, investigative activities, the Standards for Mathematical Practice (SMP) will be applied throughout the curriculum. SMP) will be applied throughout the curriculum. Students' mathematical skills and understanding will be assessed through a range of strategies, such as:

- **Individual Tests** that will allow the teacher to determine a student's ability to solve mathematical problems, level of skill mastery, and conceptual understanding of topics or ideas.
- **Team Tests** that will be used primarily as a formative assessment and an opportunity to assess the SMPs, which include problems designed to inspire in-depth conversations and collaboration around essential mathematics.
- **Participation Quizzes** that will allow the teacher to assess, and therefore support, the quality of the teams' cooperation, independent of mathematical content. In a Participation Quiz, the quality of the teamwork on any given task is documented and assessed directly by the teacher, rather than the mathematical content.
- **Student Presentations** that will allow students to exchange insights, use the language of mathematics, and deepen their understanding at the same time that they allow teachers to assess mathematical communication, justification, and making connections.
- **Class Observations** that will allow the teacher to assess, with varying degrees of formality, the quality of the discussion of mathematics in the interactions created as teams work together. Daily Assignments will vary giving students opportunities to practice what they've learned in class. This instructional approach allows students to look for and express regularity in repeated reasoning by practicing mathematical strategies learned in the classroom.
- **Independent Practice (Homework)** that will allow students the opportunity to enhance their learning and extend their practice. Nightly homework may be an extension of an investigation, more practice with similar scenarios, or practice with basic symbolic skills. Students will use appropriate tools strategically and attend to precision while extending their learning.
- **Math Portfolios** that will give students a chance to "show off" their learning, taking pride in their own perseverance, growth over time, and appropriate use of math tools, techniques and proficiency. Simultaneously, the teacher will be able to assess understanding and make instructional decisions accordingly, without the pressure of a test.
- **Investigative Activities** that will encourage students to ask questions about a complicated situation and apply mathematics in pursuit of a solution. In the process, students will make assumptions and approximations, understanding that revisions might be needed at a later time. Abstract and quantitative reasoning is applied in considering quantities and their relationships during problem solving.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math III
Course Code:	3513DH, 3514DH
School(s) Course Offered:	Crescenta Valley High School, Hoover High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated Mathematics II
Recommended Textbook:	*California Integrated Mathematics 3* Timothy D. Kanold, Edward B. Burger, Juli K. Dixon, Matthew R. Larson, Steven J. Leinwand Houghton Mifflin Harcourt 2015
Course Overview:	Integrated Mathematics III aims to apply and extend what students have learned in previous courses by focusing on finding connections between multiple representations of functions, transformations of different function families, finding zeros of polynomials and connecting them to graphs and equations of polynomials, modeling periodic phenomena with trigonometry, and understanding the role of randomness and the normal distribution in making statistical conclusions. On a daily basis, students in this course use problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments justifying their

thinking. Under teacher guidance, students learn in collaboration with others while sharing information, expertise, and ideas.

The course is well balanced between procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (extension and transference). The lessons in the course meet all of the content standards, including the "plus" standards, of Appendix A of the *Common Core State Standards for Mathematics*. The course imbeds the CCSS Standards for Mathematical Practice as an integral part of the lessons in the course.

Key concepts addressed in this course are:

- Visualize, express, interpret and describe, and graph functions (and their inverses, in many cases). Given a graph, students will be able to represent the function with an equation, and vice-versa, and transform the graph, including the following function families: absolute value, exponential, linear, logarithmic, piecewise-defined, polynomial, quadratic, square root, trigonometric.
- Use of variables and functions to represent relationships given in tables, graphs, situations, and geometric diagrams, and recognize the connections among these multiple representations.
- Application of multiple algebraic representations to model and solve problems presented as real world situations or simulations.
- Solving linear or quadratic equations in one variable, systems of equations in two variables, and linear systems of equations in three or more variables.
- Use of algebra to rewrite complicated algebraic expressions and equations in more useful forms.
- Rewriting rational expressions and arithmetic operations on polynomials.
- The relationship between zeros and factors of polynomials.
- Operations with complex numbers, and solving quadratics with complex solutions.
- Applications of the Law of Sines and Law of Cosines.
- Modeling periodic phenomena with trigonometric functions.
- Calculating the sums of arithmetic and geometric series, including infinite geometric series.
- Concepts of randomness and bias in survey design and interpretation of the results.
- Use of a normal distribution to model outcomes and to make inferences as appropriate.
- Use of computers to simulate and determine complex probabilities.
- Use of margin of error and sample-to-sample variability to evaluate statistical decisions.
- Solving trigonometric equations and proving trigonometric identities.
- Understand logarithms and their inverse relationship with exponentials.
- Use logarithms to solve exponential equations.

Course Content:

Semester A

Unit 1: **Measurement and Modeling in Two and Three Dimensions** *(approximately 20 days)*

STANDARDS
G-GMD.4, G-GMD.5, G-MG.1

A. Students will learn about cross sections and solids of rotation. They will utilize formulas to calculate the surface area of prisms, cylinders, pyramids, cones, and spheres. Students will work with geometric probability and scale factor. They will explore the differences between Euclidean and spherical geometry.

Major Topics:
Cross sections and solids of rotation
Formulas for the surface area of a prism, cylinder, pyramid, cone and sphere
Scale factor
Calculating density
Modeling to meet constraints

B. Unit Assignment(s):
At the end of this unit, students will complete a Math in Careers task relating to a scale model of a sphere. Critical skills include finding a scale factor and applying knowledge of spherical geometry. Students will experience how a model maker uses mathematics on the job.

Mathematical Practices Used in Unit:

- MP.1 - Students will make sense of problems when they use multiple formulas to find the surface area and/or volume of composite solids.
- MP.2 - Students must reason abstractly to visualize the cross sections of solids. Students relate the properties of three-dimensional figures (faces, vertices, and intersections of planes) and their rotational symmetry to help identify cross sections of solids. Students will use their knowledge of surface area of spheres and scale to find actual distances on the globe.
- MP.4 - Students represent real-world problems with mathematical models when they find the density of real-life objects as the weight or mass per unit of volume, and extend that idea to density to population density, or the population of a region per unit area of the region.
- MP.8- Students will decompose solids into two-dimensional shapes for finding surface area and determine shortcuts (formulas) for finding surface area of prisms and cylinders. Students will apply their knowledge of two- and three- dimensional figures to describe the transformation of figures by scale factor *a.*

Unit 2: **Polynomial Functions, Expressions, and Equations** *(approximately 28 days)*

STANDARDS
F-IF.4, F-IF.4, A-APR.1, A-APR.2, A-APR.5, A-APR.6, A-SSE.2

A. Students will learn about transforming function graphs and inverses of functions. They will perform operations on polynomials. Student will expand their ability to solve equations by finding rational and complex solutions.

Major Topics:
Transforming function graphs and inverses of functions
Graphing cubic and polynomial functions
Operations with polynomials
Binomial theorem
Finding rational and complex solutions of polynomial equations

B. Unit Assignment(s):
After completing this unit, students will complete a performance task by evaluating and subtracting quadratic functions representing the labor force of the United States. Critical skills include evaluating polynomial functions and operations with polynomials.

Using data from the U.S. Census Bureau, the students will be provided with two functions for approximating the labor force, one for the total number of workers and one for the number of female workers. First, students will use the functions to calculate the two estimates for the number of workers. Next, students will work in pairs to write a polynomial function that models the number of male workers and will explain to another pair how they found their function. Finally, students will discuss, as a class, alternative strategies for determining the number of males without using the function they wrote.

Mathematical Practices Used in Unit:

- MP.1, MP.3 - Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they discuss factored form of a polynomial, describe the graphs of polynomials, and develop their understanding of polynomial division.
- MP.2, MP.7, MP.8 - Students will reason abstractly and quantitatively, look for and make use of structure, and look for and express regularity in repeated reasoning as they make connections between the transformations of quadratic functions and transformations of polynomial functions. Students will also understand the relationship between a function and its inverse.
- MP.7 - Students will also look for and make use of structure as they draw graphs of polynomials, and use polynomial division to determine factors of polynomials and how those factors relate to the zeros of the function.

Unit 3: **Rational Functions, Expressions and Equations** *(approximately 15 days)*

STANDARDS
F-IF.7d, A-APR.7, A-REI.2

A. Students will learn about graphing rational functions. They will perform operations on rational expressions. Students will graph and solve rational equations.

Major Topics:
Graphing simple and complex rational functions
Adding, subtracting, multiplying and dividing rational functions
Solving rational equations

B. Unit Assignment(s):
After finishing this unit, students will complete a Math in Careers task by writing, analyzing, and graphing a function representing the concentration of acid in a mixture. Critical skills include representing real-world situations using rational functions, determining domain and range, and interpreting asymptotes.

Students will write a rule for a function that represents a specific acid and water mixture. Students will determine a reasonable domain for their function and explain to a partner. They will graph the function labeling the axes with the quantities they represent and indicate the axis scales. With a partner, a student will analyze the function's rule to determine the vertical and horizontal asymptotes and determine their relevance or irrelevance.

Mathematical Practices Used in Unit:

- MP.7, MP.8 - Students will look for and make use of structure as well as look for and express regularity in repeated reasoning as they connect multiplication and division of fractions to that of rational expressions, and make connections between adding and subtracting fractions and adding and subtracting rational expressions.
- MP.7 - Look for and make use of structure as they graph rational functions with the parameters a, b, h, and k.
- MP.3 - Students will construct viable arguments as they solve rational equations graphically to find the zeros of the function, and algebraically by rewriting an equivalent polynomial equation to solve the original rational equation.

Unit 4: **Radical Functions, Expressions and Equations** *(approximately 15 days)*

STANDARDS
F-BF.4a, F-IF.7b, N.RN.1, A-REI.2

A. Students will learn about inverses of quadratic and cubic functions. They will graph square and cube root functions. Students will simplify and solve radical equations.

Major Topics:
Inverses of simple quadratic and cubic functions
Graphing square and cube root functions
Radical expressions and rational exponents
Simplifying radical expressions
Solving radical equations

B. Unit Assignment(s):
Upon finishing this unit, students will do a performance task in which they will take on the role of a nutritionist. Students will find a quadratic function that models BMI data. Critical skills include fitting a function to data, finding the appropriate domain and range, and finding the inverse of a function.

Given the median BMI measures for a group of boys, students will create a scatter plot for the data. They will find a quadratic regression model for the data and explain their model. Students will then work with a partner to determine the domain and its restrictions for both the data set and its inverse. Lastly, students will graph the inverse of the function and determine what it models.

Mathematical Practices Used in Unit:

- MP.1 - Students will make sense of problems and persevere in solving them as they use various strategies to solve radical equations, and to obtain extraneous solutions.
- MP.4 - Students will explore how a function and its inverse can both model a given real-world situation.
- MP.7 - Students will look for and make use of structure about how the various parameters, a, b, h, and k, affect the graph of a square-root and cubic function, in relation to a quadratic and cubic function respectively.

Semester B

Unit 5**: Exponential and Logarithmic Functions and Equations** *(approximately 35 days)*

STANDARDS
F-BF.2, F-BF.3, F-BF.5, A-SSE.4, F-LE.2, F-LE.4.1, F-LE.4.2, S-ID.6a

A. During this unit, students will learn about both exponential and logarithmic functions. They will expand their understanding exponential functions as they learn about growth and decay. This will be the first time students have worked with the base, e.

Major Topics:
Exponential growth and decay
Arithmetic and geometric sequences
Choosing among linear, quadratic, and exponential models
Defining, evaluating, and graphing logarithmic functions
Using properties to solve exponential equations

B. Unit Assignment(s):
After the completion of this unit, students will explore how a nuclear medicine technologist uses math on the job. The task involves writing and using a function that describes the decay of a radioactive substance. Critical skills include representing exponential decay, interpreting exponential functions, and finding the inverses of functions.

Students will write an exponential decay function for technetium-99m with a half-life of 6 hours as it is used to map circulatory system disorders. They will describe the domain, range, and the end behavior of the functions as time increases. Students will also write the inverse of the decay function. Finally, they will determine how long it takes until a specific amount of the technetium-99m remains in the body.

Mathematical Practices Used in Unit:

- MP.7- Students will look for and make use of structure when identifying patterns in arithmetic and geometric sequences.
- MP.3- Students will construct viable arguments as to whether a sequence is arithmetic or geometric.
- MP.4- Students will understand the relationship between graphs of exponential functions, tables, real-world applications, and formulas that model exponential functions.
- MP.7- Students will understand the difference in the structure of a logarithmic equation versus its inverse, an exponential equation.

Unit 6**: Trigonometric Functions** *(approximately 25 days)*

STANDARDS
G-STR.8, G-SRT.10, F-TF.1, F-TF.2, F-TF.5, F-TF.8, F-IF.7e

A. This unit builds on the introductory trigonometric function learning from CC Integrated Mathematics II. Students will solve real life problems using trigonometric functions and Pythagorean identities. They will also work with transformations of graphs of trigonometric functions.

Major Topics:
Defining trigonometric functions with the unit circle
Laws of sines and cosines
Evaluating trig functions
Angle rotation and radian measure
Transformations of the parent graphs of trigonometric functions

B. Unit Assignment(s):
At the end of this unit, students will complete a Math in Careers task by using models to represent the motion of a paddle wheel. Critical skills include graphing a trigonometric function, describing what its parameters mean for the real world situation, and using the function to make a prediction.

Students will graph a function for a riverboat paddle wheel with a given diameter and revolution rate that hangs a specific distance below the water line during an identified time interval. Students will describe the significance of the intercepts, the maximum and minimum values for the situation. They will also predict how revolutions it will take for a point on the wheel to have traveled one mile.

Mathematical Practices Used in Unit:

- MP.2 Students will be able to reason abstractly in order to understand the relationship between the unit circle and the graphs of the trigonometric functions.
- MP.5 Students will be able to determine when it is appropriate to model periodic phenomena with a sinusoidal function. Students will use their knowledge of the key features of a trigonometric function to help fit the function to the model.
- MP.8 Students will look for and express regularity in repeated reasoning when organizing their work to find the angle measures of a triangle. Students will reason whether the measures given produce one triangle, two triangles or no triangle by using the Law of Sines.

Unit 7: **Statistics and Decision Making** *(approximately 22 days)*

STANDARDS
S-IC.1, S-IC.2, S-IC.3, S-IC.4, S-IC.5, S-ID.4, S-MD.6, S-CP.4

A. In this unit students will learn about statistics and using them to make sound decisions. They will gather and display data and find specific data points.

Major Topics:
Gathering and displaying data
Shape, center, and spread
Data distributions

Confidence intervals and margins of error
Using probability in making and analyzing decisions

B. Unit Assignment(s):
After completing this unit, the students will perform a statistical hypothesis test. Critical skills include writing a null hypothesis, creating visual representations of data, and proving or disproving the null hypothesis.

Students will work as a pharmaceutical scientist would by testing whether a certain medication for raising glucose levels is more effective at higher doses. They will be given pre-generated test results for ten patients, five high level doses and five normal level doses. They will state their null hypothesis for the experiment. Then students will compare the results using box plots. Students will then explain why or why not they have enough evidence to reject the hypothesis.

Mathematical Practices Used in Unit:

- MP.3 Students will be able to analyze whether a study is a survey experiment or an observational study and will be able to critique the results accordingly.
- MP.2 Students will be able to calculate confidence intervals and margins of error and be able to understand that statistics can help predict outcomes.
- MP.5 Students will be able to use a graphing utility to normalize data.

Unit 8: **Equations of Circles and Parabolas** *(approximately 19 days)*

STANDARDS
G-C.2, G-C.3, G-C.5, G-GMD.1, G-GPE.1

A. In this unit, students will identify whether a quadratic equation in general form represents a circle by completing the square to get the equation in standard form.

Major Topics:
Changing general form of quadratic equations into standard form
Identify whether the quadratic equations produces a circle or a parabola

B. Unit Assignment(s):
After completing this unit, students will complete a Module Performance Task to determine if a helicopter with a range of 290 nautical miles is in a close enough range to rescue a sailboat off the coast of California. Critical skills includes plotting, on a coordinate plane, the location of LAX and SFO airports along with the location of the sailboat given the latitude and longitude coordinates. Students need to determine which airport should send the rescue helicopter through graphing the equation of the

circle circles. Students will justify their reasons and show the evidence in their work for how they came up with their answer.

Mathematical Practices Used in Unit:

- MP.3 Students will construct viable arguments and justify their conclusions when identifying whether a quadratic equation in general form is a circle or a parabola.
- MP.8 Students will use repeated reasoning and algebraic steps when completing the square to change a general form quadratic equation into standard form.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math IIIB/Precalculus Accelerated
Course Code:	3517D, 3518D
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated II/IIIA Accelerated or Integrated II + (Summer) Integrated Math IIIA Accelerated
Recommended Textbook:	*Core Connections Integrated III* Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al CPM Educational Program Second Edition, Version 5.0 *Precalculus* Josea Eggink, Samantha Falkner, Emily Kaffel, Mark Ray, Jeanne Villeneuve, Karen Wooton, Erin Yao CPM Educational Program Third Edition

Course Overview: Integrated Mathematics IIIB/Precalculus Accelerated is part two of a two-part compacted math series. Following Integrated Mathematics II/IIIA Accelerated, this course provides students with instruction in the second half of the content of the Integrated Math III and all of the course content for Precalculus. This compression is designed as the single point of acceleration at the high school level as recommended by the California Mathematics Framework. This course is aligned to the California Common Core State standards for high school mathematics and supports the Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of the mathematical relationships and concepts needed to succeed in higher level math courses.

In addition to covering the second half of Integrated III standards, this course meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

The course is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson. With the emergence of new technology, many lessons have moved beyond a traditional handheld device and are written with Desmos eTools as an integral component. The curriculum contains several key labs and hands-on activities to introduce and connect concepts, with an emphasis on modeling.

A focus on algebra is woven throughout the course. Students investigate equivalent expressions and practice setting up word problems right from the start. Students use algebra to manipulate inverse, composite, and piecewise-defined functions as well as investigate characteristics of functions and transformations of functions. Students continue rewriting expressions, solving complicated equations and systems, and use algebra to solve word problems. Algebraic manipulation is practiced throughout the rest of the course as students work with limits, rates of change, trigonometric expressions, complex numbers, series, conic sections, and area under the curve.

Careful consideration was given to the sequencing of the concepts in the course to allow for mastery over time while meeting the content standards of a 4th year course with focus on the 4th year math standards: algebra, functions, trigonometry, complex numbers, conic sections, probability, vectors, and matrices.

In addition to the second half of Integrated III standards, this courses covers the same material as Precalculus Honors, by adding and adds rates of change, limits and area under the curve to the standard Precalculus course.

Course Content:

Semester A

Unit 5: Inverses and Logarithms *(approximately 11 days)*

STANDARDS
F-BF.3, F-BF-4, F-BF.4a, F-LE.4, F-LE.4.2, I-IF.7e

A. Reversing is an important theme in the early part of this chapter. The first section introduces the concept of inverse relations. Students learn that reversing, or working backward to undo the action of a function, can create a new function. They explore multiple representations of functions and their inverses, and recognize that many functions have inverses that are not functions. In the second, students determine inverses of parent functions. They learn that the inverse of an exponential function is a logarithm. Reversing is emphasized once again as they learn how to convert exponential equations into logarithmic form, and vice versa. Students investigate the new family of logarithmic functions $f(x) = \log_b(x)$ for different values of b, test values on their calculators to determine the base the calculators work in, and learn to graph transformations of $f(x) = \log(x)$.

Progression of Content:
This chapter adds to students' lists of parent functions, which will continue to expand with the addition of polynomial functions in Unit 8 and trigonometric functions in Unit 9.

B. Unit Assignment(s):
Mathematics Practices Used in Unit 5:

- Students will look for and make use of structure and construct viable arguments as they develop and justify strategies for undoing functions and as they investigate different bases for logarithms..

- Students will use appropriate tools strategically and look for and make use of structure when they graph inverses of functions and write their equations.
- Students will look for and make use of structure as they verify inverses using multiple representations, and attend to precision as they restrict the domain of a function to ensure that its inverse is also a function.
- Students will construct viable arguments and critique the reasoning of others and look for and make use of structure as they apply their knowledge of parent graphs and inverses to learn about logarithms.
- Students will look for and make use of structure and express regularity in repeated reasoning as they learn the definition of logarithm and calculate the values of logarithms.
- Students will construct viable arguments and critique the reasoning of others, use appropriate tools strategically, and look for and make use of structure as they investigate logarithms with different bases.

Sample Activities:
Guess My Number Game - Students are asked to guess the number the teacher is thinking of based on the order of operations applied to the number and what the mystery number has ultimately transformed into. Students may or may not write an equation, but you may want to encourage them to do so as it will help when they progress to working with functions and inverses. Making sure that the idea of reversing, or undoing, comes up in the discussion of the "Guess My Number" game. You undo each step, reversing the original Order of Operations.

Graph the Inverse Function - Students will be looking at strategies for creating graphs of inverse functions. The first two graphs have functions that they are capable of finding the equation of their inverse functions but the third function does not lend itself to be solved for the inverse function. Teams could make a mini-table of some coordinates from the graph and then use it to help make a mini-table for the inverse graph. Students will soon discover that the line $y = x$ is the line of symmetry.

Unit 7: Logarithms and Triangles *(approximately 13 days)*

STANDARDS
F-LE.3, F-LE.4, F-LE.4.1, F-LE.4.3, A-SSE.2, F-BF.1, F-IF.7e, G-SRT.9+, G-SRT.10+, G-SRT.11+

A. In this unit, students return to their work with logarithms to develop tools they can use when solving application problems involving exponential equations. In the first half of this unit, students investigate the family $y = \log(m^n)$ and discover the Power Property of Logarithms, which allows them to solve exponential equations by using logs to undo or rewrite the equation. Students generalize from number patterns to make conjectures about other properties of logarithms and then prove these properties. Furthermore, students develop and share strategies to write the equation of the exponential function

with a given asymptote that passes through two given points. Then they use that equation to make predictions.

The remainder of this unit focuses on completing a tool kit for calculating missing parts of non-right triangles. Students identify the types of information needed to determine all of the missing sides and angles of a triangle. Through this exercise, students also identify triangles for which they do not yet have the tools to determine missing parts. Students notice that they *do* have enough tools to calculate the measures and side lengths of right triangles. This leads to the question, "*What if the triangle is not a right triangle?"* Students then develop the Law of Sines and Law of Cosines so that they have a complete set of tools to determine the other missing parts of any triangle (when sufficient information is provided).

The unit concludes with students looking at different application problems using triangles and identifying which tools are most useful in each situation. In addition, students investigates the ambiguous case of triangles: SSA. This lesson is offered for accelerated classes or those that could benefit from a complete view of the relationships between the sides and angles of a triangle. Working through the problems of this lesson before you decide to use the lesson with your students is highly recommended.

Progression of Content:
The work with logarithms in this unit prepares students for future work in a pre-calculus course. Working with Law of Sines and Cosines and reviewing the use of right triangle trigonometry and special right triangles prepares students for working with the trigonometric family of functions in Unit 9.

B. Unit Assignment(s):

Mathematics Practices Used in Unit 7:

- Students will look for and make use of structure and express regularity in repeated reasoning while they develop the Power Property of Logarithms, learn other properties of logs and how to rewrite equations with different bases.
- Students will make sense of problems and reason abstractly and quantitatively as they write the equation of an exponential function given two points and an asymptote.
- Students will make sense of problems and persevere in solving them, model with mathematics, and reason abstractly and quantitatively as they explore exponential functions with an asymptote other than $y = 0$ and apply logarithms to solve an exponential equation.
- Students will make sense of problems and persevere in solving them as they figure out what information they need to solve for parts of triangles. They will need to attend to precision as they communicate what they know and do not know.
- Students will look for and express regularity in repeated reasoning as they develop the ratios for the Law of Sines.

- Students will make sense of problems and persevere in solving them using the Law of Cosines.
- Students will attend to precision as they work with triangles involving the SSA relationship. They must also use appropriate tools strategically as they explore the ambiguous case of the Law of Sines.
- Students will reason abstractly and quantitatively as they make sense of problems and persevere in solving them. They will attend to precision as they solve the problems and communicate within their teams, labeling diagrams, attending to units, and calculating their answers accurately.

Sample Activities:
"The Case of the Cooling Corpse" - a problem in which students model the falling temperature of a corpse to establish time of death and solve a murder mystery. In order to solve the mystery, students will need to decide which information is relevant to solving the problem (e.g., body temperature, times listed on sign-in sheets, etc.) . Students will need to write and solve a system of exponential functions, with a horizontal asymptote representing the room temperature, the independent variable as time, and the dependent variable as the temperature of the body.

Solving Triangles - This activity consists of eight independent triangle problems (suggestion is to assign one problem to a group of 3-4 students) that will provide students with a chance to consolidate their understanding of the various tools and strategies they have developed so far to solve triangle problems. Some problems may be solved using the Law of Sines, Law of Cosines, or a combination of both. Students will present their assigned problem to the entire class and their process for solving the assigned problem.

Unit 8: Polynomials *(approximately 15 days)*

STANDARDS
A-APR.1, A-APR.2, A-APR.4, A-APR.6, A-APR.3, F-IF.4, F-IF.7c, N-CN.8+, N-CN.9+, A-SSE.2, A-CED.2, F-BF.1

A. In the first section, students will investigate the equation ↔ graph connections for polynomial functions. They will recognize that equations in factored form are much easier to sketch, and they will understand the relationship between the factors and the *x*-intercepts of the graph. Then, in the second section, they will develop an understanding of imaginary and complex numbers and recognize that polynomial functions can have complex roots. In the third and last section, they will learn to divide polynomials by a known factor to find other factors. This will allow them to determine complex and irrational roots of some cubic and quartic functions.

Progression of Content:
Students will build on their understanding of function families in Unit 9, where they study trigonometric functions and transform the graphs of sine and cosine functions. Students will use

their algebra skills when they study rational expressions in Unit 11. Students will also use their algebra skills when they prove formulas for sums of series in Unit 10 and solve trigonometric identities in Unit 12.

B. Unit Assignment(s):

Mathematics Practices Used in Unit 8:

- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they discuss factored form and describe the graphs of polynomials and their understanding of the stretch. Students will also look for and make use of structure as they draw graphs of polynomials.
- Students will look for and make use of structure as they continue their polynomial investigation. Students will also construct viable arguments and critique the reasoning of others as they consolidate their results on polynomials.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they develop their understanding of a stretch factor. Student will also model with mathematics as they develop an equation for the roller coaster problem first introduced in the first lesson of Unit 8.
- Students will look for and make use of structure as they use polynomial division to determine factors of polynomials. Students will also construct viable arguments and critique the reasoning of others as they develop their understanding of polynomial division.
- Students will look for and make use of structure as they use complex roots to write equations of quadratic functions and express regularity in repeated reasoning as they identify polynomial identities to help them factor. Students will also look for and express regularity in repeated reasoning as they identify patterns in the sums and products of complex roots.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others when they determine all roots of a polynomial with a degree greater than two and when they determine all roots of a polynomial with a degree greater than two.

Sample Activities:

Polynomial Function Investigation - Students are instructed to look for, label, and describe the x-intercepts and "bounces" (double roots, although students will probably not use this term), the y-intercept, the number of turns, and the behavior of graphs for very large and very small x-values. They should share and discuss all of their graphs and their observations within their teams. The discussion should lead to conjectures and the creation of several new equations to try. Students are coming up with methods for determining the x- and y-intercepts, predictions about the numbers of crossings of the x-axis, and ideas for determining a reasonable window or maximum and minimum approximations.

Game of Polydoku - By treating division as a puzzle and using the organizational device of an area model, students can use logical reasoning to reverse the multiplication process and figure out a missing factor. Once they have worked through the process several times, they should be able to set up and solve their own division problems. This method is as efficient as (if not more efficient than) polynomial "long division" and you can use it to develop synthetic division if that is part of your curriculum. This game introduces polynomial division by challenging students to reverse the process of polynomial multiplication.

Unit 11: Rational Expressions and Three-Variable Systems *(approximately 6 days)*

STANDARDS
A-APR.7+

A. In this chapter, students will focus on operations with rational expressions. Students did a function investigation in Unit 1 that previewed the investigation of rational expressions. Students learn a powerful method of simplifying rational expressions that uses properties of the number 1 and the properties of exponents. In a previous course, students learned to solve a system of two linear equations in two variables, and they reviewed this topic in Chapter 3 of this text.

Progression of Content:
The remaining chapter requires students to use their algebra skills to solve trigonometric identities. In future courses, students may use matrices to solve systems of equations.

B. Unit Assignment(s):
Mathematics Practices used in Unit 11:

- Students will look for and make use of structure as well as look for and express regularity in repeated reasoning as they use the number 1 to understand rational expressions.
- Students will also look for and make use of structure as well as look for and express regularity in repeated reasoning as they connect multiplication and division of fractions to that of rational expressions.
- Students will look for and make use of structure as they make connections between adding and subtracting fractions and adding and subtracting rational expressions, and as they locate points in three-dimensional space. They will construct viable arguments and critique the reasoning of others as they justify their strategies.
- Students will continue to look for and make use of structure as well as look for and express regularity in repeated reasoning as they work with rational expressions. They will construct viable arguments and critique the reasoning of others as they investigate the closure of rational expressions under operations.
- Students will reason abstractly and quantitatively and look for and express regularity in repeated reasoning as they write the equation of a quadratic function by solving a system of three equations with three unknowns.

Sample Activity:
Giant One - Students are encouraged to rewrite rational expressions to create fractions that will reduce to one. The new expressions will be reduced to its simplest form. This strategy to rewrite will allow students to simplify rational expression after doing basic operations on the original expressions.

Unit 1: Preparing for Your Journey *(approximately 15 days)*

STANDARDS
F.if.4, F.IF.5, F.BF.1, A.CED.1, A.CED.2, F.IF.5, A.SSE.2, A.APR.6, F.BF.1c, F.BF.4, F.IF.7b

A. This unit is designed to accomplish several objectives:
- Introduce students to some of the main concepts that are part of this course.
- Introduce students to the modeling cycle.
- Have students work with functions, including inverse, composite, and piecewise-defined functions.
- Introduce students to radians and the unit circle.

The opening of this unit establishes a starting point for many of the concepts in this course. Interpreting functions and their graphs will be used extensively in the modeling process throughout the course. Solving word problems as well as algebraic manipulation are skills that are necessary throughout the course.

Progression of Content:
Students are introduced to radians and the unit circle early in the course to facilitate work with trigonometric functions in later units. Students review the inverse functions from a previous course. Understanding domain restrictions will be necessary when students learn about the graphs of the inverse trigonometric functions contained in Unit 2 and Unit 8. After reviewing inverse functions, students will investigate composite functions and use them to algebraically determine if two given functions are inverses of each other. Lastly, students define a radian and use radians to measure angles in the unit circle. This is the start of using the unit circle, which trigonometry will be applied to throughout the course. The last lesson in this section examines angular motion vs. linear motion.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 1:
- Students will model with mathematics, attend to precision, look for and make use of structure as they collect data from the Spring Problem
- Students will make sense of problems and persevere in solving them, construct viable arguments and critique the reasoning of others, look for and make use of structure as they work to find the inverse of functions graphically, on a table, and a rule

Sample Activities:
The Spring Problem - Students engage with a notice and wonder through this activity as they conduct a lab using a spring with a weight attached at the end. In order to gather data from this activity, students video record the motion of the spring and weight in order to make a table and graph the results. Finally, students use the their model to make various predictions of the position of the wight at different times.

The Inverse of Function - Students will review how to write an inverse function by "undoing" and learn how to algebraically verify that functions are inverses. Students will see the inverse of a function graphically, on a table, and through its rule.

Unit 2: Functions and Trigonometry *(approximately 14 days)*

STANDARDS
F.IF.4, F.IF.7, F.BF.3, F.TF.3, F.TF.4, F.IF.7e, F.TF.2, A.REI.10, F.TF.6

A. This unit is designed to accomplish several objectives:
- Describe graphs as increasing/decreasing, concave up/concave down, and state the location(s) of maxima and minima.
- Identify graphs of functions as even, odd, or neither. Or, given the equation of a function, algebraically show that the function is even, odd, or neither.
- Develop fluency with angles and coordinates in the unit circle.
- Generate the parent graphs for sine and cosine and use them in a variety of transformations.
- Generate the parent graphs for inverse sine, inverse cosine, tangent, and inverse tangent.
- Solve basic trigonometric equations over specified domains.

In the first section of this unit, students will review attributes used to describe functions. Concavity will be introduced and students will use algebra to show that functions are even, odd, or neither. Then transformations of functions will be investigated. Again, much of this will be review from a previous course, but will now include horizontal stretches.

In Unit 1, students were introduced to radians and the unit circle. They have practiced a number of problems to reinforce key angle measurements and have worked with special triangles to develop ratios for 45º-45º-90º and 30º-60º-90º triangles. Now they will use these ideas to generate the key coordinates in the unit circle and develop the graphs of sine and cosine.
The second section is devoted to the development of sine and cosine from the standpoint of the unit circle. Students first locate the coordinates for the special angles they used in Unit 1. They then see that the sine ratio corresponds to the y-coordinate and the cosine ratio corresponds to the x-coordinate. Using these values, students develop the Pythagorean Identity. From here, students will graph $y = \sin(q)$ and $y = \cos(q)$ using the unit circle. The section continues with transformations of the graphs of sine and cosine.

In the last section, students begin by solving trigonometric equations. Here students will see that these equations can have multiple, and even an infinite number of, solutions. They will use graphs and the unit circle to generate the solutions to these equations. Students will then use $y = \sin^{-1}(x)$ and $y = \cos^{-1}(x)$ to solve for angles which are not the special angles in the unit circle. Finally, students generate the graphs of inverse sine, inverse cosine, tangent, and inverse tangent.

Progression of Content:
In this unit, students work with transformations of sine and cosine and applied these transformations to a few applications. Then in Unit 8, students extend their work with trigonometric functions to more complex situations; model situations with sinusoidal functions that have both a horizontal shift and a period other than 2π; graph and apply the reciprocal trigonometric functions; develop other trigonometric tools for simplifying expressions using formulas involving sums of angles.

B. Unit Assignment(s):
Mathematical Practices used in Unit 2:

- Look for and make use of structure, reason abstractly and quantitatively.
- Use appropriate tools strategically, look for and make use of structure, look for and express regularity in repeated reasoning.
- Construct viable arguments and critique the reasoning of others, look for and make use of structure, look for and express regularity in repeated reasoning.
- Use appropriate tools strategically, attend to precision.
- Make sense of problems and persevere in solving them, use appropriate tools strategically, attend to precision, look for and make use of structure.

Sample Activities:
The Unit Circle - Students determine the coordinates of the intersection of the terminal side of a special angle with the unit circle. Students will cut out two special right triangles from a resource page. Sides of the special triangles will be labeled using the exact values on both sides of the paper. This will ensure that the labels are shown when the triangles are flipped over. By placing each of the special right triangles on the x-axis, students will be able to find the coordinates of each of the special angles and repeat the process in all four quadrants to complete the unit circle.

Solving Trigonometric Equations - To solve an equation such as sin x =12, students are directed to draw a unit circle and also graph y = 12, which is a horizontal line. The intersections of the unit circle and the horizontal line will show students the solutions as well as number of solutions. By treating this problem as a system of equations, students are made aware of the connections the solutions are graphically and algebraically. In the same problem, students are asked how many more solutions there could be if we were allowed to continue to revolve around the circle. Eventually the next time students come across this type of problem, they will know to convert the unit circle into a sinusoidal graph and will see the horizontal line having multiple intersections with the sinusoidal graph to help them find all solutions.

Semester B

Unit 3: Algebra and Area Under the Curve *(approximately 10 days)*

STANDARDS
A.APR.6, A.APR.7, A.SSE.2, A.REI.7, A.REI.11, F.BF.1, A.CED.1

A. In Unit 3, students begin by practicing and strengthening their algebraic manipulation skills as they continue to write equivalent rational expressions and complex fractions. Students learn how substitution can help solve equations and systems of equations. Students then finish up this unit by solving a series of word problems using their algebra skills.

Another focus of this unit is approximating the area under a curve using summation notation. This concept is one of the major themes of calculus. The goal is to understand what area under a curve can represent and how to approximate it using rectangles.

Progression of Content:
Area under a curve is one of the main ideas in calculus. In this unit, students will be taught background information that will provide a deeper understanding of integration in calculus. The goal in this section is for students to understand the meaning of area under a curve.

B. Unit Assignment(s):
Mathematical Practices used in Unit 3:

- Students will make sense of problems and persevere in solving them, look for and make use of structure, construct viable arguments and critique the reasoning of others as they add, subtract, multiply, and divide rational expressions.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, reason abstractly and quantitatively as they calculate sums by expanding sigma notation as well as write finite arithmetic series in sigma notation.

Sample Activities
Growth Mindset (Jo Boaler) - In the first lesson of this unit, teachers are encouraged and given the tools to discuss the concepts of the importance of everyone, especially students, learning from their mistakes through error analysis and dendrite growth.

Unit 4: Polynomial and Rational Functions *(approximately 10 days)*

STANDARDS
F.IF.7c, A.APR.3, F.IF.4, N.CN.8, N.CN.9, A.APR.6, F.IF.7d, A.CED.1, A.CED.2

A. In this unit, students will apply their knowledge of families of functions to include polynomial and rational functions. Students will investigate the equation ↔ graph connection for these two families of functions, and learn to describe the end behavior of a function. In the first section, students will learn to graph polynomial functions from the factored forms or their equations.

Students will then work backwards, using graphs to write equations in factored form. Finally, students will learn how to identify all of the roots of a polynomial. Second section begins with a new method for rewriting equations of rational functions is introduced in this section. Students will practice graphing transformations of rational functions. Then students will investigate rational functions that have slant asymptotes and holes.

Finally, students will extend your knowledge of rational functions to graph reciprocal functions. In the last section of the chapter, students will apply what students have learned to solve polynomials and rational equations and inequalities. Finally, students will apply their knowledge of polynomial and rational functions to model and analyze everyday situations.

Progression of Content:
In calculus, polynomials are used to approximate complicated functions because they "behave nicely" and are easy to work with.

B. Unit Assignment(s):
Mathematical Practices used in Unit 4:

- Students will look for and make use of structure, construct viable arguments and critique the reasoning of others as they graph polynomial functions from equations given in factored form.
- Students will look for and make use of structure as they rewrite rational expressions to transform functions in the form $g(x) = \frac{ax+b}{x-c}$ into transformations of $y = \frac{1}{x-h} + k$.
- Students will look for and make use of structure, construct viable arguments and critique the reasoning of others as they solve polynomial and rational inequalities.

Sample Activities
Polynomial Function Investigation - Students will investigate the graphs of polynomial functions in factored form. Use different numbers of factors with different values of the parameters will show how it will change the graph. Sample of an equation in which students need to change the parameters would is as follows: n(x)=x-a(x-b)(x-c) in which a, b, and c will be different values. Students will have a chance to compare their graphs with their teammates to see the behavior of different types of equations without having to do all of them themselves.

Unit 5: Exponentials and Logarithms *(approximately 10 days)*

STANDARDS
A.CED.2, F.IF.7e, F.LE.2, F.BF.5, F.LE.4

A. The start of this unit focuses on exponential functions. Students will apply what they already know about exponential functions to everyday situations. Students will then realize that sometimes two different transformations give the same result, mainly that every exponential function with a horizontal shift is equivalent to a vertical stretch. This shows graphically, as well as algebraically, that every function of the form $y = a(b^{x-h}) + k$ is equivalent to $y = A(b^x) + k$. Furthermore, students will learn about the number e.

In the second half of this unit, students will review, use, and prove the properties of logarithms, each of which corresponds to a property of exponents. Students will also continue solving equations and simplifying expressions that involve logarithms and exponents. This unit is culminated through graphing the family of logarithmic functions and solving application problems.

Progression of Content:
This unit on exponential and logarithmic functions culminates students' engagement in this 4th year course.

B. Unit Assignment(s):
Mathematical Practices used in Unit 5:

- Students will make sense of problems and persevere in solving them, reason abstractly and quantitatively, model with mathematics, look for and make use of structure as they use exponential functions to model everyday situations
- Students will look for and make use of structure as they understand that for exponential functions, a horizontal shift can be equivalently written as a vertical stretch.
- Students will look for and make use of structure, use appropriate tools strategically, look for and express regularity in repeated reasoning as they practice converting between exponential and logarithmic equations, and investigate the basic properties of logarithms, including natural logarithms.

Sample Activities
The number *e* - In this activity, students explore what occurs when1 cm2of bacteria reproduces at 100% rate every hour, every minute, every second, and finally every millisecond for one day. A follow up question to this activity is, "What happens to the bacteria if it reproduces *continuously*?" Students will recognize that the base of their exponential model is getting closer and closer to the number *e* and the continuous compound formula A(t)=Pert.

Proving the Logarithmic Properties Card Sort:
In this activity, students prove the Product Property of Logarithms using a card sort. Each team obtains one set of cards. Students arrange the cards in the center of their team's workspace so that everyone can participate. Students then arrange the cards in a logical manner and provide justification for each part of their proof. Justifications can be written on sticky notes or blank cards so that they are easily moved as well. The teacher verifies that each team has the correct proof before allowing them to move on. Students prove the Quotient and Power Properties in a similar format.

Unit 6: Triangles and Vectors *(approximately 9 days)*

STANDARDS
G.SRT.9, G.SRT.10, G.SRT.11, N.VM.1, N.VM.2, N.VM.4, N.VM.5, N.VM.3

A. Two useful tools for solving situational problems are triangles and vectors. Many everyday situations involve triangles, so students will need to be able to solve any triangle with minimal given information. In first section, students will develop and use the Law of Sines and the Law of Cosines to solve non-right triangles. Students will learn to solve triangles when the given information does not create one unique triangle. In the second section, students will learn how to use vectors to describe motion; complete vector operations both graphically and algebraically; apply your knowledge of vectors to solve everyday problems.

Progression of Content:
Students are reintroduced to Law of Sines and Law of Cosines and their applications. But this will most likely be the last time students see a formal lesson on these topics. As for the lessons on vector, since this is the first introduction to the topic, students who pursue higher math and science course will encounter them again.

B. Unit Assignment(s):
Mathematical Practices used in Unit 6:

- Students will look for and make use of structure as they prove, understand, and apply the Law of Sines and Law of Cosines. They will also derive the formula $A = 1/2ab\sin(C)$ for the area of a triangle.
- Students will look for and make use of structure, attend to precision, use appropriate tools strategically as they are introduced to vectors and vector notation. They will determine magnitude, direction, and/or components of a vector.
- Students will make sense of problems and persevere in solving them, attend to precision, reason abstractly and quantitatively, model with mathematics, use appropriate tools strategically as they use vectors in real world applications.

Sample Activity:
Vector Line Dance - The Vector Line Dance has students perform a series of moves in the form of a line dance. The idea is that all of the students are doing the same movements but from different starting positions. The starting position does not matter when working with vectors. This activity is "self correcting" in that students should notice if they make a mistake in their direction or distance, since students should move in unison (similar to line dancing). Once students have completed the activity, the class can discuss the idea of everyone making the same motion (steps and direction), but from different positions. This develops the notion that a vector has a direction and length (magnitude).

Unit 7: Limits and Rates *(approximately 12 days)*

STANDARDS
Preparation for Calculus (Addition for Precalculus Honors)

A. In mathematics, the concept of a limit can be used to describe the behavior of a function as the independent variable approaches a particular value, or as it becomes arbitrarily large. In the first half of this unit, students will explore how functions behave as x approaches a particular value or goes to infinity. Students will also look at limits from several perspectives including geometry, graphs, tables, and algebra. Students will then learn about one-sided limits and evaluate limits of many functions including rational and piecewise-defined functions. Students will use limits to define continuity.

In the second half of this unit, students will investigate rates of change as they occur in everyday situations and through multiple representations. Often, the most interesting thing about the values in a situation is not the values themselves, but how those values are changing. Is your car speeding up or slowing down? Is the room getting hotter or colder? Furthermore, students will look at the slopes of secant and tangent lines. At the end of this unit, students will use what they have learned about limits to define instantaneous rate of change.

Progression of Content:
Students develop intuitive notions of limits during this unit and refine these ideas in Unit 13. The main focus in this unit is for students to begin to develop the definition of a derivative. The final goal, in Unit 13, is for students to understand what a derivative actually is and what it tells them about a function and its graph.

B. Unit Assignment(s):
Mathematical Practices used in Unit 7:

- Students will use appropriate tools strategically as they evaluate limits geometrically, graphically, on a table, and understand the necessary conditions for a limit to exist.

- Students will make sense of problems and persevere in solving them as they work with limits of functions such asf(x)=sin(x)x.
- Students will look fo and make use of structure as they calculate average rates of change by calculating the slope of the secant line between two data points.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning as they use the limit as $h \to 0$ for the average rate of change to calculate the instantaneous rate of change.

Sample Activity:
Folding Angles - This activity is intended to provide students a tangible example of limits during an engaging activity. In this activity, every student in a group chooses a different acute angle, marks it on their receipt tape, then bisects the supplementary obtuse angle adjacent to their initial angle. By repeating the process, students discover that repeated folds in a given pattern lead to angles ever closer to 60º.

Unit 8: Extending Periodic Functions *(approximately 12 days)*

STANDARDS
F.BF.3, F.TF.7, A.CED.2, F.TF.9, F.TF.10

A. In Unit 2, students worked with transformations of sine and cosine and applied these transformations to a few applications. This unit extends their work with trigonometric functions to more complex situations. Students will model situations with sinusoidal functions that have both a horizontal shift and a period other than 2π. Students will graph and apply the reciprocal trigonometric functions. You will also develop other trigonometric tools for simplifying expressions using formulas involving sums of angles.

Progression of Content:
In Calculus, students will be using trigonometric functions to find derivatives and find integrals.

B. Unit Assignment(s):
Mathematical Practices used in Unit 8:

- Students will look for and make use of structure as they combine a horizontal stretch and shift of the same trigonometric function and set up a modeling problem.
- Students will model with mathematics as they generate trigonometric models for real-world applications.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, use appropriate tools strategically as they graph $y = \csc(x)$, $y = \sec(x)$, and $y = \cot(x)$; prove trigonometric identities.
- Students will use appropriate tools strategically as they use geometry to visualize the trigonometric functions.

Sample Activity:
Graphing Reciprocal Trigonometric Functions - Students will use the graphs of sine, cosine, and tangent to graph their respective reciprocal functions cosecant, secant, and cotangent. Students are encouraged to use the symmetry of the graph to save themselves time. For example, once they have values for sine and cosecant between $x = 0$ and $x = \pi$, they can use the same values (but negative) between $x = \pi$ and $x = 2\pi$. Students will see that the x-intercepts of $y = \sin(x)$ become the locations of the asymptotes for its reciprocal function. These asymptotes should help students identify the domain and asymptotes for the reciprocal functions.

Unit 9: Matrices *(approximately 9 days)*

STANDARDS
N.VM.6, N.VM.7, N.VM.8, N.VM.9, N.VM.10, N.VM 11, N.VM.12, A.REI.8, A.REI.9

A. In this unit, students learn what a matrix is and how matrices, along with a graphing calculator, can be useful tools for organizing data and solving problems. Students then use matrices to solve complicated systems of equations.

By the second half of the unit, students understand the definition of a linear transformations and relate linear transformations to matrices. Students then investigate compositions of transformations and see how transformations affect geometric figures.

Progression of Content:
This unit is an introduction to matrices, the topic of a Linear Algebra course (usually taken after Calculus) in college. Matrices are also included in college Business Math courses.

B. Unit Assignment(s):
Mathematical Practices used in Unit 9:

- Students will look for and make use of structure, make sense of problems and persevere in solving them as they add, subtract, and start to multiply matrices.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, make sense of problems and persevere in solving them, use appropriate tools strategically as they multiply a vector (regarded as a matrix with one row/column) by a matrix of suitable dimensions to produce another vector, and use matrix multiplication to solve problems.
- Students will reason abstractly and quantitatively, look for and make use of structure as they perform linear transformations using matrices.

Sample Activity:
The Toy Factory - Students learn to use matrices to represent linear situations that involve several variables needed to make two types of toys, cars and trucks requiring different amount of wheels, seats, and different costs to manufacture each type of toy. The goal of the activity is for students to determine whether or not a particular request from a buyer can be fulfilled.

Unit 10: Conics and Parametric Functions *(approximately 11 days)*

STANDARDS
G.GPE.3.1, F.IF.10

A. In this unit, students will analyze shapes that result from slicing a cone with a plane. These shapes are called conic section. In the first section, students will look at circles, ellipses, hyperbolas, and parabolas. They will generate the conics and derive their equations using the formal definitions. Students will recognize conic sections from their equations and complete the square to rewrite the equations in graphing form. Second section focuses on parametrically-defined functions. Students are introduced to the concept of defining x and y in terms of the parameter t. They will see how parametrically-defined functions can be used to model situations involving motion. The final lesson in this section has students solve problems using projectile motion. This is much more powerful than the past work students have completed with parabolas.

Progression of Content:
In calculus, a chapter is devoted to developing calculus tools for other forms of equations: polar, parametric, and vector.

B. Unit Assignment(s):
Mathematical Practices used in Unit 10:

- Students will look for and make use of structure, reason abstractly and quantitatively, use appropriate tools strategically, attend to precision as they derive the equation of a circle and practice completing the square, derive the equation of a hyperbola and ellipse, rewrite parametric equations representing conic sections in rectangular form, apply their knowledge of parametric equations to everyday situations.

Sample Activities:
Where is the Center - Students are reintroduced to algebra tiles which they have used in previous course to rewrite quadratic equation into perfect square forms to solve them. Now they will use algebra tiles to complete the square on both x and y variables which will help in rewrite conic section equations into graphing form. The use of the manipulatives allows students, especially those unfamiliar with completing the square or that lack the experience with algebra tiles to get a full understanding as to why it is called completing the square. Once equations of a circle in this problem are rewritten in this form, students can easily identify the center of the circle.

Flick a Coin - This demonstrates how vertical motion is not affected by horizontal motion. To do this, one coin is flicked while the other coin is dropped. The teacher will need to do a demonstration for the whole class. Fold the 3" × 5" index card in half lengthwise, then fold each half (again lengthwise) in the opposite direction. Squeeze the two middle parts together with your thumb and forefinger creating a T when viewed at the end. Turn the folded index card so

that the T is upside down. Lay the upside-down T on a table and place a coin on either side of the vertical center. The coins should be laid flat, resting against the center of the T, and near the end. Pinch and hold the side opposite of the coins. Slide the card so that the coins and half of the card extend beyond the edge of a flat surface. Now, imagine that this is a pinball machine flipper and quickly flick your wrist. One coin will be projected forward while the other falls straight down. Listen carefully for the sounds as they hit the floor. One sound means they hit at approximately the same time. Theoretically, the two coins should hit the ground at the same time, even though the first coin travels a longer path. This is true because the horizontal and vertical motions are independent.

Unit 11: Polar Functions and Complex Numbers *(approximately 11 days)*

STANDARDS
F.IF.11, N.CN.3, N.CN.4, N.CN.5, N.CN.6

A. In this unit, students transition from graphing rectangular coordinates (x, y), to polar coordinates, which use a distance and an angle. Students will then apply their work with polar coordinates to the world of complex numbers. They will graph complex numbers and learn to rewrite them in polar form. Furthermore, students will also perform operations with complex numbers in polar form, including multiplying, dividing, and computing powers and roots. This unit culminates with students learning to plot points and graph equations using a radius and an angle, and make conversions between polar and rectangular equations

Progression of Content:
It is not until the second year of Calculus that students revisit polar functions through integration and differentiation.

B. Unit Assignment(s):
Mathematical Practices used in Unit 11:

- Students will look for and make use of structure, look for and express regularity in repeated reasoning as they graph polar functions, explore various polar functions, graph complex numbers.
- Students will look for and make use of structure as they convert between polar and rectangular forms.
- Students will look for and make use of structure, use appropriate tools strategically as they represent operations with complex numbers geometrically, and use conjugates to determine moduli and quotients of complex numbers.

Sample Activity:
Polar Coordinates Battleship - Directions/rules for the students are as follows:

- Mark your ships on your polar grid. Each ship must be connected to another ship, either along a ray or around a circle.

- Take turns firing out shots. Each target should be stated in four ways: positive radius and positive angle (+, +), positive radius and negative angle (+, −), negative radius and positive angle (−, +), and negative radius and negative angle (−, −). Both players should record the shots on the charts for further reference.
- If you are the opponent, verify that all of the targets stated are the same location. If not, the player forfeits their turn.
- If the shots miss a ship, the opponent declares "miss" and both players place an open circle in the appropriate location. If the shots hit a ship, the opponent declares "hit" and both players mark an X in the appropriate location.
- You must state when a ship is sunk completely.
- The goal is to sink all of your opponent's ships.

Unit 12: Series and Statistics *(approximately 12 days)*

STANDARDS
A.SSE.2, A.SSE.4, A.APR.5, S.MD.1, S.MD.2, S.MD.3, S.MD.4, S.MD.5

A. In this unit students will begin by calculating the sums of series. Students will derive formulas for and evaluate the sums of arithmetic and geometric series. Students will use limits to evaluate sums of infinite geometric series. At the end of this section students' skills will be applied to analyze some common situations. Second section begins by looking for patterns in the expansion of $(x + y)^n$ and relates the patterns to Pascal's triangle. This leads the use of the Binomial Theorem for the expansion of binomials of the form $(a + b)^n$, where n is a positive integer. Students then apply the patterns from the first lesson of this section to compute probabilities for binomial experiments. In the last section, students will understand what a discrete random variable is as well as the difference between frequency and relative frequency. They will create relative frequency tables for discrete random variables and graph probability distributions as relative frequency histograms. The section continues with calculating the mean and expected value of a discrete random variable. Once students understand these values and how to calculate them, they use these values to make decisions for everyday situations.

Progression of Content:
In Calculus, students will learn tests for determining convergence or divergence of infinite series. And students will learn basic tools if they do decide to move onto a statistical course.

B. Unit Assignment(s):
Mathematical Practices used in Unit 12:
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, reason abstractly and quantitatively, use appropriate tools strategically as they develop a formula for the sum of an arithmetic series.

- Students will use appropriate tools strategically, look for and make use of structure, reason abstractly and quantitatively as they use limits to determine the sum for infinite geometric series.
- Students will make sense of problems and persevere in solving them, use appropriate tools strategically as they apply their knowledge of sums of geometric series to solve problems involving everyday situations and develop the concept of a random variable for discrete random variables. They will graph probability distributions associated with random variables. They will calculate and interpret the mean and expected value of a discrete random variable.

Sample Activity:
Quebare - This problem is launched by showing short video for the "game" they are about to play. For the purpose of this problem, Quebare's moves have been restricted to down left and down right. Students are instructed to discuss strategies for determining the exact number of paths to each block. Using isometric dot paper, plastic sleeves, and dry erase pens. Students can then use the resources to test their strategies. Students may or may not notice at this point that they have seen this pattern before. If they recognize it as Pascal's triangle, allow them to share this with the class. Otherwise, let them continue to work the patterns; the paragraph at the end of the lesson addresses the name and significance of the pattern.

Unit 13: Precalculus Finale *(approximately 13 days)*

STANDARDS
Preparation for Calculus (Addition for Precalculus Honors)

A. Students learned about limits in Unit 7 by using a graphical approach. In this unit, students will use dominant terms to evaluate limits at infinity and algebraic techniques to evaluate limits at a point. Students will also learn to recognize when a technique is appropriate to use.

Furthermore, in this unit, students will understand what area under a curve represents and how to approximate it using trapezoids, and by writing and using an area under a curve program with a graphing calculator.

This unit is culminated as students build conceptual understanding between the slope of a function and the area under the curve of a function's derivative, two concepts developed throughout this course. You will also learn how to write slope functions for power functions.

Progression of Content:
By the end of this unit, and essentially this course, students will be ready for Calculus.

B. Unit Assignment(s):

Mathematical Practices used in Unit 13:

- Students will look for and express regularity in repeated reasoning, reason abstractly and quantitatively as they begin a formal understanding of limits. Students will understand what a dominant term is and use the idea of dominant terms to evaluate limits at infinity.
- Students will reason abstractly and quantitatively, attend to precision as they investigate the number e as a limit in the indeterminate form $(1)^{\infty}$ and learn how the number e is important to mathematics.
- Students will attend to precision, construct viable arguments and critique the reasoning of others as they approximate area under a curve using trapezoids and compare the results obtained using trapezoids to results obtained using left endpoint and right endpoint rectangles. Students will also realize that a trapezoidal approximation is the average of left endpoint and right endpoint rectangle approximations.
- Students will make sense of problems and persevere in solving them as they sketch velocity graphs and position graphs and develop connections between the two types of graphs.

Sample Activity:

A Race to Infinity - Through this activity, students will be evaluating eight functions, whose end behavior can be described as follows: x, y. But, the important part is to determine which of these functions would approach infinity faster when comparing exponential, power, and logarithmic functions with b>1. This activity sets the premise for "dominant" functions when students then evaluate algebraic rational expressions containing any of these functions either in the numerator or on the denominator. The end goal of this activity is for students to realize that: (1) exponential functions with larger bases will dominate the exponential family, (2) of the power functions, the function with the highest power will dominate. Since radical expressions can be rewritten using an exponent, they are in the power function family, and (3) that logarithms with the smallest base ($b > 1$) would dominate.

Comprehensive Final Exam Details

1. Students will be tested on their knowledge of the following topics:
    - 3-Variable Systems
    - Prerequisites from Algebra and Geometry
    - Trigonometric Functions
    - Analytic Trigonometry
    - Laws of Sines, Cosines
    - Polar and Vectors
    - Complex Numbers
    - Exponential and Logarithmic Functions

- Topics in Analytic Geometry, including Conics
- Functions and Models
- Limits and Derivatives
- Differentiation Rules
- Applications of Differentiation

2. The Final Exams - much like unit/chapter exams - are detail-oriented and require students to provide detailed, step-by-step justification for their responses to each of the questions. This way, they get trained and prepared for their future AP Math courses/exams.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math IIIB/Precalculus Accelerated
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Hoover High School, Crescenta Valley High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, mathematics "c"
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated II/IIIA Accelerated
Recommended Textbook:	*California Integrated Mathematics 3* Timothy D. Kanold, Edward B. Burger, Juli K. Dixon, Matthew R. Larson, Steven J. Leinwand Houghton Mifflin Harcourt 2015 *Precalculus: Mathematics for Calculus* James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition

Course Overview:

Integrated Mathematics IIIB/Precalculus Accelerated is part two of a two-part compacted math series. Following Integrated Mathematics II/IIIA Accelerated, this course provides students with instruction in the second half of the content of the Integrated Math III and all of the course content for Precalculus. This compression is designed as the single point of

acceleration at the high school level as recommended by the California Mathematics Framework. This course is aligned to the California Common Core State standards for high school mathematics and supports the Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of the mathematical relationships and concepts needed to succeed in higher level math courses.

In addition to covering the second half of Integrated III standards, this course meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

In addition to the second half of Integrated III standards, this courses covers the same material as Precalculus Honors, by adding and adds rates of change, limits and area under the curve to the standard Precalculus course.

Course Content:

Semester A

Unit 6 Trigonometric Functions *(approximately 15 days)*

STANDARDS
G-STR.8, G-SRT.10, F-TF.1, F-TF.2, F-TF.5, F-TF.8, F-IF.7e

A. This unit builds on the introductory trigonometric function learning from CC Integrated Mathematics II. Students will solve real life problems using trigonometric functions and Pythagorean identities. They will also work with transformations of graphs of trigonometric functions.

Major Topics:
Defining trigonometric functions with the unit circle
Laws of sines and cosines
Evaluating trig functions
Angle rotation and radian measure
Transformations of the parent graphs of trigonometric functions

B. Unit Assignment(s):
At the end of this unit, students will complete a Math in Careers task by using models to represent the motion of a paddle wheel. Critical skills include graphing a trigonometric function, describing what its parameters mean for the real world situation, and using the function to make a prediction.

Students will graph a function for a riverboat paddle wheel with a given diameter and revolution rate that hangs a specific distance below the water line during an identified time interval. Students will describe the significance of the intercepts, the maximum and minimum values for the situation. They will also predict how revolutions it will take for a point on the wheel to have traveled one mile.

Mathematical Practices Used in Unit:

- MP.2 Students will be able to reason abstractly in order to understand the relationship between the unit circle and the graphs of the trigonometric functions.
- MP.5 Students will be able to determine when it is appropriate to model periodic phenomena with a sinusoidal function. Students will use their knowledge of the key features of a trigonometric function to help fit the function to the model.
- MP.8 Students will look for and express regularity in repeated reasoning when organizing their work to find the angle measures of a triangle. Students will reason whether the measures given produce one triangle, two triangles or no triangle by using the Law of Sines.

Unit 7: Statistics and Decision Making *(approximately 12 days)*

STANDARDS
S-IC.1, S-IC.2, S-IC.3, S-IC.4, S-IC.5, S-ID.4, S-MD.6, S-CP.4

A. In this unit students will learn about statistics and using them to make sound decisions. They will gather and display data and find specific data points.

Major Topics:
Gathering and displaying data
Shape, center, and spread
Data distributions
Confidence intervals and margins of error
Using probability in making and analyzing decisions

B. Unit Assignment(s):
After completing this unit, the students will perform a statistical hypothesis test. Critical skills include writing a null hypothesis, creating visual representations of data, and proving or disproving the null hypothesis.

Students will work as a pharmaceutical scientist would by testing whether a certain medication for raising glucose levels is more effective at higher doses. They will be given pre-generated test results for ten patients, five high level doses and five normal level doses. They will state their null hypothesis for the experiment. Then students will compare the results using box plots. Students will then explain why or why not they have enough evidence to reject the hypothesis.

Mathematical Practices Used in Unit:

- MP.3 Students will be able to analyze whether a study is a survey experiment or an observational study and will be able to critique the results accordingly.
- MP.2 Students will be able to calculate confidence intervals and margins of error and be able to understand that statistics can help predict outcomes.
- MP.5 Students will be able to use a graphing utility to normalize data.

Unit 8: Equations of Circles and Parabolas *(approximately 11 days)*

STANDARDS
G-C.2, G-C.3, G-C.5, G-GMD.1, G-GPE.1

A. In this unit, students will identify whether a quadratic equation in general form represents a circle by completing the square to get the equation in standard form.

Major Topics:
Changing general form of quadratic equations into standard form
Identify whether the quadratic equations produces a circle or a parabola

B. Unit Assignment(s):
After completing this unit, students will complete a Module Performance Task to determine if a helicopter with a range of 290 nautical miles is in a close enough range to rescue a sailboat off the coast of California. Critical skills includes plotting, on a coordinate plane, the location of LAX and SFO airports along with the location of the sailboat given the latitude and longitude coordinates. Students need to determine which airport should send the rescue helicopter through graphing the equation of the circle circles. Students will justify their reasons and show the evidence in their work for how they came up with their answer.

Mathematical Practices Used in Unit:

- MP.3 Students will construct viable arguments and justify their conclusions when identifying whether a quadratic equation in general form is a circle or a parabola.
- MP.8 Students will use repeated reasoning and algebraic steps when completing the square to change a general form quadratic equation into standard form.

Chapter 2: Functions *(approximately 10 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.CED.2, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7a, F.IF.7b, F.IF.8, F.IF.8a, F.BF.1, F.BF.1a, F.BF.1b, F.BF.3, F.BF.4, F.BF.4a, F.BF.4b, F.BF.4c, F.BF.4d, F.LE.2, S.ID.6a, S.ID.6b, S.ID.7

A. In this chapter students will study functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Graphs of Functions
Average Rate of Change of a Function
Transformations of Functions
Combining Functions
One-to-one Functions and their Inverses

B. Unit Assignment:
After completing Section 2.3, students will give a verbal summary of a situation described by a graph. In this assignment students describe, or tell the story that corresponds to a, given graph as well as make graphs that corresponds to a real-world "story".

Mathematical Practices Used in Ch. 2:

- MP.4: Students will model linear relationships in real world situations and use average rate of change to interpret and quantify the relationship between two variables.
- MP.6. Students will label axes and specify key points to clearly and accurately represent the different type of basic functions such as the linear function, reciprocal function and greatest integer function. Students will also attend to precision for piece-wise functions, ensuring that endpoints are clearly marked and representative of the corresponding domains.
- MP.7: Students will be able to interpret average rate of change within the context of a question and express the significance of the value to the problem. The students will be able to step back and overview transformations of functions as they apply to all types of parent functions and can interpret the structure of functions as a simple transformation on the parent function.

Chapter 3: Polynomials and Rational Functions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7c, F.IF.7d, F.IF.8b, F.BF.1a

A. In this chapter students will study polynomial and rational functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Quadratic Functions and Models
Polynomial Functions and Their Graphs
Real Zeros of Polynomials
Complex Zeros and the Fundamental Theorem of Algebra
Rational Functions
Polynomial and Rational Inequalities

B. Unit Assignment:
After completing Section 3.2, students will experience the process of collecting data and then analyzing the data using linear regression. In this assignment students will construct bridges out of paper and use pennies as weights to determine how strong each bridge is. Students will model the data with linear and power functions to determine which model best fits the data. The model will allow students to predict the strength of a large bridge before it is built.

Mathematical Practices Used in Ch. 3:

- MP.2: Students will be able to reason abstractly by understanding the general importance of a power function to the graph of a polynomial. The students will also be able to contextualize the significance of the end behavior and zeros of the function.
- MP.4: Students can model real world situations with fluctuations by using polynomial functions. They can use the properties of polynomial functions to help contextualize the problem.
- MP.7: Students will be able to discern a pattern in the factored form of a polynomial and its relationship to the x-intercepts of a graph. They will also be able to recognize the significance of the power function of the expanded form of a polynomial and the end behavior of the graph.

Semester B

Chapter 4: Exponential and Logarithmic Functions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.3, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7e, F.IF.8b, F.BF.5, F.LE.4

A. In this chapter students will study exponential functions where the independent variable is in the exponent. Exponential functions are used in modeling many real-world situations. The inverse function of exponential functions are called logarithmic functions. Once an exponential model has been obtained, students will use the model to predict things such as the size of a population or the growth of an investment.

Major Topics:
Exponential Functions
The Natural Exponential Function
Logarithmic Functions
Laws of Logarithms
Exponential and Logarithmic Equations
Modeling with Exponential Functions
Logarithmic Scales

B. Unit Assignment:
After completing Section 4.3, students will use logarithms or orders of magnitude to compare sizes of objects. It is often difficult to compare objects that vary enormously in size. In this assignment students learn how logarithms can be used to define the concept of "order of magnitude" which provides a simple way of comparison of these objects.

Mathematical Practices Used in Ch. 4:

- MP.2: Students will be able to quantitatively understand the structure of a logarithmic and exponential function separately as well as the inverse relationship of the functions. They will also be able to understand how the key features of a graph are represented in the algebraic expressions.
- MP.4: Students will be able to model a data set by using a linear, quadratic, exponential or logarithmic expression. Students will be able to determine which function best fits the data by identifying key points as well as end behavior.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to fit an exponential or logarithmic curve to model a data set.

Chapter 5: Trigonometric Functions: Unit Circle Approach *(approximately 8 days)*

STANDARDS
N.Q.2, N.Q.3, F.IF.8, F.LE.2, F.TF.1, F.TF.2, F.TF.3, F.TF.8, G.SRT.6, G.SRT.7, S.ID.6a

A. In this chapter students will study one way of viewing trigonometric functions, as functions of real numbers. Students will see in this chapter how the trigonometric functions are used to model periodic motion.

Major Topics:
The Unit Circle
Trigonometric Functions of Real Numbers
Trigonometric Graphs
Inverse Trigonometric Functions and Their Graphs
Modeling Harmonic Motion

B. Unit Assignment:
After completing Section 5.3 students will consider an application to biology. In this assignment students will use sine functions to model the population of a predator and its prey. An isolated island is inhabited by two species of mammals: lynx and hares. The lynx are *predators* who feed on the hares, their *prey*. Students will find functions of the form y=asink(t-b)=c that model the lynx and hare populations from a given graph.

Mathematical Practices Used in Ch. 5:

- MP.2: Students will be able to reason abstractly by understanding how the even-odd properties of a trigonometric function is related to the direction of rotation of the angle measure and the quadrant in which the terminal side is drawn.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to model periodic phenomena with a sinusoidal function. Students will be able to fit a trigonometric function by identifying the key features of the graph.
- MP.6: Students will be able to clearly define the meaning of the variables in a trigonometric equation by identifying which is an angle and what specific ratio is defined. Students will also be able to accurately label axes according to the expression being graphed, whether the unit circle or a trigonometric function.

Semester B

Chapter 6: Trigonometric Functions: Right Triangle Approach *(approximately 9 days)*

STANDARDS
F.TF.3, F.TF.4, G.SRT.6, G.C.5

A. In this chapter students will study another way of viewing trigonometric functions, as functions of angles. Students will see in this chapter the relationships between angles and distances.

Major Topics:
Angle Measures
Trigonometry of Right Triangles
Trigonometric Functions of Angles
Inverse of Trigonometric Functions and Right Triangles
The Law of Sines
The Law of Cosines

B. Unit Assignment:
After completing Section 6.2 students will investigate how areas and volumes of similar figures change as the size of the figure increases (or decreases). In this assignment students will find power functions that relate these quantities and use those functions to

explore the possibility of the existence of a real-life giant ape. Students will begin by finding some properties of similar figures.

Mathematical Practices Used in Ch. 6:

- MP.1: Students will be able to analyze the given information for an oblique triangle and will persevere in determining the best law (either law of cosines or sines) to solve the triangle. Students will also be able to determine when the ambiguous case for the law of sines applies and will solve for both possible triangles, when necessary.
- MP.3: Students will be able to determine when, for an ambiguous triangle, the second case does or does not work and can create a viable argument as to why.
- MP.4: Students will be able to model real world situations with right and oblique triangles and will be able to use the laws of cosine and sine and the properties of right triangles to determine distances and angles.

Chapter 7: Analytic Trigonometry *(approximately 8 days)*

STANDARDS
N.Q.1, N.Q.2, F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.7, F.TF.8

A. In this chapter students will study algebraic properties of trigonometric functions. Students will simplify and factor expressions and solve equations that involve trigonometric functions.

Major Topics:
Trigonometric Identities
Addition and Subtraction Formulas
Double-Angle, Half-Angle and Product-Sum Formulas
Basic Trigonometric Equations

B. Unit Assignment:
After completing Section 7.3 students will use trigonometry to find the best location from which to view a painting or a movie. In this assignment, students will use graphing devices and the Law of Cosines to find the best viewing angle possible.

Mathematical Practices Used in Ch. 7:

- MP.1: Students will look for entry points to a trigonometric identity proof and will persevere in looking for relationships to equate the two expressions. Students will analyze the given expressions to determine a solution pathway instead of jumping into a solution attempt.
- MP.2: Students will be able to reason through a trigonometric equation by being able to reason abstractly and seeing a quadratic form that requires factorization. Students will also be able to reason quantitatively by identifying the relationships between the ratios of sides with the corresponding angle measures.

- MP.3: Students will be able to build a logical progression of statements to provide a proof for a trigonometric identity by utilizing the quotient identities, Pythagorean identities, as well as the sum, difference, double- and half-angle formulas.

Chapter 8: Polar Coordinates and Parametric Equations *(approximately 7 days)*

STANDARDS
F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.8

A. In this chapter students will study a different way of locating points in the plane. Instead of using rectangular coordinates to specify a location, students will give distance and direction from a fixed reference point.

Major Topics:
Polar Coordinates
Graphs of Polar Equations
Polar Form of Complex Numbers: De Moivre's Theorem
Plane Curves and Parametric Equations

B. Unit Assignment:
After completing the chapter, students will use parametric equations and trigonometry to model the path of a projectile in motion. Students will be able to utilize coordinate geometry to realize how changing the angle of projection affects the domain and range of motion.

Mathematical Practices Used in Ch. 8:
- MP.1: Students will be able to visualize the graphing of a complex number as it relates to right triangle trigonometry and how this relationship allows for the conversion between rectangular and polar systems.
- MP.2: Students will be able to relate the roots of a complex number as points equally spaced about a circle and will be able to relate the periodicity of a sinusoidal function to help identify the polar form of the roots.
- MP.3: Students will be able to analyze the relationship between rectangular coordinates and the path of a point moving on a plane to eliminate a parameter and convert between rectangular and parametric equations.

Chapter 9: Vectors in Two and Three Dimensions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, F.TF.6, F.TF.7, G.SRT.8, G.SRT.9

A. In this chapter students will be able to represent quantities, such as force, with vectors that are defined by magnitude and direction. Students will also study how several forces acting on an object will affect the movement of that object.

Major Topics:
Vectors in Two Dimensions
The Dot Product
Three-Dimensional Coordinate Geometry
Vectors in Three Dimensions
The Cross Product
Equations of Lines and Planes

B. Unit Assignment:
After completing the chapter, students will use vector fields to model real-world scenarios, like the gravitational force on the earth or wind on the surface of the earth. Students will be able to then analyze the vector fields to identify the center and direction of motion.

Mathematical Practices Used in Ch. 9:

- MP.4: Students will be able to graph vectors in the cartesian system and use the dot product to find the angle between two vectors as well as the direction angles of a vector.
- MP.5: Students will use proper graphing utilities to help them visualize and analyze three-dimensional vectors and cross product vectors.
- MP.6: Students will attend to precision by properly drawing and labeling axes to graph in three dimensions.

Chapter 10: Systems of Equations and Inequalities *(approximately 15 days)*

STANDARDS
N.Q.1-3, N.CN.4, N.CN.5, N.VM.1-5, A.REI.5, N.REI.6, G.SRT.10, G.SRT.11

A. In this chapter, students will use more than two variables to create and solve a system of equations and inequalities. Students will be able to adapt the elimination and substitution methods of solving systems with two variables to now solve systems with three or more variables as well as learning new methods of solving, such as utilizing matrices and Cramer's Rule.

Major Topics:
Systems of Linear Equations in Two Variables
Systems of Linear Equations in Several Variables
Matrices and Systems of Linear Equations
The Algebra of Matrices
Inverses of Matrices and Matrix Equations

Determinants and Cramer's Rule
Partial Fractions
Systems of Nonlinear Equations
Systems of Inequalities

B. Unit Assignment:
After section 10.4, students will use matrix multiplication to project the population proportions of the young, juvenile and adult proportions of a population of animals. Students will use these predictions to analyze the health and growth of the population for the coming seasons in order to understand the long-term prospects of the population.

Mathematical Practices Used in Ch. 10:

- MP.2: Students will analyze a linear system of equations and inequalities and understand that there are multiple methods of solving a system – i.e. substitution, elimination, augmented matrices, Cramer's rule, etc.
- MP.4: Students will understand how to create a matrix to represent data and how matrix operations can be used to analyze the data.
- MP.5: Students will understand how a matrix can be used to represent equations and data and how to algebraically manipulate matrices to solve linear systems.

Chapter 11: Conic Sections *(approximately 9 days)*

STANDARDS
N.VM.7-12, A.REI.7-9, A.REI.12

A. In this chapter, students will understand how conic sections are different cross-sections of a cone. Students will be able to identify the equations of different conics as well as their geometric properties and their graphs.

Major Topics:
Parabolas
Ellipses
Hyperbolas
Shifted Conics
Rotation of Axes
Polar Equations of Conics

B. Unit Assignment:
At the end of the chapter, students will study the use of conics in architecture and how the geometric properties of each conic can create architectural features, such as a whispering gallery. Students will also learn practical methods by which conics could be constructed with by using practical construction tools.

Mathematical Practices Used in Ch. 11:

- MP.1: Students will be able to transform the general form of a conic into the standard form of the respective conic to determine key features.
- MP.2: Students will be able to identify the type of conic from the general form.
- MP.4: Students will be able to model real world situations with the appropriate conic type and use the key features to solve problems.

Chapter 12: Sequences and Series *(approximately 9 days)*

STANDARDS
G.GPE.2, G.GPE.3, G.GMD.4

A. In this chapter, students will study different types of sequences, such as geometric, arithmetic and the Fibonacci sequences and their applications in the real world. Students will be able to recognize, formulate and apply sequences to real world situations as well as being able to evaluate the sum of a series.

Major Topics:
Sequences and Summation Notation
Arithmetic Sequences
Geometric Sequences
Mathematics of Finance
Mathematical Induction
The Binomial Theorem

B. Unit Assignment:
At the end of this chapter, students will be able to apply their knowledge of recursive and explicit formulas of a sequence to analyze and evaluate practical problems, such as a monthly savings account as well as the accumulation of pollutants in the environment. They will be able to predict future values of account balances as well as the percentage of pollutants in the environment after n number of years.

Mathematical Practices Used in Ch. 12:

- MP.5: Students will be able to identify the strengths of using the binomial theorem vs. Pascal's triangle but still understand the complementary relationship between the two.
- MP.7: Students will discern a pattern in a sequence or series and identify whether it is arithmetic or geometric.
- MP8: Students will be able to formulate an explicit and/or recursive formula to represent various sequences and series.

Chapter 13: Limits - A Preview of Calculus *(approximately 8 days)*

STANDARDS
N.CN.8, N.CN.9, A-APR.2, A.APR.3

A. In this chapter, students will understand the definition of one-sided and the overall limit and its applications in calculus, such as finding the instantaneous rate of change as well as the area of a bounded region. Students will understand the laws and the definition of alimit of an average rate of change as the instantaneous speed.

Major Topics:
Finding Limits Numerically and Graphically
Finding Limits Algebraically
Tangent Lines and Derivatives
Limits at Infinity; Limits of Sequences
Areas

B. Unit Assignment:
By the end of the chapter, students will apply their knowledge of finding the area under a curve by finding the total distance of a car traveling for a set amount of time at a designated speed, in miles per hour.

Mathematical Practices Used in Ch. 13:

- MP.2: Students will be able to determine when the limit of a function exists both algebraically and graphically.
- MP.3: Students will be able to justify why the slope of a tangent line must equal 0 at any local maximum or minimum value and its significance.
- MP:6: Students will be able to clearly communicate the conditions for which the limit of a function does and does not exist.

Chapter 14: Probability and Statistics *(approximately 13 days)*

STANDARDS
A.SSE.4, A.APR.5, A.APR.6, A.APR.7, F.IF.3, F.BF.1a, F.BF.2, F.LE.2

A. In this chapter, students will study events that are governed by randomness and have a predictability to them. Students will understand that not all situations can be precisely determined or calculated, but can be analyzed and predicted using probability rules. Students will be able to collect, organize and analyze data using statistical methods, such as the 5-number summary.

Major Topics:
Counting
Probability
Binomial Probability
Expected Value
Descriptive Statistics (Numerical)
Descriptive Statistics (Graphical)
Introduction to Statistical Thinking
Introduction to Inferential Statistics

B. Unit Assignment:
After section 14.6, students will understand how statistics can be used to mislead and misinform. Students will then be able to analyze studies and newspaper articles that quote statistics and identify sources of potential bias.

Mathematical Practices Used in Ch. 14:

- MP.2: Students will be able to use quantitative reasoning to find the probabilities for events, including conditional probability.
- MP.5: Students will be able to use Venn diagrams appropriately to represent the probabilities for the union and intersection of two events as well as for conditional probability. Students will also be able to use a stem and leaf plot to represent data and to find a 5-number summary.
- MP.6 Students will accurately be able to calculate a 5-number summary in order to properly create a visual summary of the statistics, such as a normalized distribution or a box and whisker plot.

Comprehensive Final Exam Details

1. Students will be tested on their knowledge of the following topics:
    - Equations of Circles and Parabolas
    - Prerequisites from Algebra and Geometry
    - Trigonometric Functions
    - Analytic Trigonometry
    - Laws of Sines, Cosines
    - Polar and Vectors
    - Complex Numbers
    - Exponential and Logarithmic Functions
    - Topics in Analytic Geometry, including Conics
    - Functions and Models
    - Limits and Derivatives
    - Differentiation Rules
    - Applications of Differentiation

2. The Final Exams - much like unit/chapter exams - are detail-oriented and require students to provide detailed, step-by-step justification for their responses to each of the questions. This way, they get trained and prepared for their future AP Math courses/exams.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Integrated Math IIIB/Precalculus Accelerated
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Clark Magnet High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated II/IIIA Accelerated or Integrated II + (Summer) Integrated Math IIIA Accelerated
Recommended Textbook:	*Core Connections Integrated III* Judy Kysh, Evra Baldinger, Michael Kassarjian, Karen Wootton, et. al CPM Educational Program Second Edition, Version 5.0 *Precalculus: Mathematics for Calculus* James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition

Course Overview:

Integrated Mathematics IIIB/Precalculus Accelerated is part two of a two-part compacted math series. Following Integrated Mathematics II/IIIA Accelerated, this course provides students with instruction in the second half of the content of the Integrated Math III and all of the course content for Precalculus. This compression is designed as the single point of

acceleration at the high school level as recommended by the California Mathematics Framework. This course is aligned to the California Common Core State standards for high school mathematics and supports the Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of the mathematical relationships and concepts needed to succeed in higher level math courses.

In addition to covering the second half of Integrated III standards, this course meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

In addition to the second half of Integrated III standards, this courses covers the same material as Precalculus Honors, by adding and adds rates of change, limits and area under the curve to the standard Precalculus course.

Course Content:

Semester A

Unit 5: Inverses and Logarithms *(approximately 11 days)*

STANDARDS
F-BF.3, F-BF-4, F-BF.4a, F-LE.4, F-LE.4.2, I-IF.7e

A. Reversing is an important theme in the early part of this chapter. The first section introduces the concept of inverse relations. Students learn that reversing, or working backward to undo the action of a function, can create a new function. They explore multiple representations of functions and their inverses, and recognize that many functions have inverses that are not functions. In the second, students determine inverses of parent functions. They learn that the inverse of an exponential function is a logarithm. Reversing is emphasized once again as they learn how to convert exponential equations into logarithmic form, and vice versa. Students investigate the new family of logarithmic functions $f(x) = \log_b(x)$ for different values of b, test values on their calculators to determine the base the calculators work in, and learn to graph transformations of $f(x) = \log(x)$.

Progression of Content:
This chapter adds to students' lists of parent functions, which will continue to expand with the addition of polynomial functions in Unit 8 and trigonometric functions in Unit 9.

B. Unit Assignment(s):
Mathematics Practices Used in Unit 5:

- Students will look for and make use of structure and construct viable arguments as they develop and justify strategies for undoing functions and as they investigate different bases for logarithms..
- Students will use appropriate tools strategically and look for and make use of structure when they graph inverses of functions and write their equations.
- Students will look for and make use of structure as they verify inverses using multiple representations, and attend to precision as they restrict the domain of a function to ensure that its inverse is also a function.
- Students will construct viable arguments and critique the reasoning of others and look for and make use of structure as they apply their knowledge of parent graphs and inverses to learn about logarithms.
- Students will look for and make use of structure and express regularity in repeated reasoning as they learn the definition of logarithm and calculate the values of logarithms.
- Students will construct viable arguments and critique the reasoning of others, use appropriate tools strategically, and look for and make use of structure as they investigate logarithms with different bases.

Sample Activities:
Guess My Number Game - Students are asked to guess the number the teacher is thinking of based on the order of operations applied to the number and what the mystery number has ultimately transformed into. Students may or may not write an equation, but you may want to encourage them to do so as it will help when they progress to working with functions and inverses. Making sure that the idea of reversing, or undoing, comes up in the discussion of the "Guess My Number" game. You undo each step, reversing the original Order of Operations.

Graph the Inverse Function - Students will be looking at strategies for creating graphs of inverse functions. The first two graphs have functions that they are capable of finding the equation of their inverse functions but the third function does not lend itself to be solved for the inverse function. Teams could make a mini-table of some coordinates from the graph and then use it to help make a mini-table for the inverse graph. Students will soon discover that the line $y = x$ is the line of symmetry.

Unit 7: Logarithms and Triangles *(approximately 13 days)*

STANDARDS
F-LE.3, F-LE.4, F-LE.4.1, F-LE.4.3, A-SSE.2, F-BF.1, F-IF.7e, G-SRT.9+, G-SRT.10+, G-SRT.11+

A. In this unit, students return to their work with logarithms to develop tools they can use when solving application problems involving exponential equations. In the first half of this unit, students investigate the family $y = \log(m^n)$ and discover the Power Property of Logarithms, which allows them to solve exponential equations by using logs to undo or rewrite the equation. Students generalize from number patterns to make conjectures about other properties of logarithms and then prove these properties. Furthermore, students develop and share strategies to write the equation of the exponential function with a given asymptote that passes through two given points. Then they use that equation to make predictions.

The remainder of this unit focuses on completing a tool kit for calculating missing parts of non-right triangles. Students identify the types of information needed to determine all of the missing sides and angles of a triangle. Through this exercise, students also identify triangles for which they do not yet have the tools to determine missing parts. Students notice that they *do* have enough tools to calculate the measures and side lengths of right triangles. This leads to the question, "*What if the triangle is not a right triangle?"* Students then develop the Law of Sines and Law of Cosines so that they have a complete set of tools to determine the other missing parts of any triangle (when sufficient information is provided).

The unit concludes with students looking at different application problems using triangles and identifying which tools are most useful in each situation. In addition, students investigates the ambiguous case of triangles: SSA. This lesson is offered for accelerated classes or those that could benefit from a complete view of the relationships between the sides and angles of a triangle. Working through the problems of this lesson before you decide to use the lesson with your students is highly recommended.

Progression of Content:
The work with logarithms in this unit prepares students for future work in a pre-calculus course. Working with Law of Sines and Cosines and reviewing the use of right triangle trigonometry and special right triangles prepares students for working with the trigonometric family of functions in Unit 9.

B. Unit Assignment(s):
Mathematics Practices Used in Unit 7:

- Students will look for and make use of structure and express regularity in repeated reasoning while they develop the Power Property of Logarithms, learn other properties of logs and how to rewrite equations with different bases.

- Students will make sense of problems and reason abstractly and quantitatively as they write the equation of an exponential function given two points and an asymptote.
- Students will make sense of problems and persevere in solving them, model with mathematics, and reason abstractly and quantitatively as they explore exponential functions with an asymptote other than $y = 0$ and apply logarithms to solve an exponential equation.
- Students will make sense of problems and persevere in solving them as they figure out what information they need to solve for parts of triangles. They will need to attend to precision as they communicate what they know and do not know.
- Students will look for and express regularity in repeated reasoning as they develop the ratios for the Law of Sines.
- Students will make sense of problems and persevere in solving them using the Law of Cosines.
- Students will attend to precision as they work with triangles involving the SSA relationship. They must also use appropriate tools strategically as they explore the ambiguous case of the Law of Sines.
- Students will reason abstractly and quantitatively as they make sense of problems and persevere in solving them. They will attend to precision as they solve the problems and communicate within their teams, labeling diagrams, attending to units, and calculating their answers accurately.

Sample Activities:
"The Case of the Cooling Corpse" - a problem in which students model the falling temperature of a corpse to establish time of death and solve a murder mystery. In order to solve the mystery, students will need to decide which information is relevant to solving the problem (e.g., body temperature, times listed on sign-in sheets, etc.) . Students will need to write and solve a system of exponential functions, with a horizontal asymptote representing the room temperature, the independent variable as time, and the dependent variable as the temperature of the body.

Solving Triangles - This activity consists of eight independent triangle problems (suggestion is to assign one problem to a group of 3-4 students) that will provide students with a chance to consolidate their understanding of the various tools and strategies they have developed so far to solve triangle problems. Some problems may be solved using the Law of Sines, Law of Cosines, or a combination of both. Students will present their assigned problem to the entire class and their process for solving the assigned problem.

Unit 8: Polynomials *(approximately 15 days)*

STANDARDS
A-APR.1, A-APR.2, A-APR.4, A-APR.6, A-APR.3, F-IF.4, F-IF.7c, N-CN.8+, N-CN.9+, A-SSE.2, A-CED.2, F-BF.1

A. In the first section, students will investigate the equation ↔ graph connections for polynomial functions. They will recognize that equations in factored form are much easier to sketch, and they will understand the relationship between the factors and the x-intercepts of the graph. Then, in the second section, they will develop an understanding of imaginary and complex numbers and recognize that polynomial functions can have complex roots. In the third and last section, they will learn to divide polynomials by a known factor to find other factors. This will allow them to determine complex and irrational roots of some cubic and quartic functions.

Progression of Content:
Students will build on their understanding of function families in Unit 9, where they study trigonometric functions and transform the graphs of sine and cosine functions. Students will use their algebra skills when they study rational expressions in Unit 11. Students will also use their algebra skills when they prove formulas for sums of series in Unit 10 and solve trigonometric identities in Unit 12.

B. Unit Assignment(s):
Mathematics Practices used in Unit 8:

- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they discuss factored form and describe the graphs of polynomials and their understanding of the stretch. Students will also look for and make use of structure as they draw graphs of polynomials.
- Students will look for and make use of structure as they continue their polynomial investigation. Students will also construct viable arguments and critique the reasoning of others as they consolidate their results on polynomials.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others as they develop their understanding of a stretch factor. Student will also model with mathematics as they develop an equation for the roller coaster problem first introduced in the first lesson of Unit 8.
- Students will look for and make use of structure as they use polynomial division to determine factors of polynomials. Students will also construct viable arguments and critique the reasoning of others as they develop their understanding of polynomial division.
- Students will look for and make use of structure as they use complex roots to write equations of quadratic functions and express regularity in repeated reasoning as they identify polynomial identities to help them factor. Students will also look for and express regularity in repeated reasoning as they identify patterns in the sums and products of complex roots.
- Students will make sense of problems and persevere in solving them and construct viable arguments and critique the reasoning of others when they determine all

roots of a polynomial with a degree greater than two and when they determine all roots of a polynomial with a degree greater than two.

Sample Activities:
Polynomial Function Investigation - Students are instructed to look for, label, and describe the *x*-intercepts and "bounces" (double roots, although students will probably not use this term), the *y*-intercept, the number of turns, and the behavior of graphs for very large and very small *x*-values. They should share and discuss all of their graphs and their observations within their teams. The discussion should lead to conjectures and the creation of several new equations to try. Students are coming up with methods for determining the *x*- and *y*-intercepts, predictions about the numbers of crossings of the *x*-axis, and ideas for determining a reasonable window or maximum and minimum approximations.

Game of Polydoku - By treating division as a puzzle and using the organizational device of an area model, students can use logical reasoning to reverse the multiplication process and figure out a missing factor. Once they have worked through the process several times, they should be able to set up and solve their own division problems. This method is as efficient as (if not more efficient than) polynomial "long division" and you can use it to develop synthetic division if that is part of your curriculum. This game introduces polynomial division by challenging students to reverse the process of polynomial multiplication.

Unit 11: Rational Expressions and Three-Variable Systems *(approximately 6 days)*

STANDARDS
A-APR.7+

A. In this chapter, students will focus on operations with rational expressions. Students did a function investigation in Unit 1 that previewed the investigation of rational expressions. Students learn a powerful method of simplifying rational expressions that uses properties of the number 1 and the properties of exponents. In a previous course, students learned to solve a system of two linear equations in two variables, and they reviewed this topic in Chapter 3 of this text.

Progression of Content:
The remaining chapter requires students to use their algebra skills to solve trigonometric identities. In future courses, students may use matrices to solve systems of equations.

B. Unit Assignment(s):
Mathematics Practices Used in Unit 11:

- Students will look for and make use of structure as well as look for and express regularity in repeated reasoning as they use the number 1 to understand rational expressions.

- Students will also look for and make use of structure as well as look for and express regularity in repeated reasoning as they connect multiplication and division of fractions to that of rational expressions.
- Students will look for and make use of structure as they make connections between adding and subtracting fractions and adding and subtracting rational expressions, and as they locate points in three-dimensional space. They will construct viable arguments and critique the reasoning of others as they justify their strategies.
- Students will continue to look for and make use of structure as well as look for and express regularity in repeated reasoning as they work with rational expressions. They will construct viable arguments and critique the reasoning of others as they investigate the closure of rational expressions under operations.
- Students will reason abstractly and quantitatively and look for and express regularity in repeated reasoning as they write the equation of a quadratic function by solving a system of three equations with three unknowns.

Sample Activity:
Giant One - Students are encouraged to rewrite rational expressions to create fractions that will reduce to one. The new expressions will be reduced to its simplest form. This strategy to rewrite will allow students to simplify rational expression after doing basic operations on the original expressions.

Chapter 1: Fundamentals *(approximately 15 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, N.CN.7, A.SSE.3a, A.CED.1, A.CED.2, A.CED.3, A.CED.4, A.REI.2, A.REI.3, A.REI.4, A.RED.4a, A.REI.4b, F.IF.1, F.IF.2, F.IF.4, F.IF.5, F.IF.7, F.IF.7b, F.IF.8, G.GPE.1, G.GPE.5, G.GPE.6, G.GPE.7

A. In the first chapter, students will review the real numbers, equations and the coordinate plane. Students will get a fresh look at these review concepts by applying them to real world problems.

Major Topics:
Real numbers
Exponential, radical and rational expressions
Complex numbers
Inequalities
Lines, circles

B. Unit Assignment:
After completing section 1.12, students will use their understanding of proportionality to determine how a frog's size relates to its sensitivity to pollutants in the environment. They will explore how animals, of the same body type, will have a skin area and volume

that are proportional to the length of their body. The students will be able to calculate proportionality according to body length, weight, surface skin area, and volume.

Mathematical Practices Used in Ch. 1:

- MP.1: Students will explain to themselves the meaning of a problem and look for entry points to its solution. They analyze givens, constraints, relationships and goals for modeling questions regarding inequalities and proportions. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt.
- MP.2: Students make sense of quantities and their relationships in problem situations. They are able to abstract a given situation and represent the relationship between two variables symbolically, as in direct and indirect variation.
- MP.3: Students learn how to use stated assumptions, definitions and previously established results in constructing arguments and equations to represent real world situations. They will utilize the distance*rate=time equation and proportional relationships to analyze situations that take into account the context of each question.

Chapter 2: Functions *(approximately 10 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.CED.2, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7a, F.IF.7b, F.IF.8, F.IF.8a, F.BF.1, F.BF.1a, F.BF.1b, F.BF.3, F.BF.4, F.BF.4a, F.BF.4b, F.BF.4c, F.BF.4d, F.LE.2, S.ID.6a, S.ID.6b, S.ID.7

A. In this chapter students will study functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Graphs of Functions
Average Rate of Change of a Function
Transformations of Functions
Combining Functions
One-to-one Functions and their Inverses

B. Unit Assignment:
After completing Section 2.3, students will give a verbal summary of a situation described by a graph. In this assignment students describe, or tell the story that corresponds to a, given graph as well as make graphs that corresponds to a real-world "story".

Mathematical Practices Used in Ch. 2:

- MP.4: Students will model linear relationships in real world situations and use average rate of change to interpret and quantify the relationship between two variables.
- MP.6. Students will label axes and specify key points to clearly and accurately represent the different type of basic functions such as the linear function, reciprocal function and greatest integer function. Students will also attend to precision for piece-wise functions, ensuring that endpoints are clearly marked and representative of the corresponding domains.
- MP.7: Students will be able to interpret average rate of change within the context of a question and express the significance of the value to the problem. The students will be able to step back and overview transformations of functions as they apply to all types of parent functions and can interpret the structure of functions as a simple transformation on the parent function.

Chapter 3: Polynomials and Rational Functions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7c, F.IF.7d, F.IF.8b, F.BF.1a

A. In this chapter students will study polynomial and rational functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Quadratic Functions and Models
Polynomial Functions and Their Graphs
Real Zeros of Polynomials
Complex Zeros and the Fundamental Theorem of Algebra
Rational Functions
Polynomial and Rational Inequalities

B. Unit Assignment
After completing Section 3.2, students will experience the process of collecting data and then analyzing the data using linear regression. In this assignment students will construct bridges out of paper and use pennies as weights to determine how strong each bridge is. Students will model the data with linear and power functions to determine which model best fits the data. The model will allow students to predict the strength of a large bridge before it is built.

Mathematical Practices Used in Ch. 3:

- MP.2: Students will be able to reason abstractly by understanding the general importance of a power function to the graph of a polynomial. The students will also be able to contextualize the significance of the end behavior and zeros of the function.

- MP.4: Students can model real world situations with fluctuations by using polynomial functions. They can use the properties of polynomial functions to help contextualize the problem.
- MP.7: Students will be able to discern a pattern in the factored form of a polynomial and its relationship to the x-intercepts of a graph. They will also be able to recognize the significance of the power function of the expanded form of a polynomial and the end behavior of the graph.

Chapter 4: Exponential and Logarithmic Functions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.3, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7e, F.IF.8b, F.BF.5, F.LE.4

A. In this chapter students will study exponential functions where the independent variable is in the exponent. Exponential functions are used in modeling many real-world situations. The inverse function of exponential functions are called logarithmic functions. Once an exponential model has been obtained, students will use the model to predict things such as the size of a population or the growth of an investment.

Major Topics:
Exponential Functions
The Natural Exponential Function
Logarithmic Functions
Laws of Logarithms
Exponential and Logarithmic Equations
Modeling with Exponential Functions
Logarithmic Scales

B. Unit Assignment:
After completing Section 4.3, students will use logarithms or orders of magnitude to compare sizes of objects. It is often difficult to compare objects that vary enormously in size. In this assignment students learn how logarithms can be used to define the concept of "order of magnitude" which provides a simple way of comparison of these objects.

Mathematical Practices Used in Ch. 4:
- MP.2: Students will be able to quantitatively understand the structure of a logarithmic and exponential function separately as well as the inverse relationship of the functions. They will also be able to understand how the key features of a graph are represented in the algebraic expressions.
- MP.4: Students will be able to model a data set by using a linear, quadratic, exponential or logarithmic expression. Students will be able to determine which function best fits the data by identifying key points as well as end behavior.

- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to fit an exponential or logarithmic curve to model a data set.

Semester B

Chapter 5: Trigonometric Functions: Unit Circle Approach *(approximately 8 days)*

STANDARDS
N.Q.2, N.Q.3, F.IF.8, F.LE.2, F.TF.1, F.TF.2, F.TF.3, F.TF.8, G.SRT.6, G.SRT.7, S.ID.6a

A. In this chapter students will study one way of viewing trigonometric functions, as functions of real numbers. Students will see in this chapter how the trigonometric functions are used to model periodic motion.

Major Topics:
The Unit Circle
Trigonometric Functions of Real Numbers
Trigonometric Graphs
Inverse Trigonometric Functions and Their Graphs
Modeling Harmonic Motion

B. Unit Assignment:
After completing Section 5.3 students will consider an application to biology. In this assignment students will use sine functions to model the population of a predator and its prey. An isolated island is inhabited by two species of mammals: lynx and hares. The lynx are *predators* who feed on the hares, their *prey*. Students will find functions of the form y=asink(t-b)=c that model the lynx and hare populations from a given graph.

Mathematical Practices Used in Ch. 5:

- MP.2: Students will be able to reason abstractly by understanding how the even-odd properties of a trigonometric function is related to the direction of rotation of the angle measure and the quadrant in which the terminal side is drawn.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to model periodic phenomena with a sinusoidal function. Students will be able to fit a trigonometric function by identifying the key features of the graph.
- MP.6: Students will be able to clearly define the meaning of the variables in a trigonometric equation by identifying which is an angle and what specific ratio is defined. Students will also be able to accurately label axes according to the expression being graphed, whether the unit circle or a trigonometric function.

Chapter 6: Trigonometric Functions: Right Triangle Approach *(approximately 9 days)*

STANDARDS
F.TF.3, F.TF.4, G.SRT.6, G.C.5

A. In this chapter students will study another way of viewing trigonometric functions, as functions of angles. Students will see in this chapter the relationships between angles and distances.

Major Topics:
Angle Measures
Trigonometry of Right Triangles
Trigonometric Functions of Angles
Inverse of Trigonometric Functions and Right Triangles
The Law of Sines
The Law of Cosines

B. Unit Assignment:
After completing Section 6.2 students will investigate how areas and volumes of similar figures change as the size of the figure increases (or decreases). In this assignment students will find power functions that relate these quantities and use those functions to explore the possibility of the existence of a real-life giant ape. Students will begin by finding some properties of similar figures.

Mathematical Practices Used in Ch. 6:

- MP.1: Students will be able to analyze the given information for an oblique triangle and will persevere in determining the best law (either law of cosines or sines) to solve the triangle. Students will also be able to determine when the ambiguous case for the law of sines applies and will solve for both possible triangles, when necessary.
- MP.3: Students will be able to determine when, for an ambiguous triangle, the second case does or does not work and can create a viable argument as to why.
- MP.4: Students will be able to model real world situations with right and oblique triangles and will be able to use the laws of cosine and sine and the properties of right triangles to determine distances and angles.

Chapter 7: Analytic Trigonometry *(approximately 8 days)*

STANDARDS
N.Q.1, N.Q.2, F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.7, F.TF.8

A. In this chapter students will study algebraic properties of trigonometric functions. Students will simplify and factor expressions and solve equations that involve trigonometric functions.

Major Topics:
Trigonometric Identities
Addition and Subtraction Formulas
Double-Angle, Half-Angle and Product-Sum Formulas
Basic Trigonometric Equations

B. Unit Assignment:
After completing Section 7.3 students will use trigonometry to find the best location from which to view a painting or a movie. In this assignment, students will use graphing devices and the Law of Cosines to find the best viewing angle possible.

Mathematical Practices Used in Ch. 7:

- MP.1: Students will look for entry points to a trigonometric identity proof and will persevere in looking for relationships to equate the two expressions. Students will analyze the given expressions to determine a solution pathway instead of jumping into a solution attempt.
- MP.2: Students will be able to reason through a trigonometric equation by being able to reason abstractly and seeing a quadratic form that requires factorization. Students will also be able to reason quantitatively by identifying the relationships between the ratios of sides with the corresponding angle measures.
- MP.3: Students will be able to build a logical progression of statements to provide a proof for a trigonometric identity by utilizing the quotient identities, Pythagorean identities, as well as the sum, difference, double- and half-angle formulas.

Chapter 8: Polar Coordinates and Parametric Equations *(approximately 7 days)*

STANDARDS
F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.8

A. In this chapter students will study a different way of locating points in the plane. Instead of using rectangular coordinates to specify a location, students will give distance and direction from a fixed reference point.

Major Topics:
Polar Coordinates
Graphs of Polar Equations
Polar Form of Complex Numbers: De Moivre's Theorem
Plane Curves and Parametric Equations

B. Unit Assignment:
After completing the chapter, students will use parametric equations and trigonometry to model the path of a projectile in motion. Students will be able to utilize coordinate geometry to realize how changing the angle of projection affects the domain and range of motion.

Mathematical Practices Used in Ch. 8:

- MP.1: Students will be able to visualize the graphing of a complex number as it relates to right triangle trigonometry and how this relationship allows for the conversion between rectangular and polar systems.
- MP.2: Students will be able to relate the roots of a complex number as points equally spaced about a circle and will be able to relate the periodicity of a sinusoidal function to help identify the polar form of the roots.
- MP.3: Students will be able to analyze the relationship between rectangular coordinates and the path of a point moving on a plane to eliminate a parameter and convert between rectangular and parametric equations.

Chapter 9: Vectors in Two and Three Dimensions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, F.TF.6, F.TF.7, G.SRT.8, G.SRT.9

A. In this chapter students will be able to represent quantities, such as force, with vectors that are defined by magnitude and direction. Students will also study how several forces acting on an object will affect the movement of that object.

Major Topics:
Vectors in Two Dimensions
The Dot Product
Three-Dimensional Coordinate Geometry
Vectors in Three Dimensions
The Cross Product
Equations of Lines and Planes

B. Unit Assignment:
After completing the chapter, students will use vector fields to model real-world scenarios, like the gravitational force on the earth or wind on the surface of the earth. Students will be able to then analyze the vector fields to identify the center and direction of motion.

Mathematical Practices Used in Ch. 9:

- MP.4: Students will be able to graph vectors in the cartesian system and use the dot product to find the angle between two vectors as well as the direction angles of a vector.

- MP.5: Students will use proper graphing utilities to help them visualize and analyze three-dimensional vectors and cross product vectors.
- MP.6: Students will attend to precision by properly drawing and labeling axes to graph in three dimensions.

Chapter 10: Systems of Equations and Inequalities *(approximately 15 days)*

STANDARDS
N.Q.1-3, N.CN.4, N.CN.5, N.VM.1-5, A.REI.5, N.REI.6, G.SRT.10, G.SRT.11

A. In this chapter, students will use more than two variables to create and solve a system of equations and inequalities. Students will be able to adapt the elimination and substitution methods of solving systems with two variables to now solve systems with three or more variables as well as learning new methods of solving, such as utilizing matrices and Cramer's Rule.

Major Topics:
Systems of Linear Equations in Two Variables
Systems of Linear Equations in Several Variables
Matrices and Systems of Linear Equations
The Algebra of Matrices
Inverses of Matrices and Matrix Equations
Determinants and Cramer's Rule
Partial Fractions
Systems of Nonlinear Equations
Systems of Inequalities

B. Unit Assignment:
After section 10.4, students will use matrix multiplication to project the population proportions of the young, juvenile and adult proportions of a population of animals. Students will use these predictions to analyze the health and growth of the population for the coming seasons in order to understand the long-term prospects of the population.

Mathematical Practices Used in Ch. 10:
- MP.2: Students will analyze a linear system of equations and inequalities and understand that there are multiple methods of solving a system – i.e. substitution, elimination, augmented matrices, Cramer's rule, etc.
- MP.4: Students will understand how to create a matrix to represent data and how matrix operations can be used to analyze the data.
- MP.5: Students will understand how a matrix can be used to represent equations and data and how to algebraically manipulate matrices to solve linear systems.

Chapter 11: Conic Sections *(approximately 9 days)*

STANDARDS
N.VM.7-12, A.REI.7-9, A.REI.12

A. In this chapter, students will understand how conic sections are different cross-sections of a cone. Students will be able to identify the equations of different conics as well as their geometric properties and their graphs.

Major Topics:
Parabolas
Ellipses
Hyperbolas
Shifted Conics
Rotation of Axes
Polar Equations of Conics

B. Unit Assignment:
At the end of the chapter, students will study the use of conics in architecture and how the geometric properties of each conic can create architectural features, such as a whispering gallery. Students will also learn practical methods by which conics could be constructed with by using practical construction tools.

Mathematical Practices Used in Ch. 11:

- MP.1: Students will be able to transform the general form of a conic into the standard form of the respective conic to determine key features.
- MP.2: Students will be able to identify the type of conic from the general form.
- MP.4: Students will be able to model real world situations with the appropriate conic type and use the key features to solve problems.

Chapter 12: Sequences and Series *(approximately 9 days)*

STANDARDS
G.GPE.2, G.GPE.3, G.GMD.4

A. In this chapter, students will study different types of sequences, such as geometric, arithmetic and the Fibonacci sequences and their applications in the real world. Students will be able to recognize, formulate and apply sequences to real world situations as well as being able to evaluate the sum of a series.

Major Topics:
Sequences and Summation Notation
Arithmetic Sequences

Geometric Sequences
Mathematics of Finance
Mathematical Induction
The Binomial Theorem

B. Unit Assignment:
At the end of this chapter, students will be able to apply their knowledge of recursive and explicit formulas of a sequence to analyze and evaluate practical problems, such as a monthly savings account as well as the accumulation of pollutants in the environment. They will be able to predict future values of account balances as well as the percentage of pollutants in the environment after *n* number of years.

Mathematical Practices Used in Ch. 12:

- MP.5: Students will be able to identify the strengths of using the binomial theorem vs. Pascal's triangle but still understand the complementary relationship between the two.
- MP.7: Students will discern a pattern in a sequence or series and identify whether it is arithmetic or geometric.
- MP8: Students will be able to formulate an explicit and/or recursive formula to represent various sequences and series.

Chapter 13: Limits - A Preview of Calculus *(approximately 8 days)*

STANDARDS
N.CN.8, N.CN.9, A-APR.2, A.APR.3

A. In this chapter, students will understand the definition of one-sided and the overall limit and its applications in calculus, such as finding the instantaneous rate of change as well as the area of a bounded region. Students will understand the laws and the definition of alimit of an average rate of change as the instantaneous speed.

Major Topics:
Finding Limits Numerically and Graphically
Finding Limits Algebraically
Tangent Lines and Derivatives
Limits at Infinity; Limits of Sequences
Areas

B. Unit Assignment:
By the end of the chapter, students will apply their knowledge of finding the area under a curve by finding the total distance of a car traveling for a set amount of time at a designated speed, in miles per hour.

Mathematical Practices Used in Ch. 13:

- MP.2: Students will be able to determine when the limit of a function exists both algebraically and graphically.
- MP.3: Students will be able to justify why the slope of a tangent line must equal 0 at any local maximum or minimum value and its significance.
- MP:6: Students will be able to clearly communicate the conditions for which the limit of a function does and does not exist.

Chapter 14: Probability and Statistics *(approximately 13 days)*

STANDARDS
A.SSE.4, A.APR.5, A.APR.6, A.APR.7, F.IF.3, F.BF.1a, F.BF.2, F.LE.2

A. In this chapter, students will study events that are governed by randomness and have a predictability to them. Students will understand that not all situations can be precisely determined or calculated, but can be analyzed and predicted using probability rules. Students will be able to collect, organize and analyze data using statistical methods, such as the 5-number summary.

Major Topics:
Counting
Probability
Binomial Probability
Expected Value
Descriptive Statistics (Numerical)
Descriptive Statistics (Graphical)
Introduction to Statistical Thinking
Introduction to Inferential Statistics

B. Unit Assignment:
After section 14.6, students will understand how statistics can be used to mislead and misinform. Students will then be able to analyze studies and newspaper articles that quote statistics and identify sources of potential bias.

Mathematical Practices Used in Ch. 14:

- MP.2: Students will be able to use quantitative reasoning to find the probabilities for events, including conditional probability.
- MP.5: Students will be able to use Venn diagrams appropriately to represent the probabilities for the union and intersection of two events as well as for conditional probability. Students will also be able to use a stem and leaf plot to represent data and to find a 5-number summary.

- MP.6 Students will accurately be able to calculate a 5-number summary in order to properly create a visual summary of the statistics, such as a normalized distribution or a box and whisker plot.

Comprehensive Final Exam Details

1. Students will be tested on their knowledge of the following topics:
    - 3-Variable Systems
    - Prerequisites from Algebra and Geometry
    - Trigonometric Functions
    - Analytic Trigonometry
    - Laws of Sines, Cosines
    - Polar and Vectors
    - Complex Numbers
    - Exponential and Logarithmic Functions
    - Topics in Analytic Geometry, including Conics
    - Functions and Models
    - Limits and Derivatives
    - Differentiation Rules
    - Applications of Differentiation
2. The Final Exams - much like unit/chapter exams - are detail-oriented and require students to provide detailed, step-by-step justification for their responses to each of the questions. This way, they get trained and prepared for their future AP Math courses/exams.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Precalculus (*Formerly Math Analysis)*
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated III
Recommended Textbook:	*Precalculus* Josea Eggink, Samantha Falkner, Emily Kaffel, Mark Ray, Jeanne Villeneuve, Karen Wooton, Erin Yao CPM Educational Program Third Edition
Course Overview:	Precalculus meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

The course is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson. With the emergence of new technology, many lessons have moved beyond a traditional handheld device and are written with Desmos eTools as an integral component. The curriculum contains several key labs and hands-on activities to introduce and connect concepts, with an emphasis on modeling.

A focus on algebra is woven throughout the course. Students investigate equivalent expressions and practice setting up word problems right from the start. Students use algebra to manipulate inverse, composite, and piecewise-defined functions as well as investigate characteristics of functions and transformations of functions. Students continue rewriting expressions, solving complicated equations and systems, and use algebra to solve word problems. Algebraic manipulation is practiced throughout the rest of the course as students work with limits, rates of change, trigonometric expressions, complex numbers, series, conic sections, and area under the curve.

Careful consideration was given to the sequencing of the concepts in the course to allow for mastery over time while meeting the content standards of a 4th year course. The book is designed to be a year-long course and allows teachers to choose topics that fit the needs of their students. One option using this text is a course that focuses on the 4th year math standards: algebra, functions, trigonometry, complex numbers, conic sections, probability, vectors, and matrices. Another option is a course that focuses on Calculus readiness with topics such as rates of change, limits, and area under the curve.

Course Content:

Semester A

Unit 1: **Preparing for Your Journey** *(approximately 15 days)*

STANDARDS
F.if.4, F.IF.5, F.BF.1, A.CED.1, A.CED.2, F.IF.5, A.SSE.2, A.APR.6, F.BF.1c, F.BF.4, F.IF.7b

A. This unit is designed to accomplish several objectives:

- Introduce students to some of the main concepts that are part of this course.
- Introduce students to the modeling cycle.

- Have students work with functions, including inverse, composite, and piecewise-defined functions.
- Introduce students to radians and the unit circle.

The opening of this unit establishes a starting point for many of the concepts in this course. Interpreting functions and their graphs will be used extensively in the modeling process throughout the course. Solving word problems as well as algebraic manipulation are skills that are necessary throughout the course.

Progression of Content:
Students are introduced to radians and the unit circle early in the course to facilitate work with trigonometric functions in later units. Students review the inverse functions from a previous course. Understanding domain restrictions will be necessary when students learn about the graphs of the inverse trigonometric functions contained in Unit 2 and Unit 8. After reviewing inverse functions, students will investigate composite functions and use them to algebraically determine if two given functions are inverses of each other. Lastly, students define a radian and use radians to measure angles in the unit circle. This is the start of using the unit circle, which trigonometry will be applied to throughout the course. The last lesson in this section examines angular motion vs. linear motion.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 1:

- Students will model with mathematics, attend to precision, look for and make use of structure as they collect data from the Spring Problem
- Students will make sense of problems and persevere in solving them, construct viable arguments and critique the reasoning of others, look for and make use of structure as they work to find the inverse of functions graphically, on a table, and a rule

Sample Activities:
The Spring Problem - Students engage with a notice and wonder through this activity as they conduct a lab using a spring with a weight attached at the end. In order to gather data from this activity, students video record the motion of the spring and weight in order to make a table and graph the results. Finally, students use the their model to make various predictions of the position of the wight at different times.

The Inverse of Function - Students will review how to write an inverse function by "undoing" and learn how to algebraically verify that functions are inverses. Students will see the inverse of a function graphically, on a table, and through its rule.

Unit 2: **Functions and Trigonometry** *(approximately 14 days)*

STANDARDS
F.IF.4, F.IF.7, F.BF.3, F.TF.3, F.TF.4, F.IF.7e, F.TF.2, A.REI.10, F.TF.6

A. This unit is designed to accomplish several objectives:

- Describe graphs as increasing/decreasing, concave up/concave down, and state the location(s) of maxima and minima.
- Identify graphs of functions as even, odd, or neither. Or, given the equation of a function, algebraically show that the function is even, odd, or neither.
- Develop fluency with angles and coordinates in the unit circle.
- Generate the parent graphs for sine and cosine and use them in a variety of transformations.
- Generate the parent graphs for inverse sine, inverse cosine, tangent, and inverse tangent.
- Solve basic trigonometric equations over specified domains.

In the first section of this unit, students will review attributes used to describe functions. Concavity will be introduced and students will use algebra to show that functions are even, odd, or neither. Then transformations of functions will be investigated. Again, much of this will be review from a previous course, but will now include horizontal stretches.

In Unit 1, students were introduced to radians and the unit circle. They have practiced a number of problems to reinforce key angle measurements and have worked with special triangles to develop ratios for 45º-45º-90º and 30º-60º-90º triangles. Now they will use these ideas to generate the key coordinates in the unit circle and develop the graphs of sine and cosine.

The second section is devoted to the development of sine and cosine from the standpoint of the unit circle. Students first locate the coordinates for the special angles they used in Unit 1. They then see that the sine ratio corresponds to the y-coordinate and the cosine ratio corresponds to the x-coordinate. Using these values, students develop the Pythagorean Identity. From here, students will graph $y = \sin(q)$ and $y = \cos(q)$ using the unit circle. The section continues with transformations of the graphs of sine and cosine.

In the last section, students begin by solving trigonometric equations. Here students will see that these equations can have multiple, and even an infinite number of, solutions. They will use graphs and the unit circle to generate the solutions to these equations. Students will then use $y = \sin^{-1}(x)$ and $y = \cos^{-1}(x)$ to solve for angles which are not the special angles in the unit circle. Finally, students generate the graphs of inverse sine, inverse cosine, tangent, and inverse tangent.

Progression of Content:
In this unit, students work with transformations of sine and cosine and applied these transformations to a few applications. Then in Unit 8, students extend their work with trigonometric functions to more complex situations; model situations with sinusoidal functions that have both a horizontal shift and a period other than 2π; graph and apply the reciprocal trigonometric functions; develop other trigonometric tools for simplifying expressions using formulas involving sums of angles.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 2:

- Look for and make use of structure, reason abstractly and quantitatively.
- Use appropriate tools strategically, look for and make use of structure, look for and express regularity in repeated reasoning.
- Construct viable arguments and critique the reasoning of others, look for and make use of structure, look for and express regularity in repeated reasoning.
- Use appropriate tools strategically, attend to precision.
- Make sense of problems and persevere in solving them, use appropriate tools strategically, attend to precision, look for and make use of structure.

Sample Activities:
The Unit Circle - Students determine the coordinates of the intersection of the terminal side of a special angle with the unit circle. Students will cut out two special right triangles from a resource page. Sides of the special triangles will be labeled using the exact values on both sides of the paper. This will ensure that the labels are shown when the triangles are flipped over. By placing each of the special right triangles on the x-axis, students will be able to find the coordinates of each of the special angles and repeat the process in all four quadrants to complete the unit circle.

Solving Trigonometric Equations - To solve an equation such as sin x =12, students are directed to draw a unit circle and also graph y = 12, which is a horizontal line. The intersections of the unit circle and the horizontal line will show students the solutions as well as number of solutions. By treating this problem as a system of equations, students are made aware of the connections the solutions are graphically and algebraically. In the same problem, students are asked how many more solutions there could be if we were allowed to continue to revolve around the circle. Eventually the next time students come across this type of problem, they will know to convert the unit circle into a sinusoidal graph and will see the horizontal line having multiple intersections with the sinusoidal graph to help them find all solutions.

Unit 3: **Algebra and Area Under the Curve** *(approximately 11 days)*

STANDARDS
A.APR.6, A.APR.7, A.SSE.2, A.REI.7, A.REI.11, F.BF.1, A.CED.1

A. In Unit 3, students begin by practicing and strengthening their algebraic manipulation skills as they continue to write equivalent rational expressions and complex fractions. Students learn how substitution can help solve equations and systems of equations. Students then finish up this unit by solving a series of word problems using their algebra skills.

   Another focus of this unit is approximating the area under a curve using summation notation. This concept is one of the major themes of calculus. The goal is to understand what area under a curve can represent and how to approximate it using rectangles.

Progression of Content:
Area under a curve is one of the main ideas in calculus. In this unit, students will be taught background information that will provide a deeper understanding of integration in calculus. The goal in this section is for students to understand the meaning of area under a curve.

B. Unit Assignment(s):
Mathematical Practices used in Unit 3:

- Students will make sense of problems and persevere in solving them, look for and make use of structure, construct viable arguments and critique the reasoning of others as they add, subtract, multiply, and divide rational expressions.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, reason abstractly and quantitatively as they calculate sums by expanding sigma notation as well as write finite arithmetic series in sigma notation.

Sample Activities:
Growth Mindset (Jo Boaler) - In the first lesson of this unit, teachers are encouraged and given the tools to discuss the concepts of the importance of everyone, especially students, learning from their mistakes through error analysis and dendrite growth.

Unit 4: **Polynomial and Rational Functions** *(approximately 14 days)*

STANDARDS
F.IF.7c, A.APR.3, F.IF.4, N.CN.8, N.CN.9, A.APR.6, F.IF.7d, A.CED.1, A.CED.2

A. In this unit, students will apply their knowledge of families of functions to include polynomial and rational functions. Students will investigate the equation ↔ graph connection for these two families of functions, and learn to describe the end behavior of a function. In the first section, students will learn to graph polynomial functions from the factored forms or their equations.

Students will then work backwards, using graphs to write equations in factored form. Finally, students will learn how to identify all of the roots of a polynomial. Second section begins with a new method for rewriting equations of rational functions is introduced in this section. Students will practice graphing transformations of rational functions. Then students will investigate rational functions that have slant asymptotes and holes.

Finally, students will extend your knowledge of rational functions to graph reciprocal functions. In the last section of the chapter, students will apply what students have learned to solve polynomials and rational equations and inequalities. Finally, students will apply their knowledge of polynomial and rational functions to model and analyze everyday situations.

Progression of Content:
In calculus, polynomials are used to approximate complicated functions because they "behave nicely" and are easy to work with.

B. Unit Assignment(s):
Mathematical Practices used in Unit 4:

- Students will look for and make use of structure, construct viable arguments and critique the reasoning of others as they graph polynomial functions from equations given in factored form.
- Students will look for and make use of structure as they rewrite rational expressions to transform functions in the form $g(x) = \frac{ax+b}{x-c}$ into transformations of $y = \frac{1}{x-h} + k$.
- Students will look for and make use of structure, construct viable arguments and critique the reasoning of others as they solve polynomial and rational inequalities.

Sample Activities:
Polynomial Function Investigation - Students will investigate the graphs of polynomial functions in factored form. Use different numbers of factors with different values of the parameters will show how it will change the graph. Sample of an equation in which students need to change the parameters would is as follows: n(x)=x-a(x-b)(x-c) in which a, b, and c will be different values. Students will have a chance to compare their graphs with their teammates to see the behavior of different types of equations without having to do all of them themselves.

Unit 5: **Exponentials and Logarithms** *(approximately 14 days)*

STANDARDS
A.CED.2, F.IF.7e, F.LE.2, F.BF.5, F.LE.4

A. The start of this unit focuses on exponential functions. Students will apply what they already know about exponential functions to everyday situations. Students will then realize that sometimes two different transformations give the same result, mainly that every exponential function with a horizontal shift is equivalent to a vertical stretch. This shows graphically, as well as algebraically, that every function of the form y = a(bx–h) + k is equivalent to y = A(bx) + k. Furthermore, students will learn about the number e.

In the second half of this unit, students will review, use, and prove the properties of logarithms, each of which corresponds to a property of exponents. Students will also continue solving equations and simplifying expressions that involve logarithms and exponents. This unit is culminated through graphing the family of logarithmic functions and solving application problems.

Progression of Content:
This unit on exponential and logarithmic functions culminates students' engagement in this 4th year course.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 5:

- Students will make sense of problems and persevere in solving them, reason abstractly and quantitatively, model with mathematics, look for and make use of structure as they use exponential functions to model everyday situations
- Students will look for and make use of structure as they understand that for exponential functions, a horizontal shift can be equivalently written as a vertical stretch.
- Students will look for and make use of structure, use appropriate tools strategically, look for and express regularity in repeated reasoning as they practice converting between exponential and logarithmic equations, and investigate the basic properties of logarithms, including natural logarithms.

Sample Activities:
The number *e* - In this activity, students explore what occurs when1 cm2of bacteria reproduces at 100% rate every hour, every minute, every second, and finally every millisecond for one day. A follow up question to this activity is, "What happens to the bacteria if it reproduces *continuously*?" Students will recognize that the base of their exponential model is getting closer and closer to the number *e* and the continuous compound formula A(t)=Pert.

Proving the Logarithmic Properties Card Sort:
In this activity, students prove the Product Property of Logarithms using a card sort. Each team obtains one set of cards. Students arrange the cards in the center of their team's workspace so that everyone can participate. Students then arrange the cards in a logical manner and provide justification for each part of their proof. Justifications can be written on sticky notes or blank cards so that they are easily moved as well. The teacher verifies that each team has the correct proof before allowing them to move on. Students prove the Quotient and Power Properties in a similar format.

Semester B

Unit 6: **Triangles and Vectors** *(approximately 15 days)*

STANDARDS
G.SRT.9, G.SRT.10, G.SRT.11, N.VM.1, N.VM.2, N.VM.4, N.VM.5, N.VM.3

A. Two useful tools for solving situational problems are triangles and vectors. Many everyday situations involve triangles, so students will need to be able to solve any triangle with minimal given information. In first section, students will develop and use the Law of Sines and the Law of Cosines to solve non-right triangles. Students will

learn to solve triangles when the given information does not create one unique triangle. In the second section, students will learn how to use vectors to describe motion; complete vector operations both graphically and algebraically; apply your knowledge of vectors to solve everyday problems.

Progression of Content:
Students are reintroduced to Law of Sines and Law of Cosines and their applications. But this will most likely be the last time students see a formal lesson on these topics. As for the lessons on vector, since this is a the first introduction to the topic, students who pursue higher math and science course will encounter them again.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 6:

- Students will look for and make use of structure as they prove, understand, and apply the Law of Sines and Law of Cosines. They will also derive the formula $A = 1/2ab\sin(C)$ for the area of a triangle.
- Students will look for and make use of structure, attend to precision, use appropriate tools strategically as they are introduced to vectors and vector notation. They will determine magnitude, direction, and/or components of a vector.
- Students will make sense of problems and persevere in solving them, attend to precision, reason abstractly and quantitatively, model with mathematics, use appropriate tools strategically as they use vectors in real world applications.

Sample Activity:
Vector Line Dance - The Vector Line Dance has students perform a series of moves in the form of a line dance. The idea is that all of the students are doing the same movements but from different starting positions. The starting position does not matter when working with vectors. This activity is "self correcting" in that students should notice if they make a mistake in their direction or distance, since students should move in unison (similar to line dancing). Once students have completed the activity, the class can discuss the idea of everyone making the same motion (steps and direction), but from different positions. This develops the notion that a vector has a direction and length (magnitude).

Unit 8: **Extending Periodic Functions** *(approximately 16 days)*

STANDARDS
F.BF.3, F.TF.7, A.CED.2, F.TF.9, F.TF.10

A. In Unit 2, students worked with transformations of sine and cosine and applied these transformations to a few applications. This unit extends their work with trigonometric functions to more complex situations. Students will model situations with sinusoidal functions that have both a horizontal shift and a period other than 2π. Students will graph and apply the reciprocal trigonometric functions. You will also develop other

trigonometric tools for simplifying expressions using formulas involving sums of angles.

Progression of Content:
In Calculus, students will be using trigonometric functions to find derivatives and find integrals.

B. Unit Assignment(s):
Mathematical Practices used in Unit 8:

- Students will look for and make use of structure as they combine a horizontal stretch and shift of the same trigonometric function and set up a modeling problem.
- Students will model with mathematics as they generate trigonometric models for real-world applications.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, use appropriate tools strategically as they graph $y = \csc(x)$, $y = \sec(x)$, and $y = \cot(x)$; prove trigonometric identities.
- Students will use appropriate tools strategically as they use geometry to visualize the trigonometric functions.

Sample Activity:
Graphing Reciprocal Trigonometric Functions - Students will use the graphs of sine, cosine, and tangent to graph their respective reciprocal functions cosecant, secant, and cotangent. Students are encouraged to use the symmetry of the graph to save themselves time. For example, once they have values for sine and cosecant between $x = 0$ and $x = \pi$, they can use the same values (but negative) between $x = \pi$ and $x = 2\pi$. Students will see that the x-intercepts of $y = \sin(x)$ become the locations of the asymptotes for its reciprocal function. These asymptotes should help students identify the domain and asymptotes for the reciprocal functions.

Unit 9: **Matrices** *(approximately 13 days)*

STANDARDS
N.VM.6, N.VM.7, N.VM.8, N.VM.9, N.VM.10, N.VM 11, N.VM.12, A.REI.8, A.REI.9

A. In this unit, students learn what a matrix is and how matrices, along with a graphing calculator, can be useful tools for organizing data and solving problems. Students then use matrices to solve complicated systems of equations.

   By the second half of the unit, students understand the definition of a linear transformations and relate linear transformations to matrices. Students then investigate compositions of transformations and see how transformations affect geometric figures.

Progression of Content:
This unit is an introduction to matrices, the topic of a Linear Algebra course (usually taken after Calculus) in college. Matrices are also included in college Business Math courses.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 9:

- Students will look for and make use of structure, make sense of problems and persevere in solving them as they add, subtract, and start to multiply matrices.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, make sense of problems and persevere in solving them, use appropriate tools strategically as they multiply a vector (regarded as a matrix with one row/column) by a matrix of suitable dimensions to produce another vector, and use matrix multiplication to solve problems.
- Students will reason abstractly and quantitatively, look for and make use of structure as they perform linear transformations using matrices.

Sample Activity:
The Toy Factory - Students learn to use matrices to represent linear situations that involve several variables needed to make two types of toys, cars and trucks requiring different amount of wheels, seats, and different costs to manufacture each type of toy. The goal of the activity is for students to determine whether or not a particular request from a buyer can be fulfilled.

Unit 10: **Conics and Parametric Functions** *(approximately 15 days)*

STANDARDS
G.GPE.3.1, F.IF.10

A. In this unit, students will analyze shapes that result from slicing a cone with a plane. These shapes are called conic section. In the first section, students will look at circles, ellipses, hyperbolas, and parabolas. They will generate the conics and derive their equations using the formal definitions. Students will recognize conic sections from their equations and complete the square to rewrite the equations in graphing form. Second section focuses on parametrically-defined functions. Students are introduced to the concept of defining x and y in terms of the parameter t. They will see how parametrically-defined functions can be used to model situations involving motion. The final lesson in this section has students solve problems using projectile motion. This is much more powerful than the past work students have completed with parabolas.

Progression of Content:
In calculus, a chapter is devoted to developing calculus tools for other forms of equations: polar, parametric, and vector.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 10:

- Students will look for and make use of structure, reason abstractly and quantitatively, use appropriate tools strategically, attend to precision as they derive the equation of a circle and practice completing the square, derive the equation of a hyperbola and ellipse, rewrite parametric equations representing conic sections in rectangular form, apply their knowledge of parametric equations to everyday situations.

Sample Activities:
Where is the Center - Students are reintroduced to algebra tiles which they have used in previous course to rewrite quadratic equation into perfect square forms to solve them. Now they will use algebra tiles to complete the square on both x and y variables which will help in rewrite conic section equations into graphing form. The use of the manipulatives allows students, especially those unfamiliar with completing the square or that lack the experience with algebra tiles to get a full understanding as to why it is called completing the square. Once equations of a circle in this problem are rewritten in this form, students can easily identify the center of the circle.

Flick a Coin - This demonstrates how vertical motion is not affected by horizontal motion. To do this, one coin is flicked while the other coin is dropped. The teacher will need to do a demonstration for the whole class. Fold the 3" × 5" index card in half lengthwise, then fold each half (again lengthwise) in the opposite direction. Squeeze the two middle parts together with your thumb and forefinger creating a T when viewed at the end. Turn the folded index card so that the T is upside down. Lay the upside-down T on a table and place a coin on either side of the vertical center. The coins should be laid flat, resting against the center of the T, and near the end. Pinch and hold the side opposite of the coins. Slide the card so that the coins and half of the card extend beyond the edge of a flat surface. Now, imagine that this is a pinball machine flipper and quickly flick your wrist. One coin will be projected forward while the other falls straight down. Listen carefully for the sounds as they hit the floor. One sound means they hit at approximately the same time. Theoretically, the two coins should hit the ground at the same time, even though the first coin travels a longer path. This is true because the horizontal and vertical motions are independent.

Unit 11: **Polar Functions and Complex Numbers** *(approximately 15 days)*

STANDARDS
F.IF.11, N.CN.3, N.CN.4, N.CN.5, N.CN.6

A. In this unit, students transition from graphing rectangular coordinates (x, y), to polar coordinates, which use a distance and an angle. Students will then apply their work with polar coordinates to the world of complex numbers. They will graph complex numbers and learn to rewrite them in polar form. Furthermore, students will also perform operations with complex numbers in polar form, including multiplying, dividing, and computing powers and roots. This unit culminates with students

learning to plot points and graph equations using a radius and an angle, and make conversions between polar and rectangular equations

Progression of Content:
It is not until the second year of Calculus that students revisit polar functions through integration and differentiation.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 11:

- Students will look for and make use of structure, look for and express regularity in repeated reasoning as they graph polar functions, explore various polar functions, graph complex numbers.
- Students will look for and make use of structure as they convert between polar and rectangular forms.
- Students will look for and make use of structure, use appropriate tools strategically as they represent operations with complex numbers geometrically, and use conjugates to determine moduli and quotients of complex numbers.

Sample Activity:
Polar Coordinates Battleship - Directions/rules for the students are as follows:

- Mark your ships on your polar grid. Each ship must be connected to another ship, either along a ray or around a circle.
- Take turns firing out shots. Each target should be stated in four ways: positive radius and positive angle (+, +), positive radius and negative angle (+, −), negative radius and positive angle (−, +), and negative radius and negative angle (−, −). Both players should record the shots on the charts for further reference.
- If you are the opponent, verify that all of the targets stated are the same location. If not, the player forfeits their turn.
- If the shots miss a ship, the opponent declares "miss" and both players place an open circle in the appropriate location. If the shots hit a ship, the opponent declares "hit" and both players mark an X in the appropriate location.
- You must state when a ship is sunk completely.
- The goal is to sink all of your opponent's ships.

Unit 12: **Series and Statistics** *(approximately 15 days)*

STANDARDS
A.SSE.2, A.SSE.4, A.APR.5, S.MD.1, S.MD.2, S.MD.3, S.MD.4, S.MD.5

A. In this unit students will begin by calculating the sums of series. Students will derive formulas for and evaluate the sums of arithmetic and geometric series. Students will use limits to evaluate sums of infinite geometric series. At the end of this section students' skills will be applied to analyze some common situations. Second section

begins by looking for patterns in the expansion of (x + y)n and relates the patterns to Pascal's triangle. This leads the use of the Binomial Theorem for the expansion of binomials of the form (a + b)n, where n is a positive integer. Students then apply the patterns from the first lesson of this section to compute probabilities for binomial experiments. In the last section, students will understand what a discrete random variable is as well as the difference between frequency and relative frequency. They will create relative frequency tables for discrete random variables and graph probability distributions as relative frequency histograms. The section continues with calculating the mean and expected value of a discrete random variable. Once students understand these values and how to calculate them, they use these values to make decisions for everyday situations.

Progression of Content:
In Calculus, students will learn tests for determining convergence or divergence of infinite series. And students will learn basic tools if they do decide to move onto a statistical course.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 12:

- Students will look for and make use of structure, look for and express regularity in repeated reasoning, reason abstractly and quantitatively, use appropriate tools strategically as they develop a formula for the sum of an arithmetic series.
- Students will use appropriate tools strategically, look for and make use of structure, reason abstractly and quantitatively as they use limits to determine the sum for infinite geometric series.
- Students will make sense of problems and persevere in solving them, use appropriate tools strategically as they apply their knowledge of sums of geometric series to solve problems involving everyday situations and develop the concept of a random variable for discrete random variables. They will graph probability distributions associated with random variables. They will calculate and interpret the mean and expected value of a discrete random variable.

Sample Activity:
Quebare - This problem is launched by showing short video for the "game" they are about to play. For the purpose of this problem, Quebare's moves have been restricted to down left and down right. Students are instructed to discuss strategies for determining the exact number of paths to each block. Using isometric dot paper, plastic sleeves, and dry erase pens. Students can then use the resources to test their strategies. Students may or may not notice at this point that they have seen this pattern before. If they recognize it as Pascal's triangle, allow them to share this with the class. Otherwise, let them continue to work the patterns; the paragraph at the end of the lesson addresses the name and significance of the pattern.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Precalculus (*Formerly Math Analysis)*
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Clark Magnet High School, Crescenta Valley High School, Hoover High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated III
Recommended Textbook:	*Precalculus: Mathematics for Calculus* James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition
Course Overview:	Precalculus is a 4th year high school mathematics course to solidify and explore deeper concepts and content that students have seen before as well as introducing some new concepts to help prepare them for more advanced mathematics. This course meets all the Common Core state standards for a fourth-year of high school mathematics and is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson and chapter.

Course Content:

Semester A

Chapter 1: **Fundamentals** *(approximately 20 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, N.CN.7, A.SSE.3a, A.CED.1, A.CED.2, A.CED.3, A.CED.4, A.REI.2, A.REI.3, A.REI.4, A.RED.4a, A.REI.4b, F.IF.1, F.IF.2, F.IF.4, F.IF.5, F.IF.7, F.IF.7b, F.IF.8, G.GPE.1, G.GPE.5, G.GPE.6, G.GPE.7

A. In the first chapter, students will review the real numbers, equations and the coordinate plane. Students will get a fresh look at these review concepts by applying them to real world problems.

Major Topics:
Real numbers
Exponential, radical and rational expressions
Complex numbers
Inequalities
Lines, circles

B. Unit Assignment:
After completing section 1.12, students will use their understanding of proportionality to determine how a frog's size relates to its sensitivity to pollutants in the environment. They will explore how animals, of the same body type, will have a skin area and volume that are proportional to the length of their body. The students will be able to calculate proportionality according to body length, weight, surface skin area, and volume.

Mathematical Practices Used in Ch. 1:

- MP.1: Students will explain to themselves the meaning of a problem and look for entry points to its solution. They analyze givens, constraints, relationships and goals for modeling questions regarding inequalities and proportions. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt.
- MP.2: Students make sense of quantities and their relationships in problem situations. They are able to abstract a given situation and represent the relationship between two variables symbolically, as in direct and indirect variation.
- MP.3: Students learn how to use stated assumptions, definitions and previously established results in constructing arguments and equations to represent real world situations. They will utilize the distance*rate=time equation and proportional relationships to analyze situations that take into account the context of each question.

Chapter 2: **Functions** *(approximately 14 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.CED.2, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7a, F.IF.7b, F.IF.8, F.IF.8a, F.BF.1, F.BF.1a, F.BF.1b, F.BF.3, F.BF.4, F.BF.4a, F.BF.4b, F.BF.4c, F.BF.4d, F.LE.2, S.ID.6a, S.ID.6b, S.ID.7

A. In this chapter students will study functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Graphs of Functions
Average Rate of Change of a Function
Transformations of Functions
Combining Functions
One-to-one Functions and their Inverses

B. Unit Assignment:
After completing Section 2.3, students will give a verbal summary of a situation described by a graph. In this assignment students describe, or tell the story that corresponds to a, given graph as well as make graphs that corresponds to a real-world "story".

Mathematical Practices Used in Ch. 2:

- MP.4: Students will model linear relationships in real world situations and use average rate of change to interpret and quantify the relationship between two variables.
- MP.6. Students will label axes and specify key points to clearly and accurately represent the different type of basic functions such as the linear function, reciprocal function and greatest integer function. Students will also attend to precision for piece-wise functions, ensuring that endpoints are clearly marked and representative of the corresponding domains.
- MP.7: Students will be able to interpret average rate of change within the context of a question and express the significance of the value to the problem. The students will be able to step back and overview transformations of functions as they apply to all types of parent functions and can interpret the structure of functions as a simple transformation on the parent function.

Chapter 3: **Polynomials and Rational Functions** *(approximately 13 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7c, F.IF.7d, F.IF.8b, F.BF.1a

A. In this chapter students will study polynomial and rational functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Quadratic Functions and Models
Polynomial Functions and Their Graphs
Real Zeros of Polynomials
Complex Zeros and the Fundamental Theorem of Algebra
Rational Functions
Polynomial and Rational Inequalities

B. Unit Assignment:
After completing Section 3.2, students will experience the process of collecting data and then analyzing the data using linear regression. In this assignment students will construct bridges out of paper and use pennies as weights to determine how strong each bridge is. Students will model the data with linear and power functions to determine which model best fits the data. The model will allow students to predict the strength of a large bridge before it is built.

Mathematical Practices used in Ch. 3:

- MP.2: Students will be able to reason abstractly by understanding the general importance of a power function to the graph of a polynomial. The students will also be able to contextualize the significance of the end behavior and zeros of the function.
- MP.4: Students can model real world situations with fluctuations by using polynomial functions. They can use the properties of polynomial functions to help contextualize the problem.
- MP.7: Students will be able to discern a pattern in the factored form of a polynomial and its relationship to the x-intercepts of a graph. They will also be able to recognize the significance of the power function of the expanded form of a polynomial and the end behavior of the graph.

Chapter 4: **Exponential and Logarithmic Functions** *(approximately 13 days)*

N.Q.1, N.Q.3, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7e, F.IF.8b, F.BF.5, F.LE.4

A. In this chapter students will study exponential functions where the independent variable is in the exponent. Exponential functions are used in modeling many real-world situations. The inverse function of exponential functions are called logarithmic functions. Once an exponential model has been obtained, students will use the model to predict things such as the size of a population or the growth of an investment.

Major Topics:
Exponential Functions
The Natural Exponential Function
Logarithmic Functions
Laws of Logarithms
Exponential and Logarithmic Equations
Modeling with Exponential Functions
Logarithmic Scales

B. Unit Assignment:
After completing Section 4.3, students will use logarithms or orders of magnitude to compare sizes of objects. It is often difficult to compare objects that vary enormously in size. In this assignment students learn how logarithms can be used to define the concept of "order of magnitude" which provides a simple way of comparison of these objects.

Mathematical Practices Used in Ch. 4:

- MP.2: Students will be able to quantitatively understand the structure of a logarithmic and exponential function separately as well as the inverse relationship of the functions. They will also be able to understand how the key features of a graph are represented in the algebraic expressions.
- MP.4: Students will be able to model a data set by using a linear, quadratic, exponential or logarithmic expression. Students will be able to determine which function best fits the data by identifying key points as well as end behavior.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to fit an exponential or logarithmic curve to model a data set.

Chapter 5: **Trigonometric Functions: Unit Circle Approach** *(approximately 12 days)*

STANDARDS
N.Q.2, N.Q.3, F.IF.8, F.LE.2, F.TF.1, F.TF.2, F.TF.3, F.TF.8, G.SRT.6, G.SRT.7, S.ID.6a

A. In this chapter students will study one way of viewing trigonometric functions, as functions of real numbers. Students will see in this chapter how the trigonometric functions are used to model periodic motion.

Major Topics:
The Unit Circle
Trigonometric Functions of Real Numbers
Trigonometric Graphs
Inverse Trigonometric Functions and Their Graphs
Modeling Harmonic Motion

B. Unit Assignment:
After completing Section 5.3 students will consider an application to biology. In this assignment students will use sine functions to model the population of a predator and its prey. An isolated island is inhabited by two species of mammals: lynx and hares. The lynx are predators who feed on the hares, their prey. Students will find functions of the form y=asink(t-b)=c that model the lynx and hare populations from a given graph.

Mathematical Practices Used in Ch. 5:

- MP.2: Students will be able to reason abstractly by understanding how the even-odd properties of a trigonometric function is related to the direction of rotation of the angle measure and the quadrant in which the terminal side is drawn.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to model periodic phenomena with a sinusoidal function. Students will be able to fit a trigonometric function by identifying the key features of the graph.
- MP.6: Students will be able to clearly define the meaning of the variables in a trigonometric equation by identifying which is an angle and what specific ratio is defined. Students will also be able to accurately label axes according to the expression being graphed, whether the unit circle or a trigonometric function.

Semester B

Chapter 6: **Trigonometric Functions: Right Triangle Approach** *(approximately 16 days)*

STANDARDS
F.TF.3, F.TF.4, G.SRT.6, G.C.5

A. In this chapter students will study another way of viewing trigonometric functions, as functions of angles. Students will see in this chapter the relationships between angles and distances.

Major Topics:
Angle Measures
Trigonometry of Right Triangles
Trigonometric Functions of Angles
Inverse of Trigonometric Functions and Right Triangles
The Law of Sines
The Law of Cosines

B. Unit Assignment:
After completing Section 6.2 students will investigate how areas and volumes of similar figures change as the size of the figure increases (or decreases). In this assignment students will find power functions that relate these quantities and use

those functions to explore the possibility of the existence of a real-life giant ape. Students will begin by finding some properties of similar figures.

Mathematical Practices Used in Ch. 6:

- MP.1: Students will be able to analyze the given information for an oblique triangle and will persevere in determining the best law (either law of cosines or sines) to solve the triangle. Students will also be able to determine when the ambiguous case for the law of sines applies and will solve for both possible triangles, when necessary.
- MP.3: Students will be able to determine when, for an ambiguous triangle, the second case does or does not work and can create a viable argument as to why.
- MP.4: Students will be able to model real world situations with right and oblique triangles and will be able to use the laws of cosine and sine and the properties of right triangles to determine distances and angles.

Chapter 7: **Analytic Trigonometry** *(approximately 13 days)*

STANDARDS
N.Q.1, N.Q.2, F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.7, F.TF.8

A. In this chapter students will study algebraic properties of trigonometric functions. Students will simplify and factor expressions and solve equations that involve trigonometric functions.

Major Topics:
Trigonometric Identities
Addition and Subtraction Formulas
Double-Angle, Half-Angle and Product-Sum Formulas
Basic Trigonometric Equations

B. Unit Assignment:
After completing Section 7.3 students will use trigonometry to find the best location from which to view a painting or a movie. In this assignment, students will use graphing devices and the Law of Cosines to find the best viewing angle possible.

Mathematical Practices Used in Ch. 7:

- MP.1: Students will look for entry points to a trigonometric identity proof and will persevere in looking for relationships to equate the two expressions. Students will analyze the given expressions to determine a solution pathway instead of jumping into a solution attempt.
- MP.2: Students will be able to reason through a trigonometric equation by being able to reason abstractly and seeing a quadratic form that requires factorization. Students will also be able to reason quantitatively by identifying the relationships between the ratios of sides with the corresponding angle measures.

- MP.3: Students will be able to build a logical progression of statements to provide a proof for a trigonometric identity by utilizing the quotient identities, Pythagorean identities, as well as the sum, difference, double- and half-angle formulas.

Chapter 8: **Polar Coordinates and Parametric Equations** *(approximately 11 days)*

STANDARDS
F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.8

A. In this chapter students will study a different way of locating points in the plane. Instead of using rectangular coordinates to specify a location, students will give distance and direction from a fixed reference point.

Major Topics:
Polar Coordinates
Graphs of Polar Equations
Polar Form of Complex Numbers: De Moivre's Theorem
Plane Curves and Parametric Equations

B. Unit Assignment:
After completing the chapter, students will use parametric equations and trigonometry to model the path of a projectile in motion. Students will be able to utilize coordinate geometry to realize how changing the angle of projection affects the domain and range of motion.

Mathematical Practices Used in Ch. 8:
- MP.1: Students will be able to visualize the graphing of a complex number as it relates to right triangle trigonometry and how this relationship allows for the conversion between rectangular and polar systems.
- MP.2: Students will be able to relate the roots of a complex number as points equally spaced about a circle and will be able to relate the periodicity of a sinusoidal function to help identify the polar form of the roots.
- MP.3: Students will be able to analyze the relationship between rectangular coordinates and the path of a point moving on a plane to eliminate a parameter and convert between rectangular and parametric equations.

Chapter 9: **Vectors in Two and Three Dimensions** *(approximately 16 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, F.TF.6, F.TF.7, G.SRT.8, G.SRT.9

A. In this chapter students will be able to represent quantities, such as force, with vectors that are defined by magnitude and direction. Students will also study how several forces acting on an object will affect the movement of that object.

Major Topics:
Vectors in Two Dimensions
The Dot Product
Three-Dimensional Coordinate Geometry
Vectors in Three Dimensions
The Cross Product
Equations of Lines and Planes

B. Unit Assignment:
After completing the chapter, students will use vector fields to model real-world scenarios, like the gravitational force on the earth or wind on the surface of the earth. Students will be able to then analyze the vector fields to identify the center and direction of motion.

Mathematical Practices Used in Ch. 9:

- MP.4: Students will be able to graph vectors in the cartesian system and use the dot product to find the angle between two vectors as well as the direction angles of a vector.
- MP.5: Students will use proper graphing utilities to help them visualize and analyze three-dimensional vectors and cross product vectors.
- MP.6: Students will attend to precision by properly drawing and labeling axes to graph in three dimensions.

Chapter 10: **Systems of Equations and Inequalities** *(approximately 20 days)*

STANDARDS
N.Q.1-3, N.CN.4, N.CN.5, N.VM.1-5, A.REI.5, N.REI.6, G.SRT.10, G.SRT.11

A. In this chapter, students will use more than two variables to create and solve a system of equations and inequalities. Students will be able to adapt the elimination and substitution methods of solving systems with two variables to now solve systems with three or more variables as well as learning new methods of solving, such as utilizing matrices and Cramer's Rule.

Major Topics:
Systems of Linear Equations in Two Variables
Systems of Linear Equations in Several Variables
Matrices and Systems of Linear Equations
The Algebra of Matrices

Inverses of Matrices and Matrix Equations
Systems of Nonlinear Equations
Systems of Inequalities

B. Unit Assignment:
After section 10.4, students will use matrix multiplication to project the population proportions of the young, juvenile and adult proportions of a population of animals. Students will use these predictions to analyze the health and growth of the population for the coming seasons in order to understand the long-term prospects of the population.

Mathematical Practices used in Ch. 10:

- MP.2: Students will analyze a linear system of equations and inequalities and understand that there are multiple methods of solving a system – i.e. substitution, elimination, augmented matrices, Cramer's rule, etc.
- MP.4: Students will understand how to create a matrix to represent data and how matrix operations can be used to analyze the data.
- MP.5: Students will understand how a matrix can be used to represent equations and data and how to algebraically manipulate matrices to solve linear systems.

Chapter 11: **Conic Sections** *(approximately 13 days)*

STANDARDS
N.VM.7-12, A.REI.7-9, A.REI.12

A. In this chapter, students will understand how conic sections are different cross-sections of a cone. Students will be able to identify the equations of different conics as well as their geometric properties and their graphs.

Major Topics:
Parabolas
Ellipses
Hyperbolas
Shifted Conics

B. Unit Assignment:
At the end of the chapter, students will study the use of conics in architecture and how the geometric properties of each conic can create architectural features, such as a whispering gallery. Students will also learn practical methods by which conics could be constructed with by using practical construction tools.

Mathematical Practices Used in Ch. 11:

- MP.1: Students will be able to transform the general form of a conic into the standard form of the respective conic to determine key features.
- MP.2: Students will be able to identify the type of conic from the general form.
- MP.4: Students will be able to model real world situations with the appropriate conic type and use the key features to solve problems.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Precalculus Honors (*Formerly Honors Math Analysis)*
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Glendale High School
UC/CSU Approved (Y/N, Subject):	Y, "c" Mathematics
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated III
Recommended Textbook:	*Precalculus* Josea Eggink, Samantha Falkner, Emily Kaffel, Mark Ray, Jeanne Villeneuve, Karen Wooton, Erin Yao CPM Educational Program Third Edition

Course Overview: Precalculus meets all of the standards for a Common Core 4th Year high school math course. Several big ideas are interwoven, including: functions (e.g., inverse, composite, piecewise), trigonometry, modeling, algebraic manipulation, rates of change, and area under a curve. Students engage with an introduction to several to calculus topics, including limits, area under a curve, and rates of change. On a daily basis, students work collaboratively with others as they use problem-solving strategies, complete investigations, gather evidence, critically analyze results, and communicate clear and effective arguments while justifying their thinking.

The course is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson. With the emergence of new technology, many lessons have moved beyond a traditional handheld device and are written with Desmos eTools as an integral component. The curriculum contains several key labs and hands-on activities to introduce and connect concepts, with an emphasis on modeling.

A focus on algebra is woven throughout the course. Students investigate equivalent expressions and practice setting up word problems right from the start. Students use algebra to manipulate inverse, composite, and piecewise-defined functions as well as investigate characteristics of functions and transformations of functions. Students continue rewriting expressions, solving complicated equations and systems, and use algebra to solve word problems. Algebraic manipulation is practiced throughout the rest of the course as students work with limits, rates of change, trigonometric expressions, complex numbers, series, conic sections, and area under the curve.

Careful consideration was given to the sequencing of the concepts in the course to allow for mastery over time while meeting the content standards of a 4th year course with focus on the 4th year math standards: algebra, functions, trigonometry, complex numbers, conic sections, probability, vectors, and matrices.

This courses covers the same material as Precalculus and adds rates of change, limits and area under the curve.

Course Content:

Semester A

Unit 1: **Preparing for Your Journey** *(approximately 15 days)*

STANDARDS
F.IF.4, F.IF.5, F.BF.1, A.CED.1, A.CED.2, F.IF.5, A.SSE.2, A.APR.6, F.BF.1c, F.BF.4, F.IF.7b

A. This unit is designed to accomplish several objectives:

- Introduce students to some of the main concepts that are part of this course.
- Introduce students to the modeling cycle.
- Have students work with functions, including inverse, composite, and piecewise-defined functions.
- Introduce students to radians and the unit circle.

The opening of this unit establishes a starting point for many of the concepts in this course. Interpreting functions and their graphs will be used extensively in the modeling process throughout the course. Solving word problems as well as algebraic manipulation are skills that are necessary throughout the course.

Progression of Content:
Students are introduced to radians and the unit circle early in the course to facilitate work with trigonometric functions in later units. Students review the inverse functions from a previous course. Understanding domain restrictions will be necessary when students learn about the graphs of the inverse trigonometric functions contained in Unit 2 and Unit 8. After reviewing inverse functions, students will investigate composite functions and use them to algebraically determine if two given functions are inverses of each other. Lastly, students define a radian and use radians to measure angles in the unit circle. This is the start of using the unit circle, which trigonometry will be applied to throughout the course. The last lesson in this section examines angular motion vs. linear motion.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 1:

- Students will model with mathematics, attend to precision, look for and make use of structure as they collect data from the Spring Problem
- Students will make sense of problems and persevere in solving them, construct viable arguments and critique the reasoning of others, look for and make use of structure as they work to find the inverse of functions graphically, on a table, and a rule

Sample Activities:
The Spring Problem - Students engage with a notice and wonder through this activity as they conduct a lab using a spring with a weight attached at the end. In order to gather data from this

activity, students video record the motion of the spring and weight in order to make a table and graph the results. Finally, students use the their model to make various predictions of the position of the wight at different times.

The Inverse of Function - Students will review how to write an inverse function by "undoing" and learn how to algebraically verify that functions are inverses. Students will see the inverse of a function graphically, on a table, and through its rule.

Unit 2: **Functions and Trigonometry** *(approximately 14 days)*

STANDARDS
F.IF.4, F.IF.7, F.BF.3, F.TF.3, F.TF.4, F.IF.7e, F.TF.2, A.REI.10, F.TF.6

A. This unit is designed to accomplish several objectives:

- Describe graphs as increasing/decreasing, concave up/concave down, and state the location(s) of maxima and minima.
- Identify graphs of functions as even, odd, or neither. Or, given the equation of a function, algebraically show that the function is even, odd, or neither.
- Develop fluency with angles and coordinates in the unit circle.
- Generate the parent graphs for sine and cosine and use them in a variety of transformations.
- Generate the parent graphs for inverse sine, inverse cosine, tangent, and inverse tangent.
- Solve basic trigonometric equations over specified domains.

In the first section of this unit, students will review attributes used to describe functions. Concavity will be introduced and students will use algebra to show that functions are even, odd, or neither. Then transformations of functions will be investigated. Again, much of this will be review from a previous course, but will now include horizontal stretches.

In Unit 1, students were introduced to radians and the unit circle. They have practiced a number of problems to reinforce key angle measurements and have worked with special triangles to develop ratios for 45°-45°-90° and 30°-60°-90° triangles. Now they will use these ideas to generate the key coordinates in the unit circle and develop the graphs of sine and cosine.
The second section is devoted to the development of sine and cosine from the standpoint of the unit circle. Students first locate the coordinates for the special angles they used in Unit 1. They then see that the sine ratio corresponds to the y-coordinate and the cosine ratio corresponds to the x-coordinate. Using these values, students develop the Pythagorean Identity. From here, students will graph $y = \sin(q)$ and $y = \cos(q)$ using the unit circle. The section continues with transformations of the graphs of sine and cosine.

In the last section, students begin by solving trigonometric equations. Here students will see that these equations can have multiple, and even an infinite number of, solutions. They will use graphs and the unit circle to generate the solutions to these equations. Students will then use $y = \sin^{-1}(x)$

and $y = \cos^{-1}(x)$ to solve for angles which are not the special angles in the unit circle. Finally, students generate the graphs of inverse sine, inverse cosine, tangent, and inverse tangent.

Progression of Content:
In this unit, students work with transformations of sine and cosine and applied these transformations to a few applications. Then in Unit 8, students extend their work with trigonometric functions to more complex situations; model situations with sinusoidal functions that have both a horizontal shift and a period other than 2π; graph and apply the reciprocal trigonometric functions; develop other trigonometric tools for simplifying expressions using formulas involving sums of angles.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 2:

- Look for and make use of structure, reason abstractly and quantitatively.
- Use appropriate tools strategically, look for and make use of structure, look for and express regularity in repeated reasoning.
- Construct viable arguments and critique the reasoning of others, look for and make use of structure, look for and express regularity in repeated reasoning.
- Use appropriate tools strategically, attend to precision.
- Make sense of problems and persevere in solving them, use appropriate tools strategically, attend to precision, look for and make use of structure.

Sample Activities:
The Unit Circle - Students determine the coordinates of the intersection of the terminal side of a special angle with the unit circle. Students will cut out two special right triangles from a resource page. Sides of the special triangles will be labeled using the exact values on both sides of the paper. This will ensure that the labels are shown when the triangles are flipped over. By placing each of the special right triangles on the x-axis, students will be able to find the coordinates of each of the special angles and repeat the process in all four quadrants to complete the unit circle.

Solving Trigonometric Equations - To solve an equation such as sin x =12, students are directed to draw a unit circle and also graph y = 12, which is a horizontal line. The intersections of the unit circle and the horizontal line will show students the solutions as well as number of solutions. By treating this problem as a system of equations, students are made aware of the connections the solutions are graphically and algebraically. In the same problem, students are asked how many more solutions there could be if we were allowed to continue to revolve around the circle. Eventually the next time students come across this type of problem, they will know to convert the unit circle into a sinusoidal graph and will see the horizontal line having multiple intersections with the sinusoidal graph to help them find all solutions.

Unit 3: Algebra and Area Under the Curve *(approximately 15 days)*

STANDARDS
A.APR.6, A.APR.7, A.SSE.2, A.REI.7, A.REI.11, F.BF.1, A.CED.1

A. In Unit 3, students begin by practicing and strengthening their algebraic manipulation skills as they continue to write equivalent rational expressions and complex fractions. Students learn how substitution can help solve equations and systems of equations. Students then finish up this unit by solving a series of word problems using their algebra skills.

   Another focus of this unit is approximating the area under a curve using summation notation. This concept is one of the major themes of calculus. The goal is to understand what area under a curve can represent and how to approximate it using rectangles.

Progression of Content:
Area under a curve is one of the main ideas in calculus. In this unit, students will be taught background information that will provide a deeper understanding of integration in calculus. The goal in this section is for students to understand the meaning of area under a curve.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 3:

- Students will make sense of problems and persevere in solving them, look for and make use of structure, construct viable arguments and critique the reasoning of others as they add, subtract, multiply, and divide rational expressions.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, reason abstractly and quantitatively as they calculate sums by expanding sigma notation as well as write finite arithmetic series in sigma notation.

Sample Activities
Growth Mindset (Jo Boaler) - In the first lesson of this unit, teachers are encouraged and given the tools to discuss the concepts of the importance of everyone, especially students, learning from their mistakes through error analysis and dendrite growth.

Unit 4: **Polynomial and Rational Functions** *(approximately 14 days)*

STANDARDS
F.IF.7c, A.APR.3, F.IF.4, N.CN.8, N.CN.9, A.APR.6, F.IF.7d, A.CED.1, A.CED.2

A. In this unit, students will apply their knowledge of families of functions to include polynomial and rational functions. Students will investigate the equation ↔ graph connection for these two families of functions, and learn to describe the end behavior of a function. In the first section, students will learn to graph polynomial functions

from the factored forms or their equations.

Students will then work backwards, using graphs to write equations in factored form. Finally, students will learn how to identify all of the roots of a polynomial. Second section begins with a new method for rewriting equations of rational functions is introduced in this section. Students will practice graphing transformations of rational functions. Then students will investigate rational functions that have slant asymptotes and holes.

Finally, students will extend your knowledge of rational functions to graph reciprocal functions. In the last section of the chapter, students will apply what students have learned to solve polynomials and rational equations and inequalities. Finally, students will apply their knowledge of polynomial and rational functions to model and analyze everyday situations.

Progression of Content:
In calculus, polynomials are used to approximate complicated functions because they "behave nicely" and are easy to work with.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 4:

- Students will look for and make use of structure, construct viable arguments and critique the reasoning of others as they graph polynomial functions from equations given in factored form.
- Students will look for and make use of structure as they rewrite rational expressions to transform functions in the form $g(x) = \frac{ax+b}{x-c}$ into transformations of $y = \frac{1}{x-h} + k$.
- Students will look for and make use of structure, construct viable arguments and critique the reasoning of others as they solve polynomial and rational inequalities.

Sample Activities
Polynomial Function Investigation - Students will investigate the graphs of polynomial functions in factored form. Use different numbers of factors with different values of the parameters will show how it will change the graph. Sample of an equation in which students need to change the parameters would is as follows: n(x)=x-a(x-b)(x-c) in which a, b, and c will be different values. Students will have a chance to compare their graphs with their teammates to see the behavior of different types of equations without having to do all of them themselves.

Unit 5: **Exponentials and Logarithms** *(approximately 14 days)*

STANDARDS
A.CED.2, F.IF.7e, F.LE.2, F.BF.5, F.LE.4

A. The start of this unit focuses on exponential functions. Students will apply what they already know about exponential functions to everyday situations. Students will then realize that sometimes two different transformations give the same result, mainly that every exponential function with a horizontal shift is equivalent to a vertical stretch. This shows graphically, as well as algebraically, that every function of the form y = a(bx–h) + k is equivalent to y = A(bx) + k. Furthermore, students will learn about the number e.

In the second half of this unit, students will review, use, and prove the properties of logarithms, each of which corresponds to a property of exponents. Students will also continue solving equations and simplifying expressions that involve logarithms and exponents. This unit is culminated through graphing the family of logarithmic functions and solving application problems.

Progression of Content:
This unit on exponential and logarithmic functions culminates students' engagement in this 4th year course.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 5:

- Students will make sense of problems and persevere in solving them, reason abstractly and quantitatively, model with mathematics, look for and make use of structure as they use exponential functions to model everyday situations
- Students will look for and make use of structure as they understand that for exponential functions, a horizontal shift can be equivalently written as a vertical stretch.
- Students will look for and make use of structure, use appropriate tools strategically, look for and express regularity in repeated reasoning as they practice converting between exponential and logarithmic equations, and investigate the basic properties of logarithms, including natural logarithms.

Sample Activities:
The number *e* - In this activity, students explore what occurs when1 cm2of bacteria reproduces at 100% rate every hour, every minute, every second, and finally every millisecond for one day. A follow up question to this activity is, "What happens to the bacteria if it reproduces *continuously*?" Students will recognize that the base of their exponential model is getting closer and closer to the number *e* and the continuous compound formula A(t)=Pert.

Proving the Logarithmic Properties Card Sort:
In this activity, students prove the Product Property of Logarithms using a card sort. Each team obtains one set of cards. Students arrange the cards in the center of their team's workspace so that everyone can participate. Students then arrange the cards in a logical manner and provide justification for each part of their proof. Justifications can be written on sticky notes or blank cards so that they are easily moved as well. The teacher verifies that each team has the correct proof

before allowing them to move on. Students prove the Quotient and Power Properties in a similar format.

Unit 6: **Triangles and Vectors** *(approximately 15 days)*

STANDARDS
G.SRT.9, G.SRT.10, G.SRT.11, N.VM.1, N.VM.2, N.VM.4, N.VM.5, N.VM.3

A. Two useful tools for solving situational problems are triangles and vectors. Many everyday situations involve triangles, so students will need to be able to solve any triangle with minimal given information. In first section, students will develop and use the Law of Sines and the Law of Cosines to solve non-right triangles. Students will learn to solve triangles when the given information does not create one unique triangle. In the second section, students will learn how to use vectors to describe motion; complete vector operations both graphically and algebraically; apply your knowledge of vectors to solve everyday problems.

Progression of Content:
Students are reintroduced to Law of Sines and Law of Cosines and their applications. But this will most likely be the last time students see a formal lesson on these topics. As for the lessons on vector, since this is a the first introduction to the topic, students who pursue higher math and science course will encounter them again.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 6:

- Students will look for and make use of structure as they prove, understand, and apply the Law of Sines and Law of Cosines. They will also derive the formula $A = 1/2ab\sin(C)$ for the area of a triangle.
- Students will look for and make use of structure, attend to precision, use appropriate tools strategically as they are introduced to vectors and vector notation. They will determine magnitude, direction, and/or components of a vector.
- Students will make sense of problems and persevere in solving them, attend to precision, reason abstractly and quantitatively, model with mathematics, use appropriate tools strategically as they use vectors in real world applications.

Sample Activity:
Vector Line Dance - The Vector Line Dance has students perform a series of moves in the form of a line dance. The idea is that all of the students are doing the same movements but from different starting positions. The starting position does not matter when working with vectors. This activity is "self correcting" in that students should notice if they make a mistake in their direction or distance, since students should move in unison (similar to line dancing). Once students have completed the activity, the class can discuss the idea of everyone making the same

motion (steps and direction), but from different positions. This develops the notion that a vector has a direction and length (magnitude).

Semester B

Unit 7: **Limits and Rates** *(approximately 14 days)*

STANDARDS
Preparation for Calculus (Addition for Precalculus Honors)

A. In mathematics, the concept of a limit can be used to describe the behavior of a function as the independent variable approaches a particular value, or as it becomes arbitrarily large. In the first half of this unit, students will explore how functions behave as x approaches a particular value or goes to infinity. Students will also look at limits from several perspectives including geometry, graphs, tables, and algebra. Students will then learn about one-sided limits and evaluate limits of many functions including rational and piecewise-defined functions. Students will use limits to define continuity.

In the second half of this unit, students will investigate rates of change as they occur in everyday situations and through multiple representations. Often, the most interesting thing about the values in a situation is not the values themselves, but how those values are changing. Is your car speeding up or slowing down? Is the room getting hotter or colder? Furthermore, students will look at the slopes of secant and tangent lines. At the end of this unit, students will use what they have learned about limits to define instantaneous rate of change.

Progression of Content:
Students develop intuitive notions of limits during this unit and refine these ideas in Unit 13. The main focus in this unit is for students to begin to develop the definition of a derivative. The final goal, in Unit 13, is for students to understand what a derivative actually is and what it tells them about a function and its graph.

B. Unit Assignment(s):
Mathematical Practices used in Unit 7:

- Students will use appropriate tools strategically as they evaluate limits geometrically, graphically, on a table, and understand the necessary conditions for a limit to exist.
- Students will make sense of problems and persevere in solving them as they work with limits of functions such asf(x)=sin(x)x.
- Students will look fo and make use of structure as they calculate average rates of change by calculating the slope of the secant line between two data points.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning as they use the limit as $h \to 0$ for the average rate of change to calculate the instantaneous rate of change.

Sample Activity:
Folding Angles - This activity is intended to provide students a tangible example of limits during an engaging activity. In this activity, every student in a group chooses a different acute angle, marks it on their receipt tape, then bisects the supplementary obtuse angle adjacent to their initial angle. By repeating the process, students discover that repeated folds in a given pattern lead to angles ever closer to 60º.

Unit 8: **Extending Periodic Functions** *(approximately 16 days)*

STANDARDS
F.BF.3, F.TF.7, A.CED.2, F.TF.9, F.TF.10

A. In Unit 2, students worked with transformations of sine and cosine and applied these transformations to a few applications. This unit extends their work with trigonometric functions to more complex situations. Students will model situations with sinusoidal functions that have both a horizontal shift and a period other than 2π. Students will graph and apply the reciprocal trigonometric functions. You will also develop other trigonometric tools for simplifying expressions using formulas involving sums of angles.

Progression of Content:
In Calculus, students will be using trigonometric functions to find derivatives and find integrals.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 8:

- Students will look for and make use of structure as they combine a horizontal stretch and shift of the same trigonometric function and set up a modeling problem.
- Students will model with mathematics as they generate trigonometric models for real-world applications.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, use appropriate tools strategically as they graph $y = \csc(x)$, $y = \sec(x)$, and $y = \cot(x)$; prove trigonometric identities.
- Students will use appropriate tools strategically as they use geometry to visualize the trigonometric functions.

Sample Activity:
Graphing Reciprocal Trigonometric Functions - Students will use the graphs of sine, cosine, and tangent to graph their respective reciprocal functions cosecant, secant, and cotangent. Students are encouraged to use the symmetry of the graph to save themselves time. For example, once they have values for sine and cosecant between $x = 0$ and $x = \pi$, they can use the same values (but negative) between $x = \pi$ and $x = 2\pi$. Students will see that the x-intercepts of $y = \sin(x)$ become the

locations of the asymptotes for its reciprocal function. These asymptotes should help students identify the domain and asymptotes for the reciprocal functions.

Unit 9: **Matrices** *(approximately 13 days)*

STANDARDS
N.VM.6, N.VM.7, N.VM.8, N.VM.9, N.VM.10, N.VM 11, N.VM.12, A.REI.8, A.REI.9

A. In this unit, students learn what a matrix is and how matrices, along with a graphing calculator, can be useful tools for organizing data and solving problems. Students then use matrices to solve complicated systems of equations.

   By the second half of the unit, students understand the definition of a linear transformations and relate linear transformations to matrices. Students then investigate compositions of transformations and see how transformations affect geometric figures.

Progression of Content:
This unit is an introduction to matrices, the topic of a Linear Algebra course (usually taken after Calculus) in college. Matrices are also included in college Business Math courses.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 9:

- Students will look for and make use of structure, make sense of problems and persevere in solving them as they add, subtract, and start to multiply matrices.
- Students will look for and make use of structure, look for and express regularity in repeated reasoning, make sense of problems and persevere in solving them, use appropriate tools strategically as they multiply a vector (regarded as a matrix with one row/column) by a matrix of suitable dimensions to produce another vector, and use matrix multiplication to solve problems.
- Students will reason abstractly and quantitatively, look for and make use of structure as they perform linear transformations using matrices.

Sample Activity:
The Toy Factory - Students learn to use matrices to represent linear situations that involve several variables needed to make two types of toys, cars and trucks requiring different amount of wheels, seats, and different costs to manufacture each type of toy. The goal of the activity is for students to determine whether or not a particular request from a buyer can be fulfilled.

Unit 10: **Conics and Parametric Functions** *(approximately 15 days)*

STANDARDS
G.GPE.3.1, F.IF.10

A. In this unit, students will analyze shapes that result from slicing a cone with a plane. These shapes are called conic section. In the first section, students will look at circles, ellipses, hyperbolas, and parabolas. They will generate the conics and derive their equations using the formal definitions. Students will recognize conic sections from their equations and complete the square to rewrite the equations in graphing form. Second section focuses on parametrically-defined functions. Students are introduced to the concept of defining x and y in terms of the parameter t. They will see how parametrically-defined functions can be used to model situations involving motion. The final lesson in this section has students solve problems using projectile motion. This is much more powerful than the past work students have completed with parabolas.

Progression of Content:
In calculus, a chapter is devoted to developing calculus tools for other forms of equations: polar, parametric, and vector.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 10:

- Students will look for and make use of structure, reason abstractly and quantitatively, use appropriate tools strategically, attend to precision as they derive the equation of a circle and practice completing the square, derive the equation of a hyperbola and ellipse, rewrite parametric equations representing conic sections in rectangular form, apply their knowledge of parametric equations to everyday situations.

Sample Activities:
Where is the Center - Students are reintroduced to algebra tiles which they have used in previous course to rewrite quadratic equation into perfect square forms to solve them. Now they will use algebra tiles to complete the square on both x and y variables which will help in rewrite conic section equations into graphing form. The use of the manipulatives allows students, especially those unfamiliar with completing the square or that lack the experience with algebra tiles to get a full understanding as to why it is called completing the square. Once equations of a circle in this problem are rewritten in this form, students can easily identify the center of the circle.

Flick a Coin - This demonstrates how vertical motion is not affected by horizontal motion. To do this, one coin is flicked while the other coin is dropped. The teacher will need to do a demonstration for the whole class. Fold the 3" × 5" index card in half lengthwise, then fold each half (again lengthwise) in the opposite direction. Squeeze the two middle parts together with your thumb and forefinger creating a T when viewed at the end. Turn the folded index card so that the T is upside down. Lay the upside-down T on a table and place a coin on either side of the vertical center. The coins should be laid flat, resting against the center of the T, and near the end. Pinch and hold the side opposite of the coins. Slide the card so that the coins and half of the card extend beyond the edge of a flat surface. Now, imagine that this is a pinball machine flipper and quickly flick your wrist. One coin will be projected forward while the other falls straight down.

Listen carefully for the sounds as they hit the floor. One sound means they hit at approximately the same time. Theoretically, the two coins should hit the ground at the same time, even though the first coin travels a longer path. This is true because the horizontal and vertical motions are independent.

Unit 11: **Polar Functions and Complex Numbers** *(approximately 15 days)*

STANDARDS
F.IF.11, N.CN.3, N.CN.4, N.CN.5, N.CN.6

A. In this unit, students transition from graphing rectangular coordinates (x, y), to polar coordinates, which use a distance and an angle. Students will then apply their work with polar coordinates to the world of complex numbers. They will graph complex numbers and learn to rewrite them in polar form. Furthermore, students will also perform operations with complex numbers in polar form, including multiplying, dividing, and computing powers and roots. This unit culminates with students learning to plot points and graph equations using a radius and an angle, and make conversions between polar and rectangular equations

Progression of Content:
It is not until the second year of Calculus that students revisit polar functions through integration and differentiation.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 11:

- Students will look for and make use of structure, look for and express regularity in repeated reasoning as they graph polar functions, explore various polar functions, graph complex numbers.
- Students will look for and make use of structure as they convert between polar and rectangular forms.
- Students will look for and make use of structure, use appropriate tools strategically as they represent operations with complex numbers geometrically, and use conjugates to determine moduli and quotients of complex numbers.

Sample Activity:
Polar Coordinates Battleship - Directions/rules for the students are as follows:

- Mark your ships on your polar grid. Each ship must be connected to another ship, either along a ray or around a circle.
- Take turns firing out shots. Each target should be stated in four ways: positive radius and positive angle (+, +), positive radius and negative angle (+, −), negative radius and positive angle (−, +), and negative radius and negative angle (−, −). Both players should record the shots on the charts for further reference.

- If you are the opponent, verify that all of the targets stated are the same location. If not, the player forfeits their turn.
- If the shots miss a ship, the opponent declares "miss" and both players place an open circle in the appropriate location. If the shots hit a ship, the opponent declares "hit" and both players mark an X in the appropriate location.
- You must state when a ship is sunk completely.
- The goal is to sink all of your opponent's ships.

Unit 12: **Series and Statistics** *(approximately 15 days)*

STANDARDS
A.SSE.2, A.SSE.4, A.APR.5, S.MD.1, S.MD.2, S.MD.3, S.MD.4, S.MD.5

A. In this unit students will begin by calculating the sums of series. Students will derive formulas for and evaluate the sums of arithmetic and geometric series. Students will use limits to evaluate sums of infinite geometric series. At the end of this section students' skills will be applied to analyze some common situations. Second section begins by looking for patterns in the expansion of (x + y)n and relates the patterns to Pascal's triangle. This leads the use of the Binomial Theorem for the expansion of binomials of the form (a + b)n, where n is a positive integer. Students then apply the patterns from the first lesson of this section to compute probabilities for binomial experiments. In the last section, students will understand what a discrete random variable is as well as the difference between frequency and relative frequency. They will create relative frequency tables for discrete random variables and graph probability distributions as relative frequency histograms. The section continues with calculating the mean and expected value of a discrete random variable. Once students understand these values and how to calculate them, they use these values to make decisions for everyday situations.

Progression of Content:
In Calculus, students will learn tests for determining convergence or divergence of infinite series. And students will learn basic tools if they do decide to move onto a statistical course.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 12:

- Students will look for and make use of structure, look for and express regularity in repeated reasoning, reason abstractly and quantitatively, use appropriate tools strategically as they develop a formula for the sum of an arithmetic series.
- Students will use appropriate tools strategically, look for and make use of structure, reason abstractly and quantitatively as they use limits to determine the sum for infinite geometric series.
- Students will make sense of problems and persevere in solving them, use appropriate tools strategically as they apply their knowledge of sums of geometric series to solve

problems involving everyday situations and develop the concept of a random variable for discrete random variables. They will graph probability distributions associated with random variables. They will calculate and interpret the mean and expected value of a discrete random variable.

Sample Activity:
Quebare - This problem is launched by showing short video for the "game" they are about to play. For the purpose of this problem, Quebare's moves have been restricted to down left and down right. Students are instructed to discuss strategies for determining the exact number of paths to each block. Using isometric dot paper, plastic sleeves, and dry erase pens. Students can then use the resources to test their strategies. Students may or may not notice at this point that they have seen this pattern before. If they recognize it as Pascal's triangle, allow them to share this with the class. Otherwise, let them continue to work the patterns; the paragraph at the end of the lesson addresses the name and significance of the pattern.

Unit 13: **Precalculus Finale** *(approximately 17 days)*

STANDARDS
Preparation for Calculus (Addition for Precalculus Honors)

A. Students learned about limits in Unit 7 by using a graphical approach. In this unit, students will use dominant terms to evaluate limits at infinity and algebraic techniques to evaluate limits at a point. Students will also learn to recognize when a technique is appropriate to use.

Furthermore, in this unit, students will understand what area under a curve represents and how to approximate it using trapezoids, and by writing and using an area under a curve program with a graphing calculator.

This unit is culminated as students build conceptual understanding between the slope of a function and the area under the curve of a function's derivative, two concepts developed throughout this course. You will also learn how to write slope functions for power functions.

Progression of Content:
By the end of this unit, and essentially this course, students will be ready for Calculus.

B. Unit Assignment(s):
Mathematical Practices Used in Unit 13:

- Students will look for and express regularity in repeated reasoning, reason abstractly and quantitatively as they begin a formal understanding of limits. Students will understand what a dominant term is and use the idea of dominant terms to evaluate limits at infinity.

- Students will reason abstractly and quantitatively, attend to precision as they investigate the number e as a limit in the indeterminate form $(1)^{\infty}$ and learn how the number e is important to mathematics.
- Students will attend to precision, construct viable arguments and critique the reasoning of others as they approximate area under a curve using trapezoids and compare the results obtained using trapezoids to results obtained using left endpoint and right endpoint rectangles. Students will also realize that a trapezoidal approximation is the average of left endpoint and right endpoint rectangle approximations.
- Students will make sense of problems and persevere in solving them as they sketch velocity graphs and position graphs and develop connections between the two types of graphs.

Sample Activity:
A Race to Infinity - Through this activity, students will be evaluating eight functions, whose end behavior can be described as follows: x, y. But, the important part is to determine which of these functions would approach infinity faster when comparing exponential, power, and logarithmic functions with b>1. This activity sets the premise for "dominant" functions when students then evaluate algebraic rational expressions containing any of these functions either in the numerator or on the denominator. The end goal of this activity is for students to realize that: (1) exponential functions with larger bases will dominate the exponential family, (2) of the power functions, the function with the highest power will dominate. Since radical expressions can be rewritten using an exponent, they are in the power function family, and (3) that logarithms with the smallest base ($b > 1$) would dominate.

Comprehensive Final Exam Details

1. Students will be tested on their knowledge of the following topics:
    - Prerequisites from Algebra and Geometry
    - Trigonometric Functions
    - Analytic Trigonometry
    - Laws of Sines, Cosines
    - Polar and Vectors
    - Complex Numbers
    - Exponential and Logarithmic Functions
    - Topics in Analytic Geometry, including Conics
    - Functions and Models
    - Limits and Derivatives
    - Differentiation Rules
    - Applications of Differentiation
2. The Final Exams - much like unit/chapter exams - are detail-oriented and require students to provide detailed, step-by-step justification for their responses to each of the questions. This way, they get trained and prepared for their future AP Math courses/exams.

Glendale Unified School District

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Mathematics
Course Title:	Precalculus Honors (*Formerly Honors Math Analysis)*
Course Code:	*(Educational Services will assign course number **after** Board Approval)*
School(s) Course Offered:	Clark Magnet High School, Crescenta Valley High School, Hoover High School, Verdugo Academy
UC/CSU Approved (Y/N, Subject):	Y, mathematics "c"
Course Credits:	Full Year (10)
Recommended Prerequisite:	Integrated III
Recommended Textbook:	*Precalculus: Mathematics for Calculus* James Stewart, Lothar Redlin, Saleem Watson Cengage Learning Seventh Edition
Course Overview:	Precalculus is a 4th year high school mathematics course to solidify and explore deeper concepts and content that students have seen before as well as introducing some new concepts to help prepare them for more advanced mathematics. This course meets all the Common Core state standards for a fourth-year of high school mathematics and is well balanced among procedural fluency (algorithms and basic skills), deep conceptual understanding, strategic competence (problem solving), and adaptive reasoning (application and extension). The course embeds the CCSS Standards for Mathematical Practice as an integral part of each lesson and chapter.

This courses covers the same material as Precalculus and adds rates of change, limits and area under the curve.

Course Content:

Semester A

Chapter 1: Fundamentals *(approximately 15 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, N.CN.7, A.SSE.3a, A.CED.1, A.CED.2, A.CED.3, A.CED.4, A.REI.2, A.REI.3, A.REI.4, A.RED.4a, A.REI.4b, F.IF.1, F.IF.2, F.IF.4, F.IF.5, F.IF.7, F.IF.7b, F.IF.8, G.GPE.1, G.GPE.5, G.GPE.6, G.GPE.7

A. In the first chapter, students will review the real numbers, equations and the coordinate plane. Students will get a fresh look at these review concepts by applying them to real world problems.

Major Topics:
Real numbers
Exponential, radical and rational expressions
Complex numbers
Inequalities
Lines, circles

B. Unit Assignment:
After completing section 1.12, students will use their understanding of proportionality to determine how a frog's size relates to its sensitivity to pollutants in the environment. They will explore how animals, of the same body type, will have a skin area and volume that are proportional to the length of their body. The students will be able to calculate proportionality according to body length, weight, surface skin area, and volume.

Mathematical Practices Used in Ch. 1:

- MP.1: Students will explain to themselves the meaning of a problem and look for entry points to its solution. They analyze givens, constraints, relationships and goals for modeling questions regarding inequalities and proportions. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt.
- MP.2: Students make sense of quantities and their relationships in problem situations. They are able to abstract a given situation and represent the relationship between two variables symbolically, as in direct and indirect variation.
- MP.3: Students learn how to use stated assumptions, definitions and previously established results in constructing arguments and equations to represent real

world situations. They will utilize the distance*rate=time equation and proportional relationships to analyze situations that take into account the context of each question.

Chapter 2: Functions *(approximately 11 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.CED.2, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7a, F.IF.7b, F.IF.8, F.IF.8a, F.BF.1, F.BF.1a, F.BF.1b, F.BF.3, F.BF.4, F.BF.4a, F.BF.4b, F.BF.4c, F.BF.4d, F.LE.2, S.ID.6a, S.ID.6b, S.ID.7

A. In this chapter students will study functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Graphs of Functions
Average Rate of Change of a Function
Transformations of Functions
Combining Functions
One-to-one Functions and their Inverses

B. Unit Assignment:
After completing Section 2.3, students will give a verbal summary of a situation described by a graph. In this assignment students describe, or tell the story that corresponds to a, given graph as well as make graphs that corresponds to a real-world "story".

Mathematical Practices Used in Ch. 2:

- MP.4: Students will model linear relationships in real world situations and use average rate of change to interpret and quantify the relationship between two variables.
- MP.6. Students will label axes and specify key points to clearly and accurately represent the different type of basic functions such as the linear function, reciprocal function and greatest integer function. Students will also attend to precision for piece-wise functions, ensuring that endpoints are clearly marked and representative of the corresponding domains.
- MP.7: Students will be able to interpret average rate of change within the context of a question and express the significance of the value to the problem. The students will be able to step back and overview transformations of functions as they apply to all types of parent functions and can interpret the structure of functions as a simple transformation on the parent function.

Chapter 3: Polynomials and Rational Functions *(approximately 10 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, A.SSE.3b, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7c, F.IF.7d, F.IF.8b, F.BF.1a

A. In this chapter students will study polynomial and rational functions and their graphs, as well as many real-world applications of the functions.

Major Topics:
Quadratic Functions and Models
Polynomial Functions and Their Graphs
Real Zeros of Polynomials
Complex Zeros and the Fundamental Theorem of Algebra
Rational Functions
Polynomial and Rational Inequalities

B. Unit Assignment:
After completing Section 3.2, students will experience the process of collecting data and then analyzing the data using linear regression. In this assignment students will construct bridges out of paper and use pennies as weights to determine how strong each bridge is. Students will model the data with linear and power functions to determine which model best fits the data. The model will allow students to predict the strength of a large bridge before it is built.

Mathematical Practices Used in Ch. 3:

- MP.2: Students will be able to reason abstractly by understanding the general importance of a power function to the graph of a polynomial. The students will also be able to contextualize the significance of the end behavior and zeros of the function.
- MP.4: Students can model real world situations with fluctuations by using polynomial functions. They can use the properties of polynomial functions to help contextualize the problem.
- MP.7: Students will be able to discern a pattern in the factored form of a polynomial and its relationship to the x-intercepts of a graph. They will also be able to recognize the significance of the power function of the expanded form of a polynomial and the end behavior of the graph.

Chapter 4: Exponential and Logarithmic Functions *(approximately 10 days)*

STANDARDS
N.Q.1, N.Q.3, A.SSE.3c, F.IF.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7, F.IF.7e, F.IF.8b, F.BF.5, F.LE.4

A. In this chapter students will study exponential functions where the independent variable is in the exponent. Exponential functions are used in modeling many real-world situations. The inverse function of exponential functions are called logarithmic functions. Once an exponential model has been obtained, students will use the model to predict things such as the size of a population or the growth of an investment.

Major Topics:
Exponential Functions
The Natural Exponential Function
Logarithmic Functions
Laws of Logarithms
Exponential and Logarithmic Equations
Modeling with Exponential Functions
Logarithmic Scales

B. Unit Assignment:
After completing Section 4.3, students will use logarithms or orders of magnitude to compare sizes of objects. It is often difficult to compare objects that vary enormously in size. In this assignment students learn how logarithms can be used to define the concept of "order of magnitude" which provides a simple way of comparison of these objects.

Mathematical Practices Used in Ch. 4:

- MP.2: Students will be able to quantitatively understand the structure of a logarithmic and exponential function separately as well as the inverse relationship of the functions. They will also be able to understand how the key features of a graph are represented in the algebraic expressions.
- MP.4: Students will be able to model a data set by using a linear, quadratic, exponential or logarithmic expression. Students will be able to determine which function best fits the data by identifying key points as well as end behavior.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to fit an exponential or logarithmic curve to model a data set.

Chapter 5: Trigonometric Functions: Unit Circle Approach *(approximately 9 days)*

STANDARDS
N.Q.2, N.Q.3, F.IF.8, F.LE.2, F.TF.1, F.TF.2, F.TF.3, F.TF.8, G.SRT.6, G.SRT.7, S.ID.6a

A. In this chapter students will study one way of viewing trigonometric functions, as functions of real numbers. Students will see in this chapter how the trigonometric functions are used to model periodic motion.

Major Topics:
The Unit Circle
Trigonometric Functions of Real Numbers
Trigonometric Graphs
Inverse Trigonometric Functions and Their Graphs
Modeling Harmonic Motion

B. Unit Assignment:
After completing Section 5.3 students will consider an application to biology. In this assignment students will use sine functions to model the population of a predator and its prey. An isolated island is inhabited by two species of mammals: lynx and hares. The lynx are *predators* who feed on the hares, their *prey*. Students will find functions of the form y=asink(t-b)=c that model the lynx and hare populations from a given graph.

Mathematical Practices Used in Ch. 5:

- MP.2: Students will be able to reason abstractly by understanding how the even-odd properties of a trigonometric function is related to the direction of rotation of the angle measure and the quadrant in which the terminal side is drawn.
- MP.5: Students will be able to determine when it is appropriate to use a graphing utility to model periodic phenomena with a sinusoidal function. Students will be able to fit a trigonometric function by identifying the key features of the graph.
- MP.6: Students will be able to clearly define the meaning of the variables in a trigonometric equation by identifying which is an angle and what specific ratio is defined. Students will also be able to accurately label axes according to the expression being graphed, whether the unit circle or a trigonometric function.

Chapter 6: Trigonometric Functions: Right Triangle Approach *(approximately 9 days)*

STANDARDS
F.TF.3, F.TF.4, G.SRT.6, G.C.5

A. In this chapter students will study another way of viewing trigonometric functions, as functions of angles. Students will see in this chapter the relationships between angles and distances.

Major Topics:
Angle Measures
Trigonometry of Right Triangles
Trigonometric Functions of Angles
Inverse of Trigonometric Functions and Right Triangles
The Law of Sines
The Law of Cosines

B. Unit Assignment:
After completing Section 6.2 students will investigate how areas and volumes of similar figures change as the size of the figure increases (or decreases). In this assignment students will find power functions that relate these quantities and use those functions to explore the possibility of the existence of a real-life giant ape. Students will begin by finding some properties of similar figures.

Mathematical Practices Used in Ch. 6:

- MP.1: Students will be able to analyze the given information for an oblique triangle and will persevere in determining the best law (either law of cosines or sines) to solve the triangle. Students will also be able to determine when the ambiguous case for the law of sines applies and will solve for both possible triangles, when necessary.
- MP.3: Students will be able to determine when, for an ambiguous triangle, the second case does or does not work and can create a viable argument as to why.
- MP.4: Students will be able to model real world situations with right and oblique triangles and will be able to use the laws of cosine and sine and the properties of right triangles to determine distances and angles.

Chapter 7: Analytic Trigonometry *(approximately 8 days)*

STANDARDS
N.Q.1, N.Q.2, F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.7, F.TF.8

A. In this chapter students will study algebraic properties of trigonometric functions. Students will simplify and factor expressions and solve equations that involve trigonometric functions.

Major Topics:
Trigonometric Identities
Addition and Subtraction Formulas
Double-Angle, Half-Angle and Product-Sum Formulas
Basic Trigonometric Equations

B. Unit Assignment:
After completing Section 7.3 students will use trigonometry to find the best location from which to view a painting or a movie. In this assignment, students will use graphing devices and the Law of Cosines to find the best viewing angle possible.

Mathematical Practices Used in Ch. 7:

- MP.1: Students will look for entry points to a trigonometric identity proof and will persevere in looking for relationships to equate the two expressions. Students will

analyze the given expressions to determine a solution pathway instead of jumping into a solution attempt.

- MP.2: Students will be able to reason through a trigonometric equation by being able to reason abstractly and seeing a quadratic form that requires factorization. Students will also be able to reason quantitatively by identifying the relationships between the ratios of sides with the corresponding angle measures.
- MP.3: Students will be able to build a logical progression of statements to provide a proof for a trigonometric identity by utilizing the quotient identities, Pythagorean identities, as well as the sum, difference, double- and half-angle formulas.

Semester B

Chapter 8: Polar Coordinates and Parametric Equations *(approximately 7 days)*

STANDARDS
F.IF.7, F.IF.7e, F.TF.4, F.TF.5, F.TF.8

A. In this chapter students will study a different way of locating points in the plane. Instead of using rectangular coordinates to specify a location, students will give distance and direction from a fixed reference point.

Major Topics:
Polar Coordinates
Graphs of Polar Equations
Polar Form of Complex Numbers: De Moivre's Theorem
Plane Curves and Parametric Equations

B. Unit Assignment:
After completing the chapter, students will use parametric equations and trigonometry to model the path of a projectile in motion. Students will be able to utilize coordinate geometry to realize how changing the angle of projection affects the domain and range of motion.

Mathematical Practices used in Ch. 8:

- MP.1: Students will be able to visualize the graphing of a complex number as it relates to right triangle trigonometry and how this relationship allows for the conversion between rectangular and polar systems.
- MP.2: Students will be able to relate the roots of a complex number as points equally spaced about a circle and will be able to relate the periodicity of a sinusoidal function to help identify the polar form of the roots.

- MP.3: Students will be able to analyze the relationship between rectangular coordinates and the path of a point moving on a plane to eliminate a parameter and convert between rectangular and parametric equations.

Chapter 9: Vectors in Two and Three Dimensions *(approximately 9 days)*

STANDARDS
N.Q.1, N.Q.2, N.Q.3, F.TF.6, F.TF.7, G.SRT.8, G.SRT.9

A. In this chapter students will be able to represent quantities, such as force, with vectors that are defined by magnitude and direction. Students will also study how several forces acting on an object will affect the movement of that object.

Major Topics:
Vectors in Two Dimensions
The Dot Product
Three-Dimensional Coordinate Geometry
Vectors in Three Dimensions
The Cross Product
Equations of Lines and Planes

B. Unit Assignment:
After completing the chapter, students will use vector fields to model real-world scenarios, like the gravitational force on the earth or wind on the surface of the earth. Students will be able to then analyze the vector fields to identify the center and direction of motion.

Mathematical Practices Used in Ch. 9:
- MP.4: Students will be able to graph vectors in the cartesian system and use the dot product to find the angle between two vectors as well as the direction angles of a vector.
- MP.5: Students will use proper graphing utilities to help them visualize and analyze three-dimensional vectors and cross product vectors.
- MP.6: Students will attend to precision by properly drawing and labeling axes to graph in three dimensions.

Chapter 10: Systems of Equations and Inequalities *(approximately 15 days)*

STANDARDS
N.Q.1-3, N.CN.4, N.CN.5, N.VM.1-5, A.REI.5, N.REI.6, G.SRT.10, G.SRT.11

A. In this chapter, students will use more than two variables to create and solve a system of equations and inequalities. Students will be able to adapt the elimination and

substitution methods of solving systems with two variables to now solve systems with three or more variables as well as learning new methods of solving, such as utilizing matrices and Cramer's Rule.

Major Topics:
Systems of Linear Equations in Two Variables
Systems of Linear Equations in Several Variables
Matrices and Systems of Linear Equations
The Algebra of Matrices
Inverses of Matrices and Matrix Equations
Determinants and Cramer's Rule
Partial Fractions
Systems of Nonlinear Equations
Systems of Inequalities

B. Unit Assignment:
After section 10.4, students will use matrix multiplication to project the population proportions of the young, juvenile and adult proportions of a population of animals. Students will use these predictions to analyze the health and growth of the population for the coming seasons in order to understand the long-term prospects of the population.

Mathematical Practices Used in Ch. 10:

- MP.2: Students will analyze a linear system of equations and inequalities and understand that there are multiple methods of solving a system – i.e. substitution, elimination, augmented matrices, Cramer's rule, etc.
- MP.4: Students will understand how to create a matrix to represent data and how matrix operations can be used to analyze the data.
- MP.5: Students will understand how a matrix can be used to represent equations and data and how to algebraically manipulate matrices to solve linear systems.

Chapter 11: Conic Sections *(approximately 9 days)*

STANDARDS
N.VM.7-12, A.REI.7-9, A.REI.12

A. In this chapter, students will understand how conic sections are different cross-sections of a cone. Students will be able to identify the equations of different conics as well as their geometric properties and their graphs.

Major Topics:
Parabolas
Ellipses
Hyperbolas
Shifted Conics
Rotation of Axes
Polar Equations of Conics

B. Unit Assignment:
At the end of the chapter, students will study the use of conics in architecture and how the geometric properties of each conic can create architectural features, such as a whispering gallery. Students will also learn practical methods by which conics could be constructed with by using practical construction tools.

Mathematical Practices used in Ch. 11:

- MP.1: Students will be able to transform the general form of a conic into the standard form of the respective conic to determine key features.
- MP.2: Students will be able to identify the type of conic from the general form.
- MP.4: Students will be able to model real world situations with the appropriate conic type and use the key features to solve problems.

Chapter 12: Sequences and Series *(approximately 9 days)*

STANDARDS
G.GPE.2, G.GPE.3, G.GMD.4

A. In this chapter, students will study different types of sequences, such as geometric, arithmetic and the Fibonacci sequences and their applications in the real world. Students will be able to recognize, formulate and apply sequences to real world situations as well as being able to evaluate the sum of a series.

Major Topics:
Sequences and Summation Notation
Arithmetic Sequences
Geometric Sequences
Mathematics of Finance
Mathematical Induction
The Binomial Theorem

B. Unit Assignment:
At the end of this chapter, students will be able to apply their knowledge of recursive and explicit formulas of a sequence to analyze and evaluate practical problems, such as a monthly savings account as well as the accumulation of pollutants in the environment.

They will be able to predict future values of account balances as well as the percentage of pollutants in the environment after *n* number of years.

Mathematical Practices Used in Ch. 12:

- MP.5: Students will be able to identify the strengths of using the binomial theorem vs. Pascal's triangle but still understand the complementary relationship between the two.
- MP.7: Students will discern a pattern in a sequence or series and identify whether it is arithmetic or geometric.
- MP8: Students will be able to formulate an explicit and/or recursive formula to represent various sequences and series.

Chapter 13: Limits - A Preview of Calculus *(approximately 8 days)*

STANDARDS
N.CN.8, N.CN.9, A-APR.2, A.APR.3

A. In this chapter, students will understand the definition of one-sided and the overall limit and its applications in calculus, such as finding the instantaneous rate of change as well as the area of a bounded region. Students will understand the laws and the definition of alimit of an average rate of change as the instantaneous speed.

Major Topics:
Finding Limits Numerically and Graphically
Finding Limits Algebraically
Tangent Lines and Derivatives
Limits at Infinity; Limits of Sequences
Areas

B. Unit Assignment:
By the end of the chapter, students will apply their knowledge of finding the area under a curve by finding the total distance of a car traveling for a set amount of time at a designated speed, in miles per hour.

Mathematical Practices used in Ch. 13:

- MP.2: Students will be able to determine when the limit of a function exists both algebraically and graphically.
- MP.3: Students will be able to justify why the slope of a tangent line must equal 0 at any local maximum or minimum value and its significance.
- MP.6: Students will be able to clearly communicate the conditions for which the limit of a function does and does not exist.

Chapter 14: Probability and Statistics *(approximately 14 days)*

STANDARDS
A.SSE.4, A.APR.5, A.APR.6, A.APR.7, F.IF.3, F.BF.1a, F.BF.2, F.LE.2

A. In this chapter, students will study events that are governed by randomness and have a predictability to them. Students will understand that not all situations can be precisely determined or calculated, but can be analyzed and predicted using probability rules. Students will be able to collect, organize and analyze data using statistical methods, such as the 5-number summary.

Major Topics:
Counting
Probability
Binomial Probability
Expected Value
Descriptive Statistics (Numerical)
Descriptive Statistics (Graphical)
Introduction to Statistical Thinking
Introduction to Inferential Statistics

B. Unit Assignment:
After section 14.6, students will understand how statistics can be used to mislead and misinform. Students will then be able to analyze studies and newspaper articles that quote statistics and identify sources of potential bias.

Mathematical Practices Used in Ch. 14:

- MP.2: Students will be able to use quantitative reasoning to find the probabilities for events, including conditional probability.
- MP.5: Students will be able to use Venn diagrams appropriately to represent the probabilities for the union and intersection of two events as well as for conditional probability. Students will also be able to use a stem and leaf plot to represent data and to find a 5-number summary.
- MP.6 Students will accurately be able to calculate a 5-number summary in order to properly create a visual summary of the statistics, such as a normalized distribution or a box and whisker plot.

Comprehensive Final Exam Details

1. Students will be tested on their knowledge of the following topics:
    - Prerequisites from Algebra and Geometry
    - Trigonometric Functions
    - Analytic Trigonometry

- Laws of Sines, Cosines
- Polar and Vectors
- Complex Numbers
- Exponential and Logarithmic Functions
- Topics in Analytic Geometry, including Conics
- Functions and Models
- Limits and Derivatives
- Differentiation Rules
- Applications of Differentiation

2. The Final Exams - much like unit/chapter exams - are detail-oriented and require students to provide detailed, step-by-step justification for their responses to each of the questions. This way, they get trained and prepared for their future AP Math courses/exams.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

INFORMATION REPORT NO. 5

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED BY: Dr. Cynthia M. Foley, Assistant Superintendent, Human Resources
Phyllis Ishisaka, Executive Assistant to the Superintendent

SUBJECT: **Proposed New and Revised Board Policies Relating to Personnel, Instruction, and Administration**

This report will provide the Board of Education with information on the need to create new or revise existing Board Policies (BP) 4121 (Temporary Contract/Substitute Personnel); BP 6142.91 (Reading/Language Arts Instruction); BP 6142.94 (History-Social Science Instruction); BP 6170.1 (Transitional Kindergarten); BP 6177 (Summer School); and BP 2121 (Superintendent Contract) as recommended by the California School Boards Association (CSBA) and to comply with Education Code and federal and state laws.

BP 4121 – Temporary Contract/Substitute Personnel

CSBA Update: N/A
Last GUSD Update: February 2017

Board Policy (BP) 4121 is revised to add a statement that if a long-term substitute teacher (eleven or more consecutive days) is absent due to illness or bereavement, it shall not constitute a break in the consecutive working days requirement. Currently, a break in long-term consecutive days results in the teacher reverting from the higher long-term substitute rate of $200 per day to $165 per day. This revision is being recommended due to the similar policy practiced by surrounding districts such as Los Angeles Unified and Burbank Unified and enables GUSD to remain competitive in recruiting and retaining high quality substitute teachers.

BP 6142.91 - Reading/Language Arts Instruction

CSBA Update: December 2013
Last GUSD Update: N/A

Staff is recommending the Board adopt a new policy based on suggested language and legal references from California School Boards Association (CSBA) regarding reading/language arts instruction.

BP 6142.94 - History-Social Science Instruction
CSBA Update: October 2016
Last GUSD Update: N/A

Staff is recommending the Board adopt a new policy based on suggested language and legal references from CSBA regarding history-social studies instruction. The policy reflects key concepts in the History-Social Science Framework for California Public Schools adopted by the State Board of Education in July 2016, including, but not limited to, a new emphasis on developing student's literacy skills within the context of history-social science instruction. The policy also reflects law that encourages the use of personal testimony through oral history, videos, or other multimedia formats and establishes requirements for personal testimony provided through oral histories.

BP 6170.1 – Transitional Kindergarten
CSBA Update: October 2018
Last GUSD Update: March 2018

Staff is recommending that the Board update BP 6170 to reflect a new law (AB 1808) which allows districts to place four-year-old children enrolled in a California State Preschool Program into a Transitional Kindergarten program and to commingle children from both programs into the same classroom under specified conditions.

BP 6177 – Summer School
CSBA Update: December 2015
Last GUSD Update: December 2010

Staff is recommending that the Board update this policy to reflect current language suggested by the CSBA and legal references.

BP 2121– Superintendent's Contract
CSBA Update: May 2017
Last GUSD Update: July 2016

Board Policy 2121 is being updated to reflect new law (SB 1436, 2016) which requires the board, prior to taking final action on the superintendent's salary or benefits, to orally report a summary of the recommended action during open session of a board meeting. Updated

policy also clarifies that deliberations regarding the superintendent's salary or other compensation cannot be held during a special meeting of the board.

The proposed new and revised Board Policies are being presented for first reading. Should the consensus of the Board be to move forward, the policies will be presented at the April 16, 2019, Board meeting for approval. Further, upon approval of the policies, updates to the accompanying Administrative Regulations will be made as needed following current District procedures.

Copies of the proposed new and revised policies are attached to this report.

Temporary Contract/Substitute Personnel

The Governing Board recognizes that substitute and temporary contract personnel perform an essential role in promoting student achievement and desires to employ highly qualified, appropriately credentialed employees to fill such positions.

Hiring

The Superintendent or designee shall recommend candidates for substitute or temporary contract positions for Board approval, and shall ensure that all substitute and temporary contract employees are assigned in accordance with law and the authorizations specified in their credential.

Substitute personnel may be employed on an on-call, day-to-day basis. They shall be paid at the daily rate of pay established by the Board of Education.

After September 1 of any school year, the Board may employ substitute personnel for the remainder of the school year for positions for which no regular employee is available. The District shall first demonstrate to the Commission on Teacher Credentialing the inability to acquire the services of a qualified regular employee. (Education Code 44917)

Permanent or probationary certificated employees who were laid off pursuant to Education Code 44955 and who have a preferred right of reappointment shall be given priority for substitute service in the order of their original employment. (Education Code 44956, 44957)

Classification

At the time of initial employment and each July thereafter, the Governing Board shall classify substitute and temporary contract employees as such. (Education Code 44915, 44916)

The Governing Board may classify as substitute personnel a teacher hired to fill the position of a regularly employed person who is absent from service. (Education Code 44917)

To address the need for additional certificated employees when regular District employees are absent due to leaves or long-term illness, the Board may classify a teacher who is employed for at least one semester and up to one complete school year as a temporary employee. Any person whose service begins in the second semester and before March 15 may be classified as a temporary employee even if employed for less than a semester. The Board shall determine the number of persons who shall be so employed, which shall not exceed the identified need based on the absence of regular employees. (Education Code 44920)

Teachers who are appointed for a period of eleven or more consecutive days to substitute in the same assignment shall be classified as Long Term substitutes. On the eleventh and subsequent

Temporary Contract/Substitute Personnel

days of service, they shall be paid at the daily rate of pay established by the Board of Education. Days used by the substitute for illness or bereavement shall not constitute a break in the consecutive working days requirement.

The Governing Board also shall classify as temporary contract employees those certificated persons, other than substitute employees, who are employed to:

1. Serve from day-to-day during the first three months of any school term to teach temporary classes which shall not exist after that time, or perform any other duties which do not last longer than the first three months of any school term. (Education Code 44919)

2. Teach in special day and evening classes for adults or in schools of migratory population for not more than four months of any school term. (Education Code 44919)

3. Serve in a limited assignment supervising student athletic activities provided such assignments have first been made available to teachers presently employed in the District. (Education Code 44919)

4. Serve in a position for a period not to exceed 20 working days in order to prevent the stoppage of District business during an emergency when persons are not immediately available for probationary classification. (Education Code 44919)

5. Serve only for the first semester because the District expects a reduction in student enrollment during the second semester due to midyear graduations. (Education Code 44921) SEP

For purposes of classifying employees pursuant to item #1 or 2 above, the school year shall not be divided into more than two school terms. (Education Code 44919)

Salary and Benefits

The Governing Board shall adopt and make public a salary schedule setting the daily or pay period rate(s) for substitute employees for all categories or classes of certificated employees of the District. (Education Code 44977, 45030)

Substitute elementary teachers employed for the morning session only (7:50-11:30), or for the afternoon session only (11:30-3:00), shall be credited with one-half time service and shall be paid one-half of the daily rate paid to day–to-day substitutes. Full-day assignments at the elementary level are from 7:45 am to 3:00 pm. Substitutes employed for the morning session or afternoon session only, shall remain on duty for the full morning or afternoon session.

Temporary Contract/Substitute Personnel

Substitute secondary teachers, employed for one to three teaching periods shall be credited with one-half time service and shall be paid one-half of the daily rate paid to day-to-day substitutes. Substitute secondary teachers, employed for four or more teaching periods, shall be credited with full-time service and shall be paid the full daily rate paid to day-to-day substitutes. In such cases where the teaching assignment is interrupted by a preparation period, the preparation period shall, for pay purposes, be considered equivalent to one teaching period. The substitute teacher shall be considered to be on duty during the preparation period. In such cases where the preparation period follows two consecutive teaching periods, the substitute teacher shall be considered to be on duty during the preparation period.

Any employee hired to provide services in a categorically funded program or project may be employed for a period less than a full school year. He/she may be classified as a temporary contract employee if the period of employment will end at the expiration of that program or project. (Education Code 44909)

Temporary contract employees shall participate in the health and welfare plans or other fringe benefits of the District.

Paid Sick Leave

Except for a retired annuitant who is not reinstated to the retirement system, any temporary or substitute employee who works for 30 or more days within a year of his/her employment shall be entitled to one hour of paid sick leave for every 30 hours worked. Accrued paid sick days shall carry over to the following year of employment, up to a maximum of 48 hours. (Labor Code 246)

An hourly or substitute employee may begin to use accrued paid sick days on the 90th day of his/her employment, after which he/she may use the sick days as they are accrued. (Labor Code 246)

An hourly or substitute employee may use accrued sick leave for absences due to: (Labor Code 246.5)

1. His/her own need or the need of a family member, as defined in Labor Code 245.5, for the diagnosis, care, or treatment of an existing health condition or for preventive care

2. Need of the employee to obtain or seek any relief or medical attention specified in Labor Code 230(c) and 230.1(a) for the health, safety, or welfare of the employee, or his/her child, when the employee has been a victim of domestic violence, sexual assault, or stalking

Temporary Contract/Substitute Personnel

No employee shall be denied the right to use accrued sick days and the District shall not in any manner discriminate or retaliate against an employee for using or attempting to use sick leave, filing a complaint with the Labor Commissioner, or alleging District violation of Labor Code 245-249. The Superintendent or designee shall display a poster containing required information, provide notice to eligible employees of their sick leave rights, keep records of employees' use of sick leave for three years, and comply with other requirements specified in Labor Code 245-249 and in AR 4161.1/4361.1 - Personal Illness/Injury Leave.

Release from Employment/Dismissal

The Governing Board may dismiss substitute employees at any time at its discretion. (Education Code 44953)

The Governing Board may release a temporary contract employee at its discretion if the employee has served less than 75 percent of the number of days the regular schools of the District are maintained. After serving 75 percent of the number of days that District schools are maintained during one school year, a temporary contract employee may be released as long as he/she is Glendale Unified School District notified, before the last day of June, of the District's decision not to reelect him/her for the following school year. (Education Code 37200, 44954)

Reemployment as a Probationary Employee

Unless released from employment pursuant to Education Code 44954, any person employed for one complete school year as a temporary contract employee shall, if reemployed for the following school year in a vacant position requiring certification qualifications, be classified as a probationary employee. With the exception of on-call, day-to-day substitutes, if a temporary contract employee performs the duties normally required of certificated employees for at least 75 percent of the number of days the regular schools of the District were maintained in that school year and is then employed as a probationary employee for the following school year, his/her previous employment as a temporary contract employee shall be credited as one year's employment as a probationary employee for purposes of acquiring permanent status. (Education Code 44917, 44918, 44920)

Vacant position means a position in which the employee is qualified to serve and which is not filled by a permanent or probationary employee. It shall not include a position which would be filled by a permanent or probationary employee except for the fact that such employee is on leave. (Education Code 44920, 44921)

A temporary contract employee hired pursuant to item #1 or #2 in the section "Classification" above shall be classified as a probationary employee if the duties continue beyond the time limits of the assignment. (Education Code 44919)

Temporary Contract/Substitute Personnel

A person employed pursuant to item #5 in the section "Classification" above who is then continued in employment beyond the first semester shall be classified as a probationary employee for the entire school year and shall be reemployed to fill any vacant positions in the District for which he/she is certified. Preference for available positions shall be determined by the Governing Board as prescribed by Education Code 44845 and 44846. (Education Code 44921)

With the exception of on-call, day-to-day substitutes, any temporary contract employee who was released pursuant to Education Code 44954 but who has nevertheless served for two consecutive school years, for at least 75 percent of each year, shall receive first priority if the District fills a vacant position for the subsequent school year at the grade level at which the employee served during either year. In the case of a departmentalized program, the employee shall have taught the subject matter in which the vacant position occurs. (Education Code 44918)

GUSD Reference: Policy and Regulations 4112.2; 4113; 4116; 4117.14/4317.14; 4117.3; 4127/4227/4327; 4140/4240/4340; 4154/4254/4354

Legal Reference: Education Code, Sections §22455.5; 22515; 37200; 44252.5; 44300; 44830; 44839.5; 44845; 44846; 44909; 44914; 44915; 44916; 44917; 44918; 44919; 44920; 44921; 44953; 44954; 44955; 44956; 44957; 44977; 45030; 45041; 45042; 45043; 56060-56063
Government Code, Section §3540.1
Labor Code, Section 220; 230; 230.1; 233; 234; 245-249
Code of Regulations, Title 5, Sections §5502; 5503; 5590, 80025-80025.5
Court Decisions: McIntyre v. Sonoma Valley Unified School District (2012) 206 Cal.App.4th 170; Stockton Teachers Association CTA/NEA v. Stockton Unified School District (2012) 204 Cal.App.4th 446; Neily v. Manhattan Beach Unified School District, (2011) 192 Cal.App.4th 187; California Teachers Association v. Vallejo City Unified School District, (2007) 149 Cal.App.4th 135; Bakersfield Elementary Teachers Assn. v. Bakersfield City School District, (2006) 145 Cal.App.4th 1260, 1277; Kavanaugh v. West Sonoma Union High School District, (2003) 29 Cal.4th 911
Management Resources/Web Sites: CSBA: http://www.csba.org;
Commission on Teacher Credentialing: http://www.ctc.ca.gov

Policy Adopted: 05/06/1958
Policy Amended: 08/21/1962; 12/21/1965; 11/04/1986; 03/19/1996; 10/20/1998; 02/03/2004; 10/15/2013; 02/07/2017; --/--/2019

Formerly BP 4108

Instruction

Reading/Language Arts Instruction

The Board of Education recognizes that reading and other language arts constitute the basic foundation for learning in other areas of study. The Board desires to offer a comprehensive, balanced reading/language arts program that ensures all students have the skills necessary to read fluently and for meaning and develops students' appreciation for literature. The program shall integrate reading and oral and written language arts activities in order to build effective communication skills.

For each grade level, the Board shall adopt academic standards that meet or exceed Common Core State Standards in the following strands:

1. Reading: Foundational skills, text complexity and analysis, and the growth of comprehension

2. Writing: Text types, responding to reading, production and distribution of writings, and research

3. Speaking and listening: Oral language development, comprehension, flexible communication, and collaboration

4. Language: Conventions, effective use, knowledge of language, and vocabulary

The Superintendent or designee shall ensure that the District's reading/language arts program offers sufficient access to standards-aligned textbooks and other instructional materials. The program shall provide instructional materials of varying levels of difficulty, including fiction and nonfiction works, so that students are continually reading at an appropriate level. In addition, technology should be available to support all areas of literacy.

Teachers are expected to use a variety of instructional strategies to accommodate the needs of beginning readers and the varying abilities of more advanced readers. The program shall provide ongoing diagnosis of students' skills and, as needed, may provide supplementary instruction during the school day and/or outside the regular school session to assist students who are experiencing difficulty learning to read.

The Superintendent or designee shall make available professional development opportunities that are designed to provide instructional staff with knowledge about how students develop language skills, the ability to analyze students' literacy levels, and mastery of a variety of instructional strategies and materials.

Instruction

Reading/Language Arts Instruction

The Superintendent or designee shall provide the Board with data from state and District reading assessments and program evaluations to enable the Board to monitor program effectiveness.

Legal Reference: Education Code, Sections 41505-41508; 41530-41532; 44735; 44755-44757.5; 51210; 51220; 60119; 60200.4; 60207; 60350-60352; 60605; 60605.8; 99220-99221; 99230-99242
Code of Regulations, Title 5, Sections 11980-11985; 11991-11991.2
United States Code, Title 20, Sections 6381-6381k; 6383

Policy Adopted: --/--/2019

Instruction

History-Social Science Instruction

The Board of Education believes that the study of history and other social sciences is essential to prepare students to engage in responsible citizenship, comprehend complex global interrelationships, and understand the vital connections among the past, present, and future. The District's history-social science education program shall include, at appropriate grade levels, instruction in American and world history, geography, economics, political science, anthropology, psychology, and sociology.

The Board shall adopt academic standards for history-social science which meet or exceed state content standards and describe the knowledge and skills students are expected to possess at each grade level.

The Superintendent or designee shall develop and submit to the Board for approval a comprehensive, sequential curriculum aligned with the District standards and consistent with the state's curriculum framework for history-social science. The curriculum shall be designed to develop students' core knowledge in history and social science and their skills in chronological and spatial thinking, research, and historical interpretation. History-social science instruction shall also include an explicit focus on developing students' literacy in reading, writing, speaking, listening, and other language skills.

The Board shall adopt standards-aligned instructional materials for history-social science in accordance with applicable law, Board policy, and administrative regulation. In addition, teachers are encouraged to supplement the curriculum by using biographies, original documents, diaries, letters, legends, speeches, other narrative artifacts, and literature from and about the period being studied.

Personal testimony from persons who can provide first-hand accounts of significant historical events is encouraged and may be provided through oral histories, videos, or other multimedia formats. If oral history is used for instruction related to the role of Americans in World War II or the Vietnam War, such testimony shall exemplify the personal sacrifice and courage of the wide range of ordinary citizens who were called upon to participate in the war, provide views and comments concerning reasons for participating in the war, and provide commentary on the aftermath of the war in Eastern Europe and the former Soviet Union. (Education Code 51221.3, 51221.4)

The Superintendent or designee shall provide a standards-based professional development program designed to increase teachers' knowledge of adopted instructional materials and instructional strategies for teaching history-social science.

Instruction

History-Social Science Instruction

The Superintendent or designee shall regularly evaluate and report to the Board regarding the implementation and effectiveness of the history-social science curriculum at each grade level, including, but not limited to, the extent to which the program is aligned with state standards, any applicable student assessment results, and feedback from students, parents/guardians, and staff regarding the program.

Legal Reference: Education Code, Sections 33540; 51008-51009; 51204; 51204.5; 51210; 51220; 51220.2; 51221; 51221.3-51221.4; 51225.3; 51226.3; 51226.7; 60040-60051; 60119; 60200-60206; 60400-60411; 60640-60649; 99200-99206

Policy Adopted: --/--/2019

Instruction

Transitional Kindergarten

The Board of Education desires to offer a high-quality Transitional Kindergarten (TK) program for eligible children who do not yet meet the minimum age criterion for kindergarten. The program shall assist TK children in developing the academic, social, and emotional skills they need to succeed in kindergarten and beyond.

The District's TK program shall be the first year of a two-year kindergarten program. (Education Code 48000)

The Board encourages ongoing collaboration among District preschool staff, other preschool providers, elementary teachers, administrators, and parents/guardians in program development, implementation, and evaluation of the District's TK program.

A. Eligibility

1. The District's TK program shall admit children whose fifth birthday is from September 2 through December 2. (Education Code 48000)

2. Parents/guardians of eligible children shall be notified of the availability of the TK program and the age, residency, immunization, and any other enrollment requirements. Enrollment in the TK program shall be voluntary.

3. Upon request of a child's parents/guardians, the District may, on a case-by-case basis after the Superintendent or designee determines that it is in the child's best interest, admit into the District's TK program a child whose fifth birthday is on or before September 1 and who is therefore eligible for kindergarten.

4. The District may, at any time during the school year, but after a child turns five years of age, admit into the TK program a child whose fifth birthday is after December 2 of that same school year, provided that the Superintendent or designee recommends that enrollment in a TK program is in the child's best interest and the child's parents/guardians approve. Prior to such enrollment, the child's parents/guardians shall be provided information regarding the advantages and disadvantages and any other explanatory information about the effect of early admittance. Enrollment of children into TK whose fifth birthday is after December 2 will be on a case-by-case basis and only as space permits in the District's TK classrooms allowing for space for new TK-age student enrollment. (Education Code 48000)

Instruction

Transitional Kindergarten

B. Curriculum and Instruction

1. The District's TK program shall be based on a modified kindergarten curriculum that is age and developmentally appropriate. (Education Code 48000)

2. The program shall be aligned with the preschool learning foundations and preschool curriculum frameworks developed by the California Department of Education. It shall be designed to facilitate students' development in essential skills related to language and literacy, mathematics, physical development, health, visual and performing arts, science, history-social sciences, English language development, and social-emotional development.

3. The Board shall establish the length(s) of the school day in the district's TK program. TK programs may be maintained for different lengths of time either at the same or different school sites, as long as the school day is at least three hours but no more than four hours. The Superintendent or designee shall annually report to the California Department of Education as to whether the district's TK programs are offered full day, part day, or both. (Education Code 37202, 46111, 46115, 46117, 48003)

4. TK students may be placed in the same classrooms as kindergarten students when necessary, provided that the instructional program is differentiated to meet student needs.

5. TK students may be placed in a classroom commingled with 4-year-old students from a California State Preschool Program as long as the classroom does not include students enrolled in TK for a second year or students enrolled in a regular kindergarten. (Education Code 8235, 48000)

C. Staffing

1. The Superintendent or designee shall ensure that teachers assigned to teach in TK classes posses a teaching credential or permit from the Commission on Teacher Credentialing (CTC) that authorizes such instruction.

2. A credentialed teacher who is first assigned to a TK class after July 1, 2015, shall by August 1, 2020, have at lease 24 units in early childhood education and/or child development, comparable experience in a preschool setting and/or a child development teacher permit issued by the CTC. (Education Code 48000)

3. The Superintendent or designee may provide professional development as needed to ensure that TK teachers are knowledgeable about the standards and effective instructional methods for teaching young children.

D. Continuation to Kindergarten

1. Students who complete the TK program shall be eligible to continue in kindergarten the following school year. Parents/guardians of such students shall not be required to submit a signed Kindergarten Continuance Form for kindergarten attendance.

2. However, whenever children who would otherwise be age-eligible for kindergarten are enrolled in TK, the Superintendent or designee shall obtain a Kindergarten Continuance Form signed by the parent/guardian at the beginning of the TK year acknowledging consent for the child's enrollment in TK and enrollment in kindergarten the following school year.

3. A student shall not attend more than two years in a combination of TK and Kindergarten. (Education Code 46300)

E. Assessment

The Superintendent or designee may develop or identify appropriate formal and/or informal assessments of TK students' development and progress. He/she shall monitor and regularly report to the Board regarding program implementation and the progress of students in meeting related academic standards.

Legal References: Education Code, Sections 8235; 8973; 37202; 44258.9; 46111; 46114-46119; 46300; 48000; 48002; 48003; 48200

Policy Adopted: 05/24/2016

Policy Amended: 03/06/2018; --/--/2019

DRAFT

Instruction

Summer School

The Board of Education recognizes that ~~summer school provides valuable opportunities for students to improve their skills and make academic progress. When the need is demonstrated and funds are available, the Superintendent or designee, with Board approval, shall establish summer school day and/or evening classes for purposes of remediation, enrichment, or acceleration.~~ an extended break from the instructional program may result in significant learning loss, especially among disadvantaged and low-achieving students, and desires to provide opportunities during the summer for students to practice essential skills and make academic progress.

Summer programs offered by the District shall be aligned with the District's local control and accountability plan (LCAP), other applicable District and school plans, and the educational program provided during the school year. When feasible, summer programs shall blend high-quality academic instruction in core curricular and/or elective subjects with recreation, nutrition programs, social and emotional development, and support services that encourage attendance, student engagement in learning, and student wellness.

Summer School

The Superintendent or designee, with Board approval, may establish summer school day and/or evening classes.

The District's summer school program may be used to provide supplemental instruction to students needing remediation and/or enrichment in core academic subjects.

~~The District shall offer summer instructional programs for high school seniors who need courses for graduation prior to September.~~

~~The District's summer school program may be used to provide supplemental instruction for students failing to meet academic requirements and/or students who desire enrichment in core academic subjects in accordance with law, Board Policy, and Administrative Regulation.~~

A. Enrollment Priorities

~~Priority to enroll in summer programs shall be given to District students who:~~ As appropriate, priority for enrollment in summer school programs shall be given to District students who:

1. Need course credits in order to graduate from high school ~~by September~~ before the beginning of the next school year.

Instruction

Summer School

2. ~~Are eligible for supplemental instruction on the basis of retention, recommendation for retention, or insufficient progress toward the state High School Exit Examination.~~ Have been retained or are at risk of being retained at their grade level.

3. ~~The remaining openings shall be offered to District students by lottery.~~ Demonstrate academic deficiencies in core curriculum areas.

4. Are in targeted student groups identified in the District's LCAP as needing increased or improved services to succeed in the educational program.

5. The remaining openings shall be offered to other District students on a lottery basis.

~~To the extent that space is available after district students have enrolled, remaining openings in high school summer classes for core academic subjects shall be open to private school students who reside in the District and then to students from other districts.~~

B. Attendance

Because summer courses cover extensive instructional content in a relatively short time period, ~~consistent class attendance is crucial.~~ students who have more than three excused absences or one unexcused absence may not receive credit for summer session class(es) unless they make-up missed work in accordance with law, Board policy, and administrative regulation.

C. Location

Sites for summer school programs may be rotated in an effort to make summer school programs more accessible to all students, regardless of residence or regular attendance area, and to accommodate the maintenance needs of District schools.

D. Evaluation

The Superintendent or designee shall annually report to the Board on summer school enrollment in the current year and previous year for the program as a whole and disaggregated by grade level, school that the students attend during the regular school year, and student population. In addition, he/she may report on the extent to which

Instruction

Summer School

students successfully achieved the outcomes established for the program.

E. Additional Summer Learning Opportunities

The Superintendent or designee may collaborate with parents/guardians, city and county agencies, community organizations, child care providers, and/or other interested persons to develop, implement, and build awareness of organized activities that support summer learning.

Strategies to support summer learning may include, but are not limited to:

1. Providing information to students and parents/guardians about summer reading programs scheduled to be conducted by public libraries or community organizations.

2. Collaborating with Early Education and Extended Learning Programs to provide day camps and child care.

3. Collaborating with workforce development agencies, businesses, and community organizations to provide summer job training opportunities that include an academic component.

4. Encouraging reading in the home, such as providing lists of recommended reading to students and parents/guardians, establishing a target number of books or pages, and providing prizes for achievement of reading goals.

5. Conducting occasional, interactive "fun days" during the summer to provide activities related to art, music, science, technology, mathematics, environmental science, multicultural education, debate, or other subjects.

6. Arranging opportunities for community service

Legal Reference: Education Code, Sections ~~420-428~~ 8481-8484.6; 8484.7-8484.9; 37252~~;~~ ~~37253; 37253.5~~ -37254.1; 39837; 41505-41508; 41976.5; 42238.01-42238.07; ~~42239; 42239; 46010;~~ 48070-48070.5; 51210; 51220; 51730~~;~~

Instruction

Summer School

~~51731;~~ -51732; 52052; 52060-52077; ~~53025-53031; 53081-53084; 54000-54033; 54035-54036;~~ 5444.3; 56345; 58700-58702; 58806~~; 60851;~~
Code of Regulations, Title 5, Sections 3043; 11470-11472
United States Code, Title 20, Sections 6311-6322; 7171-7176

Policy Adopted: 06/16/1959

Policy Amended: 07/02/1985; 12/06/1994; 03/27/2002; 10/15/2002; 12/14/2010; --/--/2019

(Formerly BP 6610)

DRAFT

Administration

Superintendent Contract

The Governing Board believes that the Superintendent's employment contract should outline the framework through which the Board and Superintendent are to work together to achieve district goals and objectives. When approving the Superintendent's employment contract, the Board shall consider the need for stability in district administration and shall ensure the best use of district resources.

The contract shall be reviewed by the district's legal counsel and may ~~shall, at a minimum,~~ include the following:

1. Term of the contract, which shall be for no more than four years pursuant to Education Code 35031

2. Length of the work year and hours of work

3. Salary, health and welfare benefits, and other compensation for the position

4. Reimbursement of work-related expenses, including mileage reimbursement, consistent with Board policies, regulations, and guidelines applicable to other professional administrative staff

5. Vacation, illness and injury leave, and personal leaves

6. General duties and responsibilities of the position

7. Criteria, process, and procedure for annual evaluation of the Superintendent

8. A statement that any subsequent increase in the Superintendent's salary shall be at the sole discretion of the Board

9. A statement that there shall be no automatic renewal or extension of the contract, although the Board can enter into a new contract with the Superintendent prior to the expiration of the existing contract

10. Timeline for providing written notice to the Superintendent if the Board does not wish to enter into a new contract, which shall be at least 45 calendar days in advance of the expiration of the term of the contract pursuant to Education Code 35031, and the responsibility of the Superintendent to remind the Board in a timely manner of the requirement to give notice

Administration

Superintendent Contract

11. Conditions and process for termination of the contract, including the maximum cash settlement that the Superintendent may receive if the contract is terminated prior to its expiration date

12. Matters related to liability and indemnification against demands, claims, suits, actions, and legal proceedings brought against the Superintendent in his/her official capacity in the performance of duties related to his/her employment

The Board may deliberate about terms of the contract in closed session at a regular meeting. However, discussions regarding the salary, salary schedule, or other compensation may occur in the closed session of a regular meeting only ~~as permitted under Government Code 54957.6~~ between the Board and its designated representative(s), as permitted under Government Code 54957.6 (the "labor exception"), for the purpose of reviewing the Board's position and/or instructing the designated representative(s) prior to or during bona fide negotiations with the current or prospective Superintendent. Such deliberations shall not be held during a special meeting. (Government Code 54956, 54957, 54957.6)

The Board may consult with district legal counsel prior to holding a closed session with the designated representative(s) to discuss compensation to be paid to the current or prospective Superintendent.

Terms of the contract shall remain confidential until the ratification process commences.

~~The Board shall take final action on the Superintendent's contract in an open meeting, which shall be reflected in the Board's minutes. Copies of the contract shall be available to the public upon request.~~

The Board shall take final action on the Superintendent's contract during an open session of a regularly scheduled Board meeting, and that action shall be reflected in the Board's minutes. At that meeting, prior to taking action, the Board shall orally report a summary of the recommendation for the final action on the Superintendent's salary or compensation in the form of fringe benefits. (Government Code 3511.1, 53262, 54953)

Copies of the contract and other public records created or received in the process of developing the recommendation related to the Superintendent's salary, benefits, and other compensation shall be available to the public upon request. (Government Code 53262, 54953, 54957.6)

Administration

Superintendent Contract

Termination of Contract

Prior to the expiration of the contract, the Board may terminate the Superintendent's employment contract in accordance with law and applicable contract provisions.

In such an event, any cash settlement that the Superintendent may receive upon termination of the contract shall not exceed his/her monthly salary multiplied by the number of months left on the contract or, if the unexpired term of the contract is more than 18 months and the contract was executed prior to January 1, 2016, no greater than the superintendent's monthly salary multiplied by 18. For any contract executed on or after January 1, 2016, any cash settlement shall not exceed the Superintendent's monthly salary multiplied by 12. (Government Code 53260)

The cash settlement shall not include any noncash items other than health benefits, which may be continued for the same duration of time as covered in the settlement or until the Superintendent finds other employment, whichever occurs first. (Government Code 53260, 53261)

However, when the termination of the Superintendent's contract is based upon the Board's belief and subsequent confirmation through an independent audit that the Superintendent has engaged in fraud, misappropriation of funds, or other illegal fiscal practices, no cash or noncash settlement of any amount shall be provided.

In addition, if the Superintendent is convicted of a crime involving an abuse of his/her office or position, he/she shall reimburse the district for payments he/she receives as paid leave salary pending investigation or as cash settlement upon his/her termination, and for any funds expended by the district in his/her defense against a crime involving his/her office or position.

Legal Reference: Education Code, Sections 35031; 41325-41329.3
Government Code, Sections 3511.1-3511.2; 6250-6270, 53243-53243.4; 53260-53264; 54953, 54954; 54956; 54957; 54957.1; 54957.6
United States Code, Title 26, Section 105
United States Code, Title 42, Sections 300gg-16
Code of Federal Regulations, Sections 1.105-11

Policy Adopted: 07/14/2015

Policy Amended: 02/02/2016; 07/26/2016; --/--/2019

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

INFORMATION REPORT NO. 6

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED IN: Office of the Superintendent

SUBJECT: **Board of Education Annual Organization Meeting**

On Tuesday, April 16, 2019, the annual organization meeting takes place. The meeting includes elections, signature authorizations, readoption of policies, and selection of Board representatives to the Los Angeles County School Trustees Association and to the County Committee on School District Organization. Board Policies 9121, 9123, and 9140 are attached for your reference.

The selection of officers pursuant to BP 9100 is as follows:

1. The selection of officers may be determined by a rotation of seats.

2. The seats of the Board of Education are:
   Seat 1 – President
   Seat 2 – Vice President
   Seat 3 – Clerk
   Seat 4 - Board Member
   Seat 5 – Board Member

3. In non-election years and in years when there are no newly elected members, the outgoing president may rotate to Seat 5 and other members may rotate forward.

4. Non-Rotation: If the Board chooses not to rotate officers, nominations from all officers and seats 4 and 5 will be taken and voted upon in accordance with Robert's Rules of Order.

Duties of Members - President

The Governing Board shall elect a president from among its members to provide leadership on behalf of the governance team and the educational community it serves.

To ensure the Board meetings are conducted in an efficient, transparent and orderly manner, the president shall:

1. Call such meetings of the Board as he/she may deem necessary, giving notice as required by law.

2. Consult with the Superintendent or designee on the preparation of Board meeting agendas.

3. Call the meeting to order at the appointed time and preside over the meeting.

4. Announce the business to come before the Board in its proper order.

5. Enforce the Board's bylaws related to the conduct of meetings and help ensure compliance with applicable requirements of the Brown Act.

6. Recognize persons who desire to speak, and protect the speaker who has the floor from disturbance or interference.

7. Facilitate the Board's effective deliberation, ensuring that each Board member has an opportunity to participate in the deliberation and that the discussion remains focused.

8. Rule on issues of parliamentary procedure.

9. Put motions to a vote, and clearly state the results of the vote.

The president shall have the same rights as other members of the Board, including the right to discuss and vote on all matters before the Board.

The president shall perform other duties in accordance with law and Board policy including, but not limited to:

1. Signing all instruments, acts, orders, and resolutions necessary to comply with legal requirements and carry out the will of the Board.

2. Working with the Superintendent or designee to ensure that Board members have necessary materials and information.

Duties of Members - President

3. Subject to Board approval, appointing and dissolving all committees.

4. In conjunction with the Superintendent or designee, representing the district as the Board's spokesperson in communications with the media.

5. Leading the Board's advocacy efforts to build support within the local community and at the state and national levels.

The president shall participate in the California School Boards Association's Board President's Workshop and other professional development opportunities to enhance his/her leadership skills.

When the president resigns or is absent, the vice president shall perform the president's duties. When both the president and vice president are absent, the clerk shall perform the president's duties.

Legal Reference:	Education Code Section 35022, 35143 Government Code 54950-54963 Ralph M. Brown Act
Policy Adopted:	12/04/1956
Policy Amended:	01/18/1977; 03/19/1985; 05/17/1994; 06/24/2003; 12/14/2010; 09/05/2017

Formerly BP 9310, 9320

Clerk

The Governing Board shall elect a clerk from its own membership at the annual organizational meeting. (Education Code 35143)

The duties of the clerk shall be to:

1. Certify or attest to actions taken by the Board when required
2. Maintain such other records or reports as required by law
3. Sign documents on behalf of the district as directed by the Board
4. Serve as presiding officer in the absence of the president and vice president
5. Notify Board members and members-elect of the date and time for the annual organizational meeting
6. Perform any other duties assigned by the Board

Legal Reference:	Education Code, Sections 17593; 35038; 35039; 35121; 35143; 35250; 38113 Government Code 54950-54963 Ralph M. Brown Act
Policy Adopted:	12/04/1956
Policy Amended:	01/18/1977; 03/19/1985; 06/24/2003; 11/05/2018

Formerly BP 9330

Board Representatives

The Governing Board recognizes that effective performance of its community leadership responsibilities may require its participation in District or community committees on matters of concern to the District and its students. As needed, the Board may appoint any of its members to serve as its representative on a District committee or on a committee of another public agency or organization of which the Board or District is a member or to which the Board is invited to participate.

When making such appointments, the Board shall clearly specify the authority and responsibilities of the representative(s), including, but not limited to, reporting back to the Board regarding committee activities and/or actions. Board representatives shall not exercise the authority of the Board without prior Board approval.

If a committee discusses a topic on which the Board has taken a position, the Board member shall express the position as a representative of the Board. When contributing his/her own ideas or opinions, the representative shall clearly indicate that he/she is expressing his/her individual idea or opinion.

Board Representative to Elect Members of County Committee on School District Organization

At its annual organizational meeting, the Board shall designate one Board member as its representative to elect members to the county committee on school District organization. The Secretary shall notify the County Superintendent of Schools of the name of the representative selected by the Board.

Legal Reference: Education Code, Sections 4000-4014; 35020-35046; 35160
Government Code 54952.2

Policy Adopted: 03/19/1985
Policy Amended: 05/17/1994; 06/01/1999; 06/24/2003; 12/14/2010; 11/05/2018

Formerly BP 9160

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 1

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Stephen Dickinson, Chief Business and Financial Officer

PREPARED BY: Christine Ward, Director, Procurement & Contract Services

SUBJECT: **Award of Bid No. 180-18/19 for the Roosevelt MS Walk-in Freezer**

The Interim Superintendent recommends that the Board of Education award Bid No. 180-18/19 for the Roosevelt MS Walk-in Freezer project to SS+K Construction, Inc. in the amount of $97,960.00

This item is in support of Board Priority #2 - Create a Culture of Learning - Ensure the safety and support the social, emotional, and physical needs of our students and staff.

In accordance with established procedures, Procurement & Contract Services completed the solicitation of bids for the Roosevelt MS Walk-in Freezer project, Bid No. 180-18/19. A bid conference and job walk was conducted and eight (8) contractors participated. The District received and opened three (3) bids on February 19, 2019, as outlined below:

Contractor	Amount
East Bay Restaurant Supply (bid non-responsive)	$75,967.82
SS+K Construction, Inc.	$97,960.00
Harik Construction, Inc.	$179,000.00

After conducting a post-bid conference and reviewing the bid documents it was determined that the bid received from East Bay Restaurant Supply was non-responsive. Therefore, the lowest most responsive bidder is SS+K Construction, Inc. Staff is recommending the award of this project to SS+K Construction, Inc. in the amount of $97,960.00. This project is anticipated to be completed by August 16, 2019.

Bid details are available for review in the Procurement & Contract Services Department. This project will be funded by Fund 40.2 – Child Nutrition Special Reserve for Capital Projects.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 2

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Stephen Dickinson, Chief Business and Financial Officer

PREPARED BY: Christine Ward, Director, Procurement & Contract Services

SUBJECT: **Approve List of Prequalified Contractors from which Request for Proposals on Lease-Leaseback Projects May be Solicited**

The Interim Superintendent recommends that the Board of Education approve the list of Prequalified Contractors from which Request for Proposals on Lease-Leaseback projects may be solicited over the next two (2) years.

This agenda item is in support of Board priority #2 - Create a Culture of Learning.

On January 15, 2019, and pursuant to California Education Code Section 17406, the Board adopted and published required procedures and guidelines for evaluating the qualifications of prospective lease-leaseback contractors. In accordance with established procedures, Procurement & Contract Services solicited a Request for Qualification for the submission of a prequalification questionnaire and a statement of qualifications from qualified contractors to perform services for projects pursuant to a lease-leaseback structure.

On March 1, 2019, the District received five (5) responses from contractors to both the prequalification questionnaire and the statement of qualifications. After scoring, only four (4) of the contractors who submitted a response met the minimum point requirement for approval.

- Balfour Beatty Construction, LLC
- Neff Construction, Inc.
- Pinner Construction Co., Inc.
- The Nazerian Group

Staff is recommending the approval of the above-listed prequalified contractors from which request for proposals on Lease-leaseback projects may be solicited over the next two (2) years.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 3

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Stephen Dickinson, Chief Business and Financial Officer

PREPARED BY: Christine Ward, Director, Procurement & Contract Services

SUBJECT: **Resolution No. 22 - Utilization of the Informal Bidding under the California Uniform Public Construction Cost Accounting Act (CUPCCAA) for New Construction, Maintenance, and Repairs**

The Interim Superintendent recommends that the Board of Education approve Resolution No. 22 for utilization of the informal bidding under the California Uniform Public Construction Cost Account Act (CUPCCAA) for new construction, maintenance, and repairs.

This agenda item is in support of Board priority #2 - Create a Culture of Learning.

On December 13, 2011, the Board of Education approved a resolution for the District to utilize the California Uniform Public Construction Cost Accounting Act (CUPCCAA) for projects valued below $175,000, pursuant to California Public Contract Code 22032 (a)(b).

On January 1, 2019, the CUPCCAA Commission, in agreement with the State Controller's Office, increased the bidding threshold for these projects from $175,000 to $200,000. In addition, this change will allow projects valued at $60,000 or less to be performed by employees of a public agency by force account, by negotiated contract, or by purchase order.

Staff recommends that the Board approve Resolution No. 22 documenting new bidding thresholds for the California Uniform Public Construction Cost Accounting Act (CUPCCAA) effective January 1, 2019.

GLENDALE UNIFIED SCHOOL DISTRICT

RESOLUTION NO. 22

RESOLUTION FOR CALIFORNIA UNIFORM PUBLIC CONSTRUCTION COST ACCOUNTING ACT (CUPCCAA)

WHEREAS, the California Uniform Public Construction Cost Accounting Act of Public Contract Code section 22030 et seq. ("Act") permits the District to utilize "informal" bidding procedures for public works projects of the District which fall within the preview of the Act; and

WHEREAS, the District is currently subject to the California Uniform Public Construction Cost Accounting Act ("Act"); and

WHEREAS, Public Contract Code section 22000 et seq., the California Uniform Public Construction Cost Accounting Act ("Act"), establishes a uniform cost accounting standard and allows for an alternate method for bidding public works projects ("informal bidding") by local public agencies;

WHEREAS, to engage in the informal bidding procedures permitted under the Act, the District must adopt procedures governing the selection of contractors for public works projects subject to the Act;

WHEREAS, the California Uniform Construction Cost Accounting Commission in agreement with the State Controller's Office recommended an increase to the bid limit threshold prescribed in Public Contract Code 22032, and was signed into law effective January 1, 2019;

WHEREAS, the limits for the informal bidding of public works projects by local agencies, as defined by the Act, adjusted effective January 1, 2019, to provide that (a) public contracts of $60,000 or less may be performed by District employees by force account, by negotiated contract, or by purchase order (Public Contract Code 22032(a)); (b) public projects of $200,000 or less may be contracted by informal procedures (Public Contract Code 22032(b)); and (c) public projects over $200,000 are subject to formal bidding procedures (Public Contract Code 22032(c));

THEREFORE, BE IT RESOLVED that the Governing Board approves that public projects, as defined by the Act, of two hundred thousand dollars ($200,000) or less, may be led to contract by informal bidding procedures as set forth in Section 22032, et seq., of the Public Contract Code.

BE IT ALSO RESOLVED that the Governing Board approves that a list of contractors shall be developed and maintained in accordance with the provisions of Section 22034 of the Public Contract Code, and criteria promulgated from time to time by the California Uniform Construction Cost Accounting Commission.

BE IT ALSO RESOLVED that the Governing Board approves that, where a public project is to be performed, it is subject to the provisions of this resolution and a notice inviting formal bids shall be sent to all contractors for the category of work to be bid, as shown on the list developed in accordance with this resolution, and/or to all construction trade journals as specified by the California Uniform Construction Cost Accounting Commission in accordance with Section 22036 of the Public Contract Code.

BE IT ALSO RESOLVED that the Governing Board approves that the district's Superintendent, and/or designee are authorized to award informal contracts pursuant to this resolution.

THE FOREGOING RESOLUTION was adopted by the Governing Board of the Glendale Unified School District of Los Angeles County, State of California, at a meeting of said Board held on the 2nd day of April, 2019, by the following vote:

AYES: _____
NOES: _____
ABSENT: _____
ABSTAIN: _____

_____
President, Governing Board
Glendale Unified School District
Los Angeles County, California

I, Armina Gharpetian, Clerk of the Governing Board of the Glendale Unified School District, County of Los Angeles, State of California, do hereby certify that the foregoing is a true copy of the resolution adopted by said Board at a regular meeting thereof, at the time and by the vote therein stated, which original resolution is on file in the office of said Board.

_____

Clerk, Governing Board
Glendale Unified School District
Los Angeles County, California

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 4

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Stephen Dickinson, Chief Business and Financial Officer

SUBJECT: **Approval of Budget Adjustment for the Hoover High School Pool Expansion and Renovation Project**

The Interim Superintendent recommends that the Board of Education approve a Budget Adjustment for the Hoover High School Pool Expansion and Renovation Project in the amount of $5,000,000, funded by Developer Fees and Measure S funds.

This agenda item is in support of Board Priority No. 2 – Create a Culture of Learning. On March 6, 2018, the Board of Education approved the allocation of $5,000,000 for the Hoover High School Pool Expansion and Renovation project. Following the approval of this project, staff began working with the District's approved architectural firms in order to obtain a proposal for the work.

Planning & Development staff also discussed with District Administrators the usage of the pool and the benefits of the expansion and renovation. The Hoover High School Pool Project would serve approximately 60 water polo athletes, 100 swim athletes, and would benefit approximately 600 physical education students in 9th and 10th grade. Once the project is complete, the facility would also allow for Hoover High School to host playoff games and tournaments, which would additionally benefit the other high schools in the District, in addition to community use.

Following discussions with NAC Architecture and pool engineers, it was determined that the current budget allocated for this project would not be sufficient to cover the anticipated costs. Due to several factors, including escalation in costs and detailed estimates, it has been determined that an additional budget allocation of $5,000,000 is required in order to complete the project. This revised budget of $10 million is based on the total cost of the project, including an estimated construction cost of $6.7 million, soft costs, and escalation costs on the project.

The Board directed staff to generate three (3) different options for this project that include revised scope of work that would fit different budgets. Below are three (3) different options for moving forward with this project, along with the details of each scope of work. These estimated budgets include hard construction estimates as well as soft costs and contingency. Staff recommends moving forward with Option 3 of the project, which includes the expansion and renovation of the pool as originally planned.

Option 1 – Basic Upgrade to Existing Facility, $2.1 million Estimated Budget

- Removal and replacement of existing concrete pool decking
- Structural concrete repair to existing chemical and equipment room ceiling and walls
- Expansion of new chemical room (required due to current code requirements)
- Construction of a new retaining wall

Option 2 – Mid-Level Improvement to Existing Pool & Facility, Estimated Budget of $4.4 million

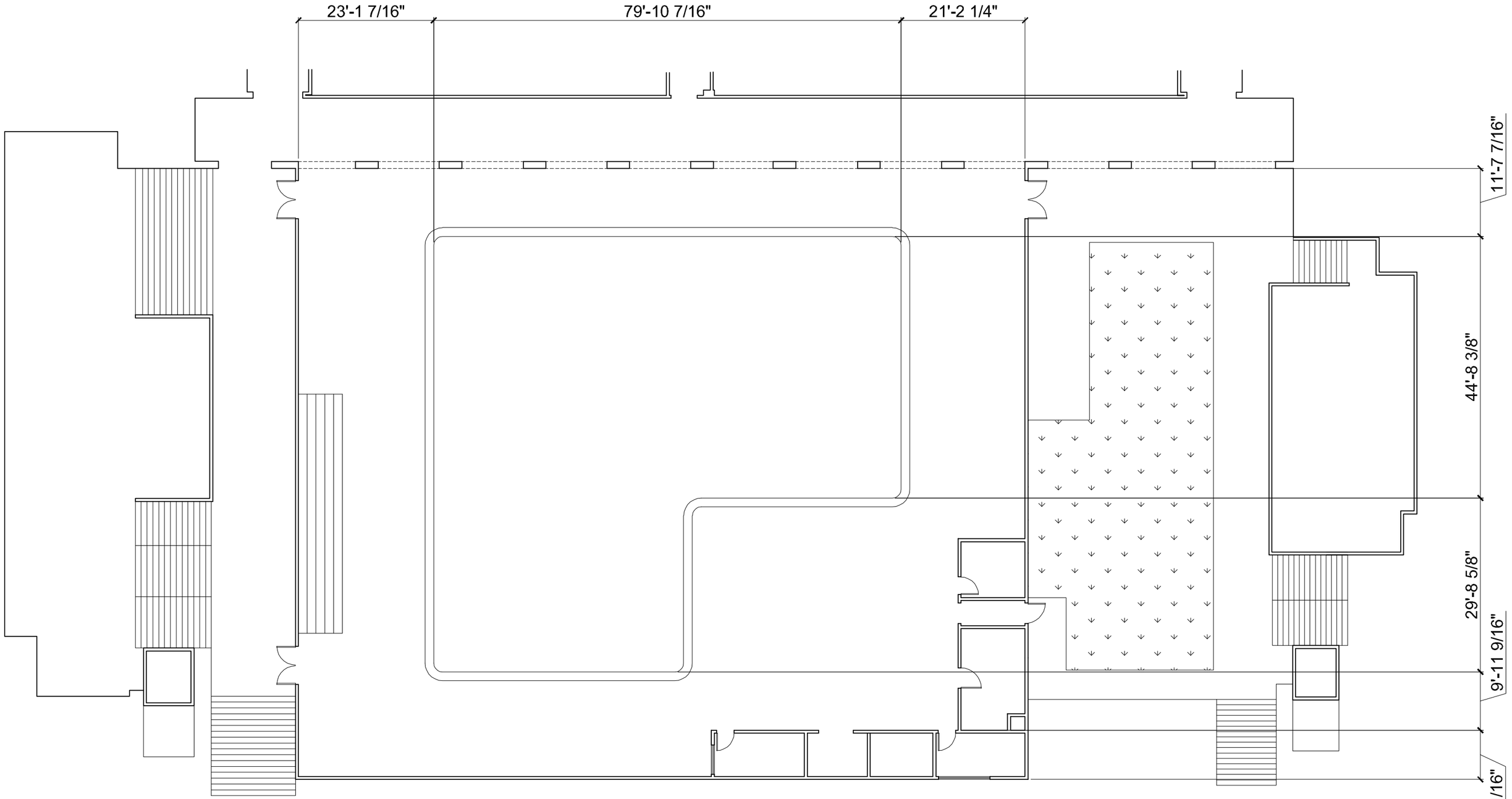
- Removal and replacement of existing concrete pool decking
- Structural concrete repair to existing chemical and equipment room ceiling and walls
- Expansion of new chemical room (required due to current code requirements)
- Re-plaster current pool
- Installation of new plumbing and drainage system to existing pool
- Purchase and installation of all new pool equipment, plumbing, and electrical as necessary
- Complete renovation to existing coaches' office, storage, and shower building
- Construction of new retaining wall

Option 3 – Construct New CIF Water Polo Pool and Aquatics Area, $10 million Estimated Budget

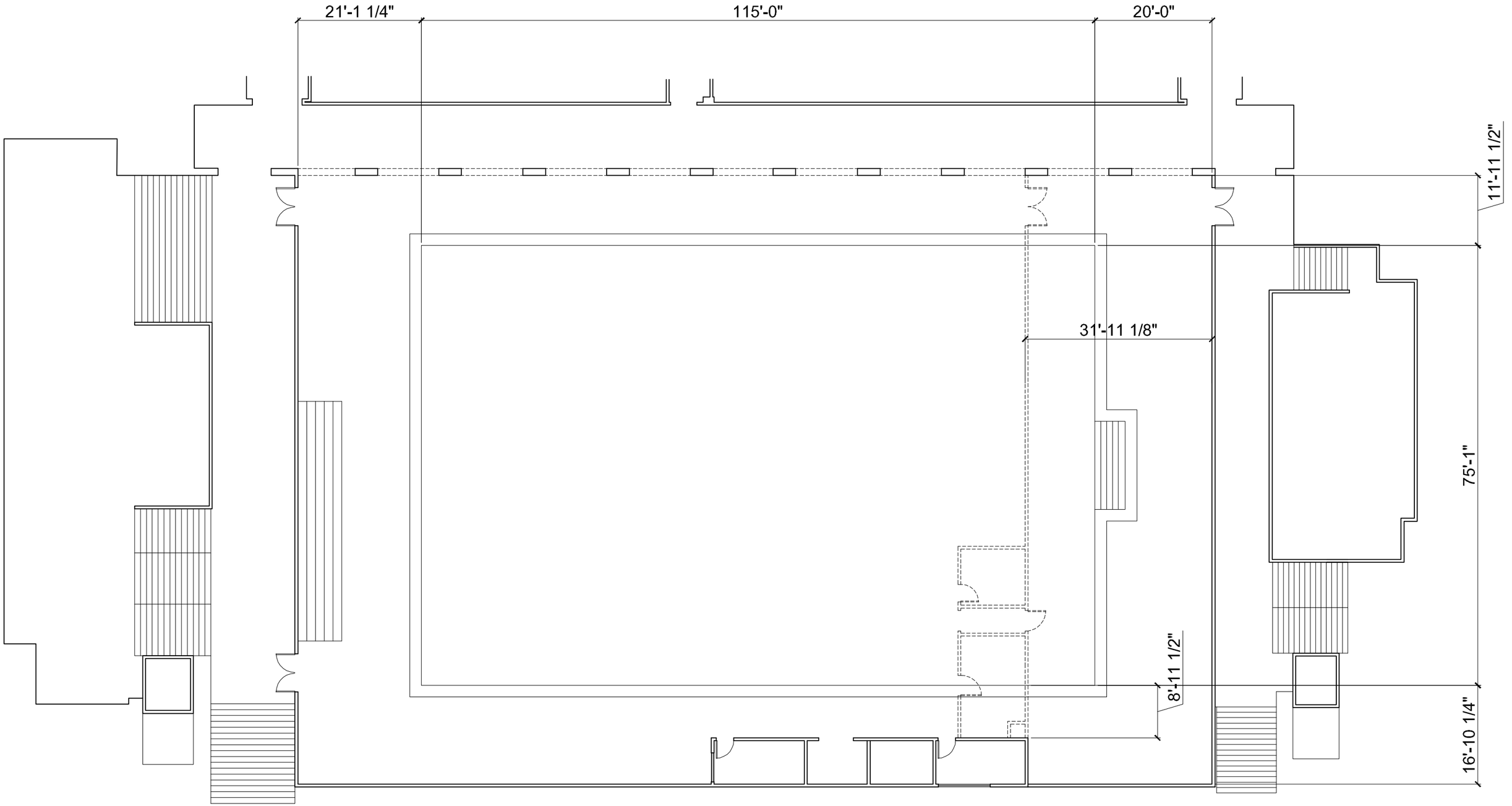
- Demolition of existing pool and supporting equipment and buildings
- Demolition of existing retaining wall and construction of new retaining wall
- Structural underpinning along north side of pool adjacent to existing football bleacher & shower building
- Expansion of pool area to provide CIF water polo and swimming
- Construction of new offices, team room, storage & shower area
- Construction of shade structure over spectator seating area
- Expansion of new chemical room (required due to current code requirements)

Staff is recommending that the Board approve an additional budget allocation of $5,000,000 for the Hoover High School Pool Expansion and Renovation project, which would change the total project budget to $10,000,000. Attached is a rough design of the current pool layout, as well as a layout of the plan for Option 3.

This project is funded by Developer Fees and Measure S – Hoover High School Pool Expansion and Renovation project Fund. The Superintendent's Facility Advisory Committee has rescinded their support of Option 3 of the project and supports either Option 1 or Option 2.



HOOVER HS SWIMMING POOL RENOVATION
EXISTING CONDITION
SCALE: 1/16" = 1'-0"
NAC ARCHITECTURE
12/12/2018



HOOVER HS SWIMMING POOL RENOVATION
AQUATIC MODEL SP1
SCALE: 1/16" = 1'-0"
NAC ARCHITECTURE
12/12/2018

SWIMMING POOL DATA (OPTION 1)

SURFACE AREA	=	8,711 SQ. FT.
PERIMETER	=	390 FT.
DEPTHS	=	3'-6" TO 7'-3"
VOLUME	=	433,069 GAL.
6 HR TURNOVER	=	1,203 GPM

LEGEND

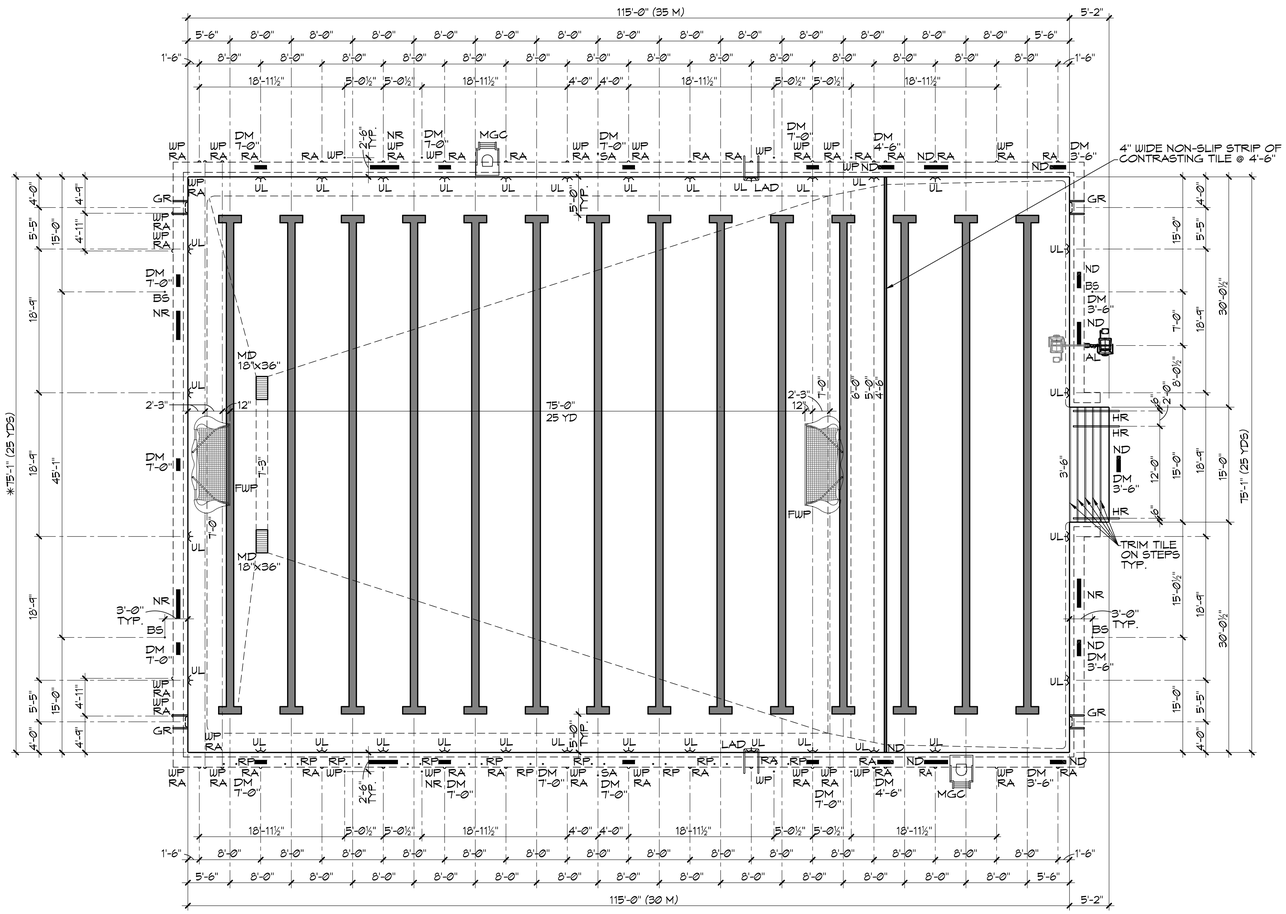
MD	=	MAIN DRAIN
HR	=	HANDRAIL
GR	=	GRABRAIL
DM	=	DEPTH MARKER
NR	=	'NO RUNNING'
ND	=	'NO DIVING'
LAD	=	LADDER
RA	=	ROPE ANCHOR
RP	=	RACING PLATFORM
WP	=	WATER POLO GOAL/ANCHOR
BS	=	BACKSTROKE STANCHION
UL	=	UNDERWATER LIGHT
MGC	=	MOVEABLE GUARD CHAIR
AL	=	ACCESSIBLE LIFT
FWP	=	FLOATING WATERPOLO GOAL
SA	=	STANCHION ANCHOR

CERTIFICATION REQUIREMENTS

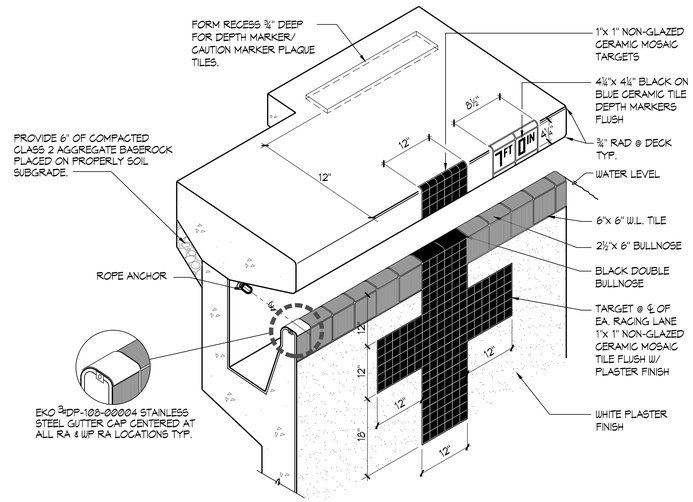
* THE CONTRACTOR SHALL RETAIN AN INDEPENDENT LICENSED SURVEYOR TO PROVIDE USA SWIMMING CERTIFICATION OF COMPLIANCE FOR REQUIRED POOL LENGTHS AS FOLLOWS: (RECOMMEND PATRELL ENG. GROUP (626) 335-4362)

SHORT COURSE-25YDS: (ALLOWS FOR TOUCH PADS AT ONE END) 75'-0 5/16" MIN.; 75'-1 3/16" MAX.

TOLERANCE AGAINST LENGTH SHALL EXTEND IN A VERTICAL PLANE Ø.3M (12") ABOVE AND Ø.8M. (2'-7½") BELOW THE SURFACE OF THE WATER AT ALL POINTS OF BOTH END WALLS TYP. OF ALL COURSES.



1 **SWIMMING POOL LAYOUT PLAN (OPTION 1)** 1/8"=1'-0"



2 **DEEP GUTTER PERSPECTIVE** NO SCALE

AQUATIC DESIGN GROUP
2226 Faraday Ave. Carlsbad, CA 92008
AquaticDesignGroup.com
760.438.8400

PROJECT INFORMATION
HOOVER HIGH SCHOOL
651 GLENWOOD RD.
GLENDALE, CA 91202

REVISIONS

NO.	DATE	DESCRIPTION

ARCHITECT
LICENSED ARCHITECT SCOTT J. FERRELL C-26222 REN: 12/31/19 STATE OF CALIFORNIA

DRAWING TITLE
SWIMMING POOL LAYOUT PLAN (OPTION 1)

PROJECT NO.	
DRAWN BY	NFC
CHECKED BY	SJF
DATE	12/11/2018

DRAWING NO.
SP.1

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 5

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Stephen Dickinson, Chief Business and Financial Officer

SUBJECT: **Approval of Project Authorization No. 23 with NAC Architecture for Architectural Services at Hoover High School Pool Expansion and Renovation Project**

The Interim Superintendent recommends that the Board of Education approve Project Authorization No. 23 with NAC Architecture for Architectural Services at the Hoover High School Pool Expansion and Renovation project in the amount of $862,250.00, funded by Developer Fees and Measure S – Hoover High School Pool Expansion and Renovation project funds.

This item is in support of Board Priority No. 2 – Create a Culture of Learning. On March 6, 2018, the Board of Education approved the allocation of $5,000,000 for the Hoover High School Pool Expansion and Renovation project. This project will create a 38m by 25yd pool that would meet CIF regulation size, as well as address several additional concerns at the pool deck. Following this approval, staff began working with site administrators and staff to determine the details of the project.

Planning & Development staff then began working with the District's approved architectural firms in order to obtain a proposal for the work. Staff is recommending that the Board approve Project Authorization No. 23 for NAC Architecture to provide architectural services for this project for a total cost of $862,250.00.

This project is funded by Developer Fees and Measure S – Hoover High School Pool Expansion and Renovation project funds. The Superintendent's Facility Advisory Committee voted to support an agreement with NAC Architecture in alignment with either Option 1 or Option 2 of the proposed project.

PROJECT AUTHORIZATION

Project Authorization Number: NAC - Hoover High Pool Complex -023

Date: **March 13**, 2019

This Project Authorization is issued pursuant to the Architectural Services Agreement dated November 6, 2018 by and between GLENDALE UNIFIED SCHOOL DISTRICT (DISTRICT) AND NAC Architecture (ARCHITECT) and, when fully executed, is considered as an integral part of said Agreement subject to all the provisions and conditions thereof.

The DISTRICT does hereby authorize the ARCHITECT to provide professional services on the following project:

1. PROJECT NAME AND LOCATION

Herbert Hoover High School, 651 Glenwood Road, Glendale, CA 91202

2. PROJECT DESCRIPTION/SCOPE

Hoover High School Pool Complex Project. Scope of Work as described below:

Design and documentation of Pool Complex:

1. Pool Building: Approx. 2,500sf
2. Pool Equipment and Chemical Room: Approx. 1,500sf
3. Swimming Pool: Approx. 8,700sf
4. Pool Deck and Observation Area: Approx. 8,800sf

Specific scope of work includes:

1. Design and documentation for GUSD review and approval based on our prime agreement following the phases listed in the "Deliverables" portion below.
2. Design and documentation for DSA review and approval:
    a. Civil construction documents including site demolition, precise grading/ drainage, site utility and erosion control plans.
    b. Architectural construction documents including site accessibility/code analysis, Demolition plans, site improvements and building documentation.
    c. Structural construction documents for:
        i. Pool building (approx. 2,500sf).
        ii. South concrete retaining wall (approx. 155ft long w/20ft long return walls).
        iii. Site walls/fencing along the east and west and connection to the top of the retaining walls.
        iv. Pool utility rooms (approx. 1,500sf) located below pool deck, concrete basement walls on three sides, suspended concrete deck.
        v. Temporary shoring system along east and west perimeters as required.
        vi. Permanent shoring/underpinning for existing north colonnade (as required).
    d. Aquatics construction documents for:
        i. 30-meter x 25-yard swimming pool.
        ii. Pool decks and deck drainage.
        iii. Swimming pool surge tank.
        iv. Swimming pool mechanical equipment layout.

e. Mechanical, Plumbing and Electrical construction documents including:
    i. Lighting Design.
    ii. Fire alarm.
    iii. Security System, including intrusion alarm and CCTV.
    iv. Audio-visual and master clock.
    v. Power distribution.
    vi. Telephone and data.
    vii. Title 24 compliant mechanical design.
    viii. Sequence of operations for HVAC controls.
    ix. Sewer, sanitary waste and vent system.
f. Cost estimating services for the schematic design, design development and construction documents phases.

The design scope of work includes the design, approval and construction administration for the project scope listed above.

Deliverables:
Deliverable will be per the GUSD master agreement for the following phases; schematic design, design development, construction documents, back-check bidding and construction administration/closeout.

3. ARCHITECT'S SERVICES

The ARCHITECT shall provide those services specified to be performed by the ARCHITECT. The following phases of services are authorized:

____✓____ Schematic Design
____✓___ Design Development
____✓___ Construction Documents
____✓___ DSA & OPSC Approval
____✓___ Bidding Phase
____✓___ Construction Administration
____✓___ Close-out

_____ Other (Specify Below)
_____
_____
_____

4. ARCHITECT'S COMPENSATION In conformance with Attachment "A" - Basic Architect Fee Schedule (Modernization). Architectural/Engineering Team fee is Six Hundred Ninety Thousand and Five Hundred Dollars ($690,500).

For Aquatic Designer, Structural Temp Shoring Design, Structural Permanent Shoring/Underpinning and Cost Estimating is a fixed fee of One Hundred Seven One Thousand and Seven Hundred-Fifty Dollars ($171,750).

Fee Breakdown:

Architectural/Engineering Team		$690,500
Fixed Fee:		$171,750
Aquatic Designer	$112,500	
Structural Temp Shoring Design	$ 11,000	
Structural Permanent Shoring/Underpinning	$ 18,500	
Cost Estimating	$ 29,750	
TOTAL FEES		$862,250

5. PROJECT CONSTRUCTION BUDGET

$6,700,000

6. PROJECT COMPLETION SCHEDULE

A) Schematic Design to be completed and submitted for review and approval by the District within thirty-five (35) work days upon execution of this Projection Authorization.

B) Design Development to be completed and submitted for review and approval by the DISTRICT within forty (40) work days upon acceptance of Schematic Design.

C) Construction Documents to be completed and submitted for review and approval by the DISTRICT within fifty-five (55) work days upon acceptance of Design Development.

D) Agency approval to be obtained within fifteen (15) work days after authorization by District to submit the Construction Documents into DSA.

7. OTHER PROVISIONS

Further to the completion schedules listed above, the due date of a DSA stamped set of approved plans shall be delivered to the DISTRICT by September 16, 2019.

8. The schematic design, design development and construction document services covered by this AGREEMENT shall be completed and submitted to the Division of the State ARCHITECT for review and approval on or before See Project Completion Schedule.

This Project Authorization No. NAC Architecture - Hoover Pool Complex-023 is hereby approved, the DISTRICT and the ARCHITECT having executed said Project Authorization on _____, 2019.

DISTRICT:

_____
Stephen Dickinson
Chief Business and Financial Officer
Glendale Unified School District

ARCHITECT:

_____
Name: _____
Title: _____

ATTACHMENT "A"
ARCHITE**CT'S FEE SCHEDULE**
HOOVER POOL

1. Twelve percent (12%) of the first five hundred thousand dollars ($500,000) of computed cost.

2. Eleven and one-half percent (11.5%) of the next five hundred thousand dollars ($500,000) computed cost.

3. Eleven percent (11%) of the next one million dollars ($1,000,000) computed cost.

4. Ten percent (10%) of the next four million dollars ($4,000,000) computed cost.

5. Nine percent (9%) of the next four million dollars ($4,000,000) computed cost.

6. Eight percent (8%) of the computed cost in excess of ten million dollars ($10,000,000).

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 6

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED IN: Office of the Superintendent

SUBJECT: Resolution #21- Opposing the Proposed Transfer of Territory to the La Cañada Unified School District

The Interim Superintendent recommends that the Board of Education adopt Resolution No. 21 – Reaffirming its commitment to oppose the proposed transfer of territory to the La Cañada Unified School District.

On May 1, 2019, the Los Angeles Country Committee on School Districts Organization will be voting on the petition to transfer territory from the Glendale Unified School District to the La Cañada Unified School District. The accompanying Resolution, which was originally adopted on November 1, 2016, is being presented to the Board of Education to reaffirm the District's commitment to "Keep Glendale Whole."

Background

On September 7, 2016, the Los Angeles County Committee on School District Organization officially accepted a petition requesting transfer of the "Sagebrush" territory from Glendale Unified School District to the La Cañada Unified School District. The petition was submitted by a group of La Canada resides who are organized under the nanme "UniteLCF."

The County Committee conducted two public hearings for the primary purpose of receiving testimony from the parties affected by the petition and to request public input. The first public hearing was held on October 26, 2016 at the La Cañada Unified School District. The second public hearing was held on November 2, 2016 at Crescenta Valley High School Auditorium.

On August 31, 2018, the County Committee notified the District that the CEQA study for the territory transfer was completed. On October 3, 2018, a CEQA hearing on the petition to transfer territory from GUSD to LCUSD was held to receive public comment and presentations from the petitioners and GUSD.

On March 6, 2019, the County Committee voted to schedule the hearing to vote on the petition to transfer territory from Glendale Unified School District to La Cañada Unified School District on May 1, 2019.

This territory has been an integral and significant part of the Glendale Unified School District community. The homes that sit on approximately 950 parcels of land house hundreds of past, current and future Glendale Unified students, and families. The loss of these students would be felt throughout the school district now and far into the future.

There are no educational reasons for this territory transfer. The petitioners agree that Glendale Schools are of the highest quality. The diversity of GUSD's students and teachers are a strength and source of immense pride. Three schools that would be directly and negatively impacted by this territory transfer were just named as 2019 California Distinguished Schools: Rosemont Middle School, Clark Magnet High School, and Crescenta Valley High School. Achieving this recognition with the new State accountability system is truly exceptional and was unique to Glendale Unified School District in comparison to our surrounding school districts. Clark Magnet High School has been further honored by the State for its exemplary Career Technical Program. Crescenta Valley High School was honored for both its exemplary Arts Education Program and its Physical Activity and Nutrition Program. GUSD is the only District in the State to receive all three exemplary recognitions and Crescenta Valley High School is the only secondary school in the State to receive exemplary honors in two categories.

The Glendale Unified School District opposes the petitioners' action to separate from this District.

GLENDALE UNIFIED SCHOOL DISTRICT

RESOLUTION NO. 21
REAFFIRM OPPOSITION TO THE PROPOSED TRANSFER OF TERRITORY TO THE LA CAÑADA UNIFIED SCHOOL DISTRICT

WHEREAS, a group of residents in our District and the City of La Cañada Flintridge have proposed the transfer to the La Cañada Unified School District of that portion of the Glendale Unified School District located within the western city limits of La Cañada Flintridge; and

WHEREAS, the attendance boundaries have existed since the inception of the two districts in the late 1800's; and

WHEREAS, approximately 235 students now attending Glendale public schools reside in the affected area, including 84 at Mountain Avenue Elementary, 37 at Rosemont Middle School, and 68 at Crescenta Valley High School, and 46 at other campuses in the District; and

WHEREAS, in matters of proposed transfer of territory, the Board of Education not only considers the potential impact on those students affected directly but on all current and future students within the District; and

WHEREAS, if approved, the transfer would create a number of negative and permanent impacts for the District including: (1) A loss of student population at Mountain Avenue Elementary School, Rosemont Middle School, and Crescenta Valley High School and the resulting loss of Average Daily Attendance revenue generated by the loss of student population; (2) Negative fiscal impact on the District as a whole; (3) Unfair bonded indebtedness increase of $11.6 million to be shouldered by the remaining District residents; and (4) Decreased tax capacity and bonding capacity due to the loss of parcels.

WHEREAS, if the transfer of the above-mentioned territory were to occur, the Glendale Unified School District could face a potential net financial loss in per-student income of approximately $2.7 million annually at a time when GUSD is working to resolve its current budget deficit and at a time when projected school funding under the LCFF will experience certain slow down, based upon economic predictors; and

WHEREAS, the District's diversity and strength of parent and student leadership are invaluable resources and should the transfer of the above-mentioned territory occur, the Glendale Unified School District would permanently lose an important portion of the District's community that has previously provided GUSD school board members, Council and school site Parent-Teacher Association leaders, student board members, and student leaders to the benefit of the District as a whole.

NOW, THEREFORE, BE IT RESOLVED that the Board of Education of the Glendale Unified School District goes on public record as opposing the proposed transfer of territory to the La Cañada Unified School District, as having significant negative impacts upon the current and future students of the Glendale Unified Schools and the School District; and

BE IT FURTHER RESOLVED that there is no educational reason for the territory transfer. The Board is justly proud of the achievements of Mountain Avenue Elementary School, Rosemont Middle School, and Crescenta Valley High School—all recognized as National Blue Ribbon Schools, California Distinguished Schools, and California Gold Ribbon Schools—and believes strongly that the quality of education, student services, and community involvement supporting these three campuses are among the finest quality anywhere in California.

Adopted this 2nd day of April 2019 by the Governing Board of the Glendale Unified School District.

_____
Gregory S. Krikorian, President

_____	_____
Jennifer Freemon, Vice President	*Dr. Armina Gharpetian, Clerk*
_____	_____
Shant Sahakian, Member	*Nayiri Nahabedian, Member*

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 7

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED IN: Office of the Superintendent

SUBJECT: **Board of Education Meeting Schedule 2019-2020**

The Interim Superintendent recommends that the Board of Education approve its Board meeting schedule for the 2019-2020 school year.

Board of Education meetings are held at the Administration Center, 223 N. Jackson Street, on the first and third Tuesday of the month, unless otherwise specified. At its meeting on February 19 and March 12, 2019, the Board of Education discussed its meeting schedule for 2019-20. The schedule is now being presented for final approval.

2019

July 16

August 13

September 3, 17

October *7 (*Monday), 22

November 5, 19

December 17
(Winter recess: December 23 – January 6)

2020

January 14

February 4, 18

March 10
Spring recess: March 16-20)

April 7, 21 (*Annual Organizational Meeting)*

May 5, 19, *26
*(*meeting is for recognitions only)*

June 2, 16
Note: Last day of school for students is June 11.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

ACTION REPORT NO. 8

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Dr. Chris Coulter, Director, Teaching & Learning
PREPARED BY:	Jill Firstman, Coordinator, Teaching & Learning Sandra Espinoza, Teacher Specialist, Teaching & Learning
SUBJECT:	**Approval of Secondary Standards-Aligned English Language Arts/English Language Development Instructional Materials Adoption**

The Interim Superintendent recommends that the Board of Education approve the five-year adoption of the College Board *SpringBoard* program for English Language Arts and English Language Development for Grade 6-12 students, with the additional supplement of three literary novels per student, beginning in the 2019-2020 school year.

Overview:

To provide all Grade 6-12 English teachers with standards-aligned instructional materials in English Language Arts (ELA) and English Language Development (ELD), a new program is needed for adoption for the 2019-2020 school year. The last secondary English formal instructional material adoption took place 18 years ago.

Instructional Material Review Process

The English Curriculum Study Committee (CSC) began the review process in October of 2018 by reviewing the *ELA/ELD Framework for California Public Schools* for evaluation criteria of instructional materials in Grades 6-12. The adoption committee included middle school and high school department chairs along with representatives from 6th grade elementary, Special Education, and ELD teachers.

The adoption committee adapted the Instructional Materials Evaluation Tool (IMET) and the ELD component of the California Adoption Toolkit rubric to evaluate secondary ELA/ELD instructional materials. After an extensive review, the committee chose to recommend *SpringBoard* from the College Board to the CSC for adoption with the additional purchase of three novels per student per school to supplement the materials.

#

ELA CSC Recommendation

The English CSC met in February to review the feedback from the school sites and reach agreement on a recommendation. The English CSC voted 7 to 2 in favor of recommending the adoption of College Board *SpringBoard* for English and ELD for Grade 6-12 students, with the additional supplement of three literary novels per student, for implementation in the 2019-20 school year.

ELD CSC Recommendation

The ELD CSC also reviewed the materials and feedback from the ELD CSC members who served on the adoption committee. The ELD CSC voted unanimously to approve *SpringBoard* for adoption in ELD classes for students at the Expanding and Bridging ELD levels. The *SpringBoard* ELD program is closely aligned to the ELD standards and works seamlessly with the ELA materials to support ELD student success in grade level English classes. Newcomer or Emerging ELD students will use the SpringBoard ELD materials along with the current ELD materials, *Inside* and *Edge*.

Parent/Community Feedback

Parent feedback was solicited via a display of sample materials with surveys for parents to provide feedback in the lobby of the GUSD District Office from February 13 through February 27, 2019. In addition, a parent information night was held on February 27, 2019 in the Board Room. Parent feedback was minimal, and there was no negative feedback.

Principal Recommendation

Principals reviewed the process and recommendations from the adoption committee, English CSC, ELD CSC, and the parent feedback. The Principals recommend the adoption of College Board *SpringBoard* for English and ELD for Grade 6-12 students, with the additional supplement of three literary novels per student, in the 2019-2020 school year. Three of the four middle school principals approved, and four of the five high school principals approved.

Program Cost

The approximate cost to adopt College Board's *SpringBoard* program for five (5) years for Grades 6-12 is $2,000,000. The publisher has agreed to provide all teacher resources and three years of professional development at no cost. The additional three novels per student per school will add an additional cost of approximately $650,000. The total estimated cost of adoption is $2,650,000.

#

Recommendation

The Interim Superintendent recommends the five-year adoption of the College Board *SpringBoard* program for ELA and ELD for Grade 6-12 students, with the additional supplement of three literary novels per student, beginning in the 2019-2020 school year.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 1

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED IN: Office of the Superintendent

SUBJECT: **Minutes**

The Superintendent recommends that the Board of Education approve the Minutes, as listed:

a) Regular Meeting No. 24, March 12, 2019
b) Special Meeting No. 25, March 26, 2019

GLENDALE UNIFIED SCHOOL DISTRICT
223 N. Jackson Street
Glendale, California 91206-4380

BOARD OF EDUCATION MEETING NO. 24
UNADOPTED MINUTES
REGULAR MEETING, March 12, 2019

CALL TO ORDER AND ROLL CALL

The regular meeting of the Glendale Unified School District Board of Education was called to order by Greg Krikorian, president of the Board of Education, at 4:35 p.m. on Tuesday, March 12, 2019, in the Board Room at the Administration Center, 223 N. Jackson Street, Glendale, California. The following members were present for roll call: Jennifer Freemon, Dr. Armina Gharpetian, Nayiri Nahabedian, Shant Sahakian, and Greg Krikorian.

The following administrators were present: Dr. Kelly King, Mr. Stephen Dickinson, Dr. Cynthia Foley, Dr. Mary Mason, Mr. Felix Melendez, and Dr. Deb Rinder.

PLEDGE OF ALLEGIANCE

Madelyn Catania Karayan, a 6th grade student from Franklin Elementary School, led the Pledge of Allegiance.

CERTIFICATE OF COMPLIANCE

Mr. Krikorian read the following statement: "To accommodate the requirements of Government Code §54954.2 and in accordance with the Brown Act revisions, I declare that the agenda for this meeting was posted on the bulletin boards in the lobby of the Administration Center and the GUSD website 72 hours prior to this meeting."

APPROVAL OF AGENDA ORDER

A motion was made by Mrs. Freemon and seconded by Mr. Sahakian to amend the agenda order as follows: Move Information Item #9 to after the Study Session on the Superintendent's Search Process. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

PRESENTATION

1. Women's History Month—March is designated as "Women's History Month" by Presidential proclamation. The Board recognized the contributions of women to society and to the GUSD.

2. Glendale Unified School District Presents Promotional Videos—The GUSD FLAG promotional video was shared with the Board.

PRESENTATIONS (Continued)

3. Citizens' Bond Oversight Committee (CBOC) Year-End Report
CBOC members Michael Myers, Harry Leon, and Sophal Ear presented to the Board of Education its Year-End Report for Measure S expenses for fiscal year 2017-2018.

ACKNOWLEDGEMENTS AND RECOGNITIONS

1. Poetry Out Loud – Bradley Goldhammer, student from Hoover High, came in first place at the district's Poetry Out Loud competition. The Board of Education recognized his achievement in absentia.

2. GUSD Spelling Bee Winners – The Board recognized the winner of the Elementary Spelling Bee, Sonia Carrillo from Valley View Elementary, and the winner of the Middle School Spelling Bee, Ibrahim Ahmed from Roosevelt Middle School.

PUBLIC COMMUNICATION

1. James Howell spoke about the Convenient Fun Fitness program in which he founded. They service elementary schools during recess. They apply great core values and work to resolve altercation between students. They work with Inglewood USD, Compton USD, and LAUSD. They create a structured recess program, which they call the Walt Disney playground experience, to make it a positive and productive time for all students.

2. Jennifer Hiramoto, volunteer with the YMCA Glendale, spoke about the YMCA Youth in Government Program, which has been in hiatus for twenty years. This program came into fruition with the support of Dr. Armina Gharpetian and others. The program is a six-month Model Legislature and Court and culminates in Sacramento. It was exciting to see the delegates debate topics and share their opinions.

3. Amaras Gogoshian, junior at GHS and president of the YMCA Youth in Government delegation, spoke about her experience in the program. They were able to take government positions in Sacramento. She took part in the senate program area and was able to debate bills. It was inspiring. It gives you a sense of hope for the future. She would like this program to continue in Glendale. She introduced the members in the delegation who all spoke on their experience in the program: Janet Louie, Nicole Herrera, Nayra Gharpetian, and Lilly Armstrong from GHS. She thanked Dr. Gharpetian for encouraging the students to participate in the program.

4. Arda Tchakian, Senator Portantino's district representative in Glendale, shared some draft education bills introduced by Senator Portantino. SB 729 would increase the LCFF base and make it a permanent part of the funding formula moving forward. SB 217 increases Special Education services, provides $4000 grant funding for each 3 and 4 year-olds with special needs, and allows 4 year-olds with special needs to enter TK. SB 428 would require applicants for teaching credential to complete a course in youth mental health first aid. SB 484 would require community colleges to identify those students who have completed an associate degree for transfer, issue

PUBLIC COMMUNICATIONS (Continued)

associate degrees, and add those students to an identification system at the end of each academic year. SB 568 addresses the problem of homelessness amongst college students. It would also provide services to support homeless students as they transition into stable housing.

5. Monna Johnson, president of Glendale Council PTA, spoke about having a quality art education for every student. California PTA and CDE recognize March as Art Education Month in California. She cited benefits of having a quality art education. However, 80% of California schools are not fully teaching the arts. The level of art education varies from school to school. We need to cultivate our students' creativity so they can come up with solutions to problems that will face them in the future. School districts throughout the state are shifting their priority to make art education as part of their core curriculum. We need to do better in giving our students more access to art education.

6. Mitsuko Roberts announced the Sakura Matsuri (Cherry Blossom Festival) is taking place at Brand Park on Sunday, March 17, 2019, from 10 a.m. to 5 p.m. The festival includes martial arts, calligraphy, tea ceremony, kimonos, and food. She congratulated GUSD for hosting the *Walk in U.S., Talk on Japan* delegates from Japan.

7. Jaclyn Scott, GSMA president and principal at Mountain Avenue Elementary, announced that Mountain Avenue Elementary School is participating in the ScholarShare 529 Scholar Dollars Program. She asked for your vote. They are awarding $300,000 to public schools in California. The link to vote is on the Mountain Avenue website. You can vote once a day from March 11 to March 22. The top four schools in each category will receive $15,000. They want this for their STEAM initiative.

8. Joanne Kim is asking for transparency of how the district prioritizes Measure S funds. Parents at Monte Vista Elementary School filed a Williams Complaint. The district is in violation of California Code of Regulations, Title 5, Section 14030, which requires that toilets for kindergarten students be provided in the kindergarten classroom or in the kindergarten complex and these fixtures should be mounted at a height appropriate for student use. Additionally, Monte Vista does not have an adequate number of restroom facilities. She spoke about the problems and challenges students face due to the lack of adequate restroom facilities.

9. Harry Leon and Sophal Ear from the Crescenta Valley Town Council thanked the Board for having a good working relationship, which makes La Crescenta a great place to live. They also thanked the Board for supporting their 8th annual prayer breakfast. Of concern, however, is the traffic situation around the schools. We have many speeders. He asked the Board to pass a message to the students, parents, staff, and principals about traffic speeders. The CHP will no longer tolerate speeders and will be issuing tickets. Dr. Sophal Ear added he lives across the street from CVHS and has a camera facing out from his home. He is able to confirm that students are driving recklessly and speeding in the neighborhood.

MINUTES: March 12, 2019 – Regular Board Meeting

STUDENT BOARD MEMBER REPORT

Student Board Member Sophia James congratulated the Crescenta Valley High School boys basketball team for making it to the CIF finals. Spring break is next week; schools will be closed. She spoke about the various activities occurring at Glendale High, Hoover High, Rosemont Middle, and Franklin Elementary. Crescenta Valley High won the Scholastic Bowl. She visited John Muir Elementary and showed a video highlighting the Muir students and school.

INFORMATION

1. Acknowledgements of Service

2. Second Interim Financial Report and Certification – AB 1200 (Refer to Action Report No. 1)

3. Proposed Secondary English Language Arts and English Language Development Instructional Materials Adoption

4. Board of Education Meeting Schedule 2019-2020

5. Proposed Secondary Summer School Program for 2019

6. Proposed Supplementary Textbook for Use in High Schools in the Area of English

7. Proposed New Course of Study Outlines for Use in Middle and High Schools in the Area of Career Technical Education and Visual and Performing Arts

8. Proposed New, Revised, or Retired Board Policies Relating to Students and Instruction

The above reports were presented for information and discussion only; no action was taken.

CLOSED SESSION

The Board recessed to Closed Session at 6:30 p.m. to discuss the following:

1. Instructing designated representative, Dr. Kelly King, Interim Superintendent of Schools, regarding collective bargaining matters pursuant to Government Code §54957.6

2. Personnel matters relating to the appointment, employment or evaluation of school based and non-school based district management positions pursuant to Government Code §54957.

3. Personnel matters relating to the discipline, dismissal and release of school-based employees pursuant to Government Code §54957.

CLOSED SESSION (Continued)

4. Conference with Legal Counsel – Anticipated Litigation – Initiation of litigation pursuant to Government Code §54956.9(c): Two potential cases.

5. Conference with Legal Counsel - Existing Litigation – Government Code §54956.9 (d)(1) – Case No.: EEOC 846-2017-13793

CALL TO ORDER/RETURN TO REGULAR MEETING

The meeting reconvened at 7:45 p.m.

REPORTING OUT OF CLOSED SESSION

None.

PUBLIC COMMUNICATIONS

1. Kevin Witt, water polo coach, spoke about Hoover's pool project. The fact is the pool is in need of repair. When it rains, his office is flooded. The lighting is not adequate, the pool is undersized, and they have never been able to host a CIF game. This is one of the most underserved community in terms of aquatics. We currently have no year-round swim team, water polo, or swim lessons in Glendale. There is no master swimming in this city. There is no master water polo in this city. Burbank has a year-round swim and water polo program, we do not. If you move to Glendale, you are going to look to the high schools for those aquatic opportunities. They have to go Burbank and Pasadena in order to get the kind of resources that we should be providing.

2. Henry Pruitt, senior at Hoover, has been in the aquatics program for four years. He has been using the pool since the sixth grade. The pool has a lot of issues, including that it is not the standard size. Therefore, they don't know how to balance themselves when they do play water polo at other sites. He hates playing water polo in the shallow part of the pool. The pool limits them as a team to fulfil their full potential. They travel to schools with beautiful pools, such as Burbank. He and his team members agree that Hoover's pool needs improvement. He hopes the program becomes stronger throughout the years.

3. Hayk Yengibaryan, freshman, said Hoover deserves a pool. His school has gone to CIF five years in a row. They want a normal size pool so they can host their own playoff games. Home games give you an extra boost. In general, the whole pool is messy. They are not able to host a Pacific League game. Their pool is unsafe for the students. When they visit Arcadia and Burbank, they dream of having a pool like them. A new pool will help their program.

PUBLIC COMMUNICATIONS (Continued)

4. Mr. Jeff Baker, parent of a freshman at Hoover High who plays water polo, asked if we could stop putting this project on the back burner. It has been in the works for a long time, and it is time to do it. They have to drive out to Pasadena for practices. He wants his kids to experience the pool before they graduate and their kids, too.

5. Taline Arsenian, GTA president, said GTA believes that all five of our board members have the best of intentions to bring the best candidates for consideration for our next superintendent. As she said last time, she has done her due diligence on each consultant that presented at the February 19 meeting. Because GTA is also acting with the best of intentions, they hope that the Board continues to consider their input as well as all of our stakeholders. On behalf of all educators of GUSD, she shared how much they appreciate moving forward in a transparent, collaborative, and considerate manner as the Board makes this extremely important and difficult decision.

6. Sedda Antekelian, volunteer for ANCA-Western Regional Education Committee, thanked the Board for its support to the organization. She invited the Board and staff to the 3rd Annual ANCA Awards luncheon on March 23, 2019, 11 a.m. at the De Luxe Banquet Hall in Burbank. They will be honoring seven educators for going above and beyond in providing instruction about the Armenian Genocide in the classroom. Mandy Manning, the 2018 National Teacher of the Year, will be delivering the keynote address at the luncheon. Please RSVP for the event. Tickets are $50 and can be purchased on their website.

INFORMATION

1. Update on Measure S and Facility Programs

STUDY SESSION

1. Superintendent's Search Process

   The Board discussed details with HYA & Associates to include the timeline, characteristics the Board is looking for in the next Superintendent, advertising strategies, and the process for engaging stakeholders in the search process. Dr. Maria Ott and Dr. Max McGee are the new consultants representing HYA & Associates.

ACTION REPORTS

1. Second Interim Financial Report and Certification – AB 1200

   It was moved by Mr. Sahakian and seconded by Mrs. Freemon to approve Action Report No. 1, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

ACTION REPORTS (Continued)

2. Approval of Independent Consultant Agreement No. 511 with BPI Inspection Services for the Cloud Preschool Portables Project's DSA Inspection Services

   It was moved by Mrs. Freemon and seconded by Ms. Nahabedian to approve Action Report No. 2, as recommended. Motion approved by the following roll-call vote: AYES—Freemon, Nahabedian, and Krikorian. NAYS—Gharpetian and Sahakian. (3-2)

3. Award of Bid No. 182-18/19 for the Cloud Pre-School Portables Project and Budget Adjustment

   It was moved by Mrs. Freemon and seconded by Ms. Nahabedian to approve Action Report No. 3, as recommended. Motion approved by the following roll-call vote: AYES—Freemon, Nahabedian, and Krikorian. NAYS—Gharpetian and Sahakian. (3-2)

4. Approval of Amendment No. 2 to Independent Consultant Agreement No. 415 with Premier Inspection Services, Inc., for DSA Inspection Services for Installation of Solar Photovoltaic Systems at Hoover and Glendale High Schools

   It was moved by Mrs. Freemon and seconded by Ms. Nahabedian to approve Action Report No. 4, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

5. Approval of Budget Allocation for Site Improvement Projects at Various School Sites

   It was moved by Mr. Sahakian and seconded by Ms. Nahabedian to approve Action Report No. 5, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

6. Approval of Independent Consultant Agreement for Professional Services DSA Project Inspections Services No. 514 for the Crescenta Valley High School Sports Medicine Building Project

   It was moved by Mrs. Freemon and seconded by Ms. Nahabedian to approve Action Report No. 6, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

7. Award of Bid No. 181-18/19 for the Crescenta Valley High School CTE Sports Medicine Building

   It was moved by Mrs. Freemon and seconded by Mr. Sahakian to approve Action Report No. 7, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

ACTION REPORTS (Continued)

8. Resolution No. 20 in Support of Submitting Applications beyond the Current Bond Authority

   It was moved by Dr. Gharpetian and seconded by Mr. Sahakian to approve Action Report No. 8, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

9. Human Resources Settlement Agreement - Settlement Agreement: Case No. EEOC 846-2017-13793

   It was moved by Ms. Nahabedian and seconded by Dr. Gharpetian to approve Action Report No. 9, as recommended. Motion approved by the following vote: AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

CONSENT CALENDAR

1. Minutes
   a) Regular Meeting No. 22, February 19, 2019
   b) Special Meeting No. 23, February 26, 2019

2. Certificated Personnel Report No. 14

3. Classified Personnel Report No. 13

4. Warrants totaling $18,557,970.33 for February 1, 2019 through February 28, 2019.

5. Purchase Orders totaling $1,374,070.29 for the period of February 4, 2019 through February 22, 2019

6. Appropriation Transfer and Budget Revision Report

7. Amendment to Agreement with AbilityFirst of Southern California for Use of School Facilities

8. Approval of Notice of Completion for Bid No. 170-17/18 with Paradise Construction & Contract Management for Play Area Improvement at Verdugo Woodlands Elementary School

9. Amendment to the Agreement with Rob Wiltsey Creative Partners, LLC

10. Authorization to Dispose of Surplus Property

11. Acceptance of Specialized Secondary Program (SSP) Funds for the 2018-2019 School Year

12. Acceptance of Whole Kids Foundation Garden Grant

CONSENT CALENDAR (Continued)

13. Approval of Revised Board Policies Relating to Philosophy-Goals-Objectives and Comprehensive Plans; Administration; and Bylaws of the Board

14. Approval of Agreement with the California State University, on behalf of San Jose State University, for Social Work Interns

15. Acceptance of Gifts

It was moved by Ms. Nahabedian and seconded by Dr. Gharpetian to approve the Consent Calendar, as presented. Motion approved unanimously. AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

REPORTS FROM THE BOARD

Ms. Nahabedian spoke about her attendance at the World Languages Committee meeting, the CV Prayer Breakfast, and Hoover High Open House. She congratulated the awardees of the GEF Disco and Diamonds. Moving forward, she requested that Measure S related materials contain detailed information for them to review.

Dr. Gharpetian congratulated CVHS for winning the Scholastic Bowl. She attended the Oratorical, several PTA Founders Day dinners, celebrated Dr. Seuss' birthday by reading to two kindergarten classes at Marshall, and enjoyed the GEF Disco and Diamonds gala. She went to Sacramento to watch the kids participate in the Youth in Government program. Her daughter was transformed after having this experience. She is very proud of them and looks forward to this program continuing.

Mrs. Freemon had a great time at the Disco and Diamonds gala and the middle school track meet. She went with a group from CVHS to the Diplomacy and World Affairs conference where students had had an opportunity to converse with consul generals and deputy counsels from several countries. It was a wonderful experience. Her daughter also participated in the Youth in Government program with a delegation from the YMCA of the Foothills. Her daughter was on a bill writing team.

Mr. Sahakian attended the Olivia Macaulay restorative practice center dedication ceremony at Glendale High, the GEF Disco and Diamonds gala, the Crescenta Valley Prayer breakfast, the D&M Costume show, the Middle School Honor Band & Orchestra Solo Recital, Toll Middle School Open House, Franklin Educational Foundation gala, and the Scholastic Bowl. He mentioned that parents are saying it is a challenge to make donations to us. Our parents want to give to our schools; however, there is a lot of red tape. He asked that we review the process.

Mr. Krikorian mentioned again staff's inconsistencies in reporting costs on the same projects and would like clarification. He spoke about the superintendent search and about "interim goals" such as Sagebrush, the budget, and property exchange. He complimented Jennifer Freemon for her support during the search process and thanked the Board, Dr. King and staff, as well.

MINUTES: March 12, 2019 – Regular Board Meeting

REPORT FROM THE INTERIM SUPERINTENDENT

Dr. Kelly King spoke about the "Walk in U.S., Talk on Japan" program sponsored by the Japanese Consulate Office. Music teacher Amy Rangel from Glendale High was notified by the Country Music Association that she is being recognized for her excellence in the music education field. She also gave a shout out to Dr. Magran as the District has been recognized as a model SARB for the state of California. She announced the District received a grant from the California Student Aid Commission to look at college savings plans for high-poverty students.

RETURN TO CLOSED SESSION

The Board returned to the regular meeting at 10:54 p.m.

ADJOURNMENT

There being no further business, President Krikorian adjourned the meeting in memory of Jason Hur, who graduated in 2017 from CVHS, at 10:54 p.m.

Gregory S. Krikorian	Dr. Armina Gharpetian
President, Board of Education	Clerk, Board of Education

Board of Education Minutes - Regular Meeting, March 12, 2019
Recorded by: Ms. Phyllis F. Ishisaka, Executive Assistant to the Superintendent
Approved by the Board of Education:

GLENDALE UNIFIED SCHOOL DISTRICT
223 N. Jackson Street
Glendale, California 91206-4380

BOARD OF EDUCATION MEETING NO. 25
UNADOPTED MINUTES
SPECIAL MEETING, March 26, 2019

CALL TO ORDER AND ROLL CALL

The special meeting of the Glendale Unified School District Board of Education was called to order by President Greg Krikorian at 5:10 p.m. on Tuesday, March 26, 2019, in the Boardroom of the Administration Center, 223 North Jackson Street, Glendale, California. The following members were present for roll call: Jennifer Freemon, Dr. Armina Gharpetian, Nayiri Nahabedian, Shant Sahakian, and Greg Krikorian.

The following administrators were present: Dr. Kelly King, Mr. Steve Dickinson, Dr. Cynthia Foley, Dr. Mary Mason, Mr. Felix Melendez, and Dr. Deb Rinder

PLEDGE OF ALLEGIANCE

Mr. Krikorian led the Pledge of Allegiance.

CERTIFICATE OF COMPLIANCE

Mr. Krikorian read the following statement: "To accommodate the requirements of Government Code Section 54954.2 and in accordance with the Brown Act revisions, I declare that the agenda for the meeting was posted on the bulletin board in the lobby of the Administration Center and the GUSD website 24 hours prior to this meeting."

APPROVAL OF THE AGENDA ORDER

Motion to approve the agenda order, as presented, was made by Mr. Sahakian and seconded by Ms. Nahabedian. Motion approved unanimously. AYES—Freemon, Gharpetian, Nahabedian, Sahakian, and Krikorian.

PUBLIC COMMUNICATION

No one addressed the Board at this time.

STUDY SESSION

1. Measure S

Staff provided information on the following: Historical background of Measure S; Measure S timeline; the Overcrowding Relief Grant projects; construction cost estimates; high school pool projects options; previous priority lists for projects; summary of unallocated funds, and next steps for Measure S.

MINUTES: March 26, 2019 – Special Board Meeting

CLOSED SESSION

The Board recessed to Closed Session at 8:00 p.m. to discuss the following:

1. Instructing designated representative, Dr. Kelly King, Interim Superintendent of Schools, regarding collective bargaining matters pursuant to Government Code §54957.6.

2. Personnel matters relating to the discipline, dismissal and release of school-based employees pursuant to Government Code §54957

3. Conference with Legal Counsel - Anticipated Litigation – Initiation of litigation pursuant to section 54956.9(c): Two potential cases

RETURN TO REGULAR MEETING

The meeting reconvened at p.m.

REPORTING OUT OF CLOSED SESSION

None.

ADJOURNMENT

There being no further business, Mr. Krikorian adjourned the meeting in memory of Tagui ___ assistant at Hoove4r High at p.m.

_____	_____
Gregory S. Krikorian	Dr. Armina Gharpetian
President, Board of Education	Clerk, Board of Education

Board of Education Minutes – Special Meeting, March 26, 2019
Recorded by: Ms. Phyllis Ishisaka, Executive Assistant to the Superintendent
Approved by the Board of Education:

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CERTIFICATED PERSONNEL REPORT NO. 15

CONSENT CALENDAR NO. 2

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED BY: Dr. Cynthia M. Foley, Assistant Superintendent, Human Resources/Director of Classified Personnel

SUBJECT: CERTIFICATED PERSONNEL REPORT NO. 15

It is recommended that the following report be approved as presented:

		Position	Effective Dates And Salary Rate
Change of Maternity Leave of Absence			
1.	Morales, Elizabeth	Teacher, Early Education College View School	6/17/19 through 8/18/19
Extension of Maternity Leave of Absence			
1.	Kim, Jisoo	Teacher, Temp Contract 4th Grade Keppel Elementary	1/25/19 through 4/14/19
2.	Navarro, Mallory	Teacher, Regular 6th Grade Fremont Elementary	1/07/19 through 6/15/19
Health Leave of Absence			
1.	Babayan, Aida	Coordinator I Special Education	2/08/19 through 3/11/19
2.	Hartounian, Carmen	Teacher, Early Education Glenoaks Elementary EEELP	2/25/19 through 4/19/19

		Position	Effective Dates And Salary Rate
Health Leave of Absence (Cont.)			
3.	Lau, Celeste	Teacher, Regular Spanish Crescenta Valley High School	8/01/19 through 8/01/20
Change of Health Leave of Absence			
1.	Mardirosian, Mary	Assistant Principal Hoover High School	1/25/19 through 3/04/19
Extension of Health Leave of Absence			
1.	Babayan, Aida	Coordinator I Special Education	2/08/19 through 3/24/19
2.	Barsegyan, Anush	Teacher, Early Education Jefferson Elementary EEELP	12/06/18 through 6/06/19
3.	Conrad, Sarah	Language, Speech & Hearing Specialist Special Education	9/06/18 through 5/05/19
4.	Di Fusco, Annette	Language, Speech & Hearing Specialist Special Education	1/09/19 through 3/24/19
5.	Grafius, Jennifer	Teacher, Early Education Pacific/Edison Preschool	1/14/19 through 3/31/19
6.	Hamdan, Joyce	Teacher, Regular Art Roosevelt Middle School	1/30/19 through 4/14/19
7.	Mueller, Shelly	Teacher, Regular 3rd Grade Verdugo Woodlands ES	2/27/19 through 5/31/19

		Position	Effective Dates And Salary Rate
Family & Medical Leave of Absence			
1.	Babayan, Aida	Coordinator I Special Education	2/08/19 through 3/11/19
2.	Hartounian, Carmen	Teacher, Early Education Glenoaks Elementary EEELP	2/25/19 through 4/19/19
3.	Lau, Celeste	Teacher, Regular Spanish Crescenta Valley High School	8/01/19 through 11/12/19
Change of Family & Medical Leave of Absence			
1.	Mardirosian, Mary	Assistant Principal Hoover High School	1/25/19 through 3/04/19
2.	Morales, Elizabeth	Teacher, Early Education College View School	6/17/19 through 8/18/19
Extension of Family & Medical Leave of Absence			
1.	Babayan, Aida	Coordinator I Special Education	2/08/19 through 3/24/19
2.	Barsegyan, Anush	Teacher, Early Education Jefferson Elementary EEELP	12/06/18 through 3/13/19
3.	Di Fusco, Annette	Language, Speech & Hearing Specialist Special Education	1/09/19 through 3/24/19
4.	Grafius, Jennifer	Teacher, Early Education Pacific/Edison Preschool	1/14/19 through 3/31/19
5.	Hamdan, Joyce	Teacher, Regular Art Roosevelt Middle School	1/30/19 through 4/14/19

		Position	Effective Dates And Salary Rate
Extension of Family & Medical Leave of Absence (Cont.)			
6.	Kim, Jisoo	Teacher, Temp Contract 4th Grade Keppel Elementary	1/25/19 through 4/14/19
7.	Lee, Eun-Jung Christine	Teacher, Regular 5th Grade Valley View Elementary	7/21/19 through 10/13/19
8.	Mueller, Shelly	Teacher, Regular 3rd Grade Verdugo Woodlands ES	2/27/19 through 5/30/19
Opportunity Leave of Absence			
1.	Dall, Mary P.	Teacher, Regular History Wilson Middle School	8/19/19 through 6/11/20
Additional Assignment			
1.	Reynolds, Brook	Principal, as needed, to oversee the Elementary Music Program	7/01/19 through 6/30/20 Daily rate of pay Not to exceed 5 days 01.0 00000.0 00000 27004 1331 410000
2.	Williams, Caitlin	Teacher, as needed, to attend Benchmark Training Teaching & Learning	3/07/19 through 7/30/19 Daily substitute rate of pay Not to exceed one day 01.0 07405.0 11100 10000 1160 0000618

		Position	Effective Dates And Salary Rate

Release – Temporary Employees

1. Pursuant to California Education Code 44954, the following temporary employees are to be released from service having completed their contractual assignment. Pending District determination of staffing needs for the 2019-20 school year, some or all of these employees may be rehired.

2019ce – 853	EEELP	6/28/19
2019ce – 695	EEELP	6/28/19
2019ce – 696	EEELP	6/28/19

Election

1.	Esraelian, Krestena	Teacher, Temp Contract Pacific Avenue EEELP	4/03/19 through 6/30/19
2.	Sanchez, Gladis	Teacher, Temp Contract Pacific Avenue EEELP	4/03/19 through 6/30/19

Election Hourly/Daily

1.	Campbell, Joseph Foster, Dennis	Teachers, as needed, to plan Construction Academy curriculum and maintain & update academy facilities at Glendale High School	6/17/19 through 8/09/19 $27.00 per hour Not to exceed 200 hours each Construction Academy Grant 01.0 72202.0 38000 10000 1130 0200000
2.		Extra-Curricular Assignments	First Semester 2018-2019

BALBOA ELEMENTARY

Yapundjian, Narine	Invention Convention

KEPPEL ELEMENTARY

Faieta, April	Invention Convention

	Position	Effective Dates And Salary Rate
Election Hourly/Daily (Cont.)		
3.	Extra-Curricular Assignments	Second Semester 2018-2019
	BALBOA ELEMENTARY	
Donabedian, Kristine	Spelling Bee	
Yahiayan, Natalie	Math Field Day	
	COLUMBUS ELEMENTARY	
Boyd, Mark	Spelling Bee	
Micev, Mary	Math Field	
Sasse, Collin	Math Field	
	Invention Convention	
	DUNSMORE ELEMENTARY	
Cassley, Lori	Math Field Day	
Garabedian, Ovsanna	Spelling Bee	
Wedemeyer, Carrie	Math Field Day	
	EDISON ELEMENTARY	
Bergman, Anya	Debate Team	
Luna, Mariana	VAPA Clubs	
Meza, Emily	Debate Team	
Tiscareno, Araceli	Debate Team	
	FREMONT ELEMENTARY	
Bogle, Amanda	Math Field Day	
Morgan, Jessica	Math Field Day	
	HORACE MANN ELEMENTARY	
Beshlian, Alice	Math Club	
Nazarian, Tania	Academic Coaching	

	Position	Effective Dates And Salary Rate

Election Hourly/Daily (Cont.)

3.

THOMAS JEFFERSON ELEMENTARY

Bendgen, Krista	Spelling Bee
	Math Field Day
	GATE
Galfayan, Gagik	Spelling Bee
	Math Field Day
	GATE

LINCOLN ELEMENTARY

Black, Tracey	Academic Coaching
Cady, Yelena	Math Field Day
Rovello, Cindy	Math Field Day

MARSHALL ELEMENTARY

Agazaryan, Marine	Spelling Bee
Hambarsumian, Melineh	Math Field Day
Makhmuryan, Anahit	Math Field Day

MONTE VISTA ELEMENTARY

Weingarten, Jon	GATE

VALLEY VIEW ELEMENTARY

McCreary, Scott	Math Field Day

VERDUGO WOODLANDS ELEMENTARY

Ouweleen, Mark	Math Field Day

R.D. WHITE ELEMENTARY

Ambartsumyan, Narine	Math Field Day

	Position	Effective Dates And Salary Rate
Election Hourly/Daily (Cont.)		
4.	Extra-Curricular Assignments	Winter Semester 2018-2019

CRESCENTA VALLEY HIGH SCHOOL

Allen, Megan	Pep Squad Coach
Atwal, Aneeka	Pep Squad Coach
Soto, Jianni	Pep Squad Coach

	Position	Effective Dates And Salary Rate

Election Hourly/Daily (Cont.)

5.	Extra-Curricular Assignments	Spring Semester 2018-2019

ROSEMONT MIDDLE SCHOOL

Anker, Michael	Student Body Advisor
Avery, Elizabeth	English
	Academic Coaching
Buyer, James	Industrial Arts
Cole, Jessica	Drill Team Sponsor
	Academic Coaching
Curtis, Elizabeth	Academic Coaching
DiCarlo, Nicola	Art
	VAPA
	Newspaper Sponsor 1
	Yearbook Sponsor 1
Fox, Stacy	Social Studies
Gillespie, Paul	Head Counselor 2
Hoang, Kevin	Stage Director
	Audio-Visual Coordinator
Kasmanian, Janna	Home Economics
Kracker, Shannon	Academic Coaching
McMillin, Krista	Science
Mori, Michelle	Business Education
Mustain, James	Physical Education
Narvaez-Rivera, Laura	Foreign Language
O'Rourke, Sean	Math
Ritthamel, Nancy	Special Education
Stein, Stephanie	ELD
Yonkers, Rodney	Music
	Band/Orchestra
	Choral Director
Zimmer, Jennifer	Drill Team Sponsor
	Academic Coaching

	Position	Effective Dates And Salary Rate

Election Hourly/Daily (Cont.)

5.

ROOSEVELT MIDDLE SCHOOL

Alvarado, Paul	Yearbook Sponsor 1
Arlington, Alicia	Industrial Arts
Braggins, Elena	Special Education
Carroll, John	Science
Cerda, Lusine	Head Counselor 2
Elzanaty, Mohammed	Academic Coaching (split)
Fox, Frank	Band/Orchestra
	Stage Director
Galdamez, Henry	Math
	Academic Coaching (split)
Gamez, Ashley	Drill Team Sponsor
Gonzalez, Elwing	Social Studies
Guzman, Javier	English
Hamdan, Joyce	VAPA
Kamiya, Randall	Academic Coaching
Pascale-Parra, Jean-Marie	Audio-Visual Coordinator
	Newspaper Sponsor 1
Rodriguez, Corina	Physical Education
	Drama Director
Shahverdian, Estine	ELD
Zamanis, Pamela	Student Body Advisor

WILSON MIDDLE SCHOOL

Casillas, Marie	Social Studies
	Audio-Visual Coordinator
De Bruijn, Rens	Science
	Student Body Advisor
Dunham, Gail	English
Gharabighi, Aylin	ELD
Herington, Christina	Physical Education
Jackson, Paula	Academic Coaching
Lancaster, Gerald	Technology
	Audio-Visual Coordinator
Lapacka, Heather	English
Marsh, Walter	Head Counselor 2

		Position	Effective Dates And Salary Rate
Election Hourly/Daily (Cont.)			
5.	Mlady, Kelly	Drill Team Sponsor	
	Nam, Joan	Math	
		Academic Coaching	
	Orris, Christina	Home Economics	
	Penglase, Ellen	Special Education	
	Southward, Rebecca	Choral Director	
	Sutphin, Valerie	VAPA	
	Svetich, Amanda	Band/Orchestra	
	Thompson, Elizabeth	Newspaper Sponsor 2	
		Yearbook Sponsor 2	
	Zatarain, Barbara	Stage Director	
		Drama Director	
		CLARK MAGNET HIGH SCHOOL	
	Black, David	Industrial Arts	
		Academic Coaching	
	Blattner, Charles F.	Math	
	Davis, Christopher	Social Studies	
		Newspaper Sponsor 1	
		Yearbook Sponsor 2	
	Davis, Jennifer	English	
	Der Gevorkian, Narbeh	Health & Guidance	
	Doom, Nicholas	Social Studies	
	Gabriel, Michelle	Physical Education	
	Gruss, Gerald	Science	
	Guarino, Maral	ELD	
	Kursinski, Eric	Class Sponsor 10th	
		Audio-Visual Coordinator	
		Academic Coaching	
	Newcomer, Susan	Academic Coaching	
	Paronikyan, Yeranui	VAPA	
	Reinhard, Anne	Class Sponsor 10th	
	Schmit, Tinky	Special Education	
	Scott-Sawyer, Shari	Class Sponsor 9th	
	Snodgress, Elaine	Business Education	
		Class Sponsor 12th	
		Student Body Advisor	
	Tatevosian, Narine	Class Sponsor 11th	

		Position	Effective Dates And Salary Rate
Election Hourly/Daily (Cont.)			
5.	Turdjian, Karine Witler, Esther	Head Counselor 1 Foreign Language	
		DAILY HIGH SCHOOL	
	Akobian, Allie Alarcon, Jamie Collins, Kathleen Gonzalez, Jose Alfredo Grigoryan, Satenik Janairo, Brenda Minasyan, Nvard Piscitelli-Carrasco, Antonia Van, Michelle	Head Counselor 1 English Social Studies Math Special Education Art Science Student Body Advisor Yearbook Sponsor 1 Home Economics	
		VERDUGO ACADEMY	
	Curtiss, Alison	Student Body Advisor	
6.	Carbajal, Laura Hartel, Antonella Miller, Robert Ophoven, Barbara	Teachers, as needed, to work after school tutoring program for ELL students Franklin Elementary	3/01/19 through 5/17/19 $30.00 per hour with students $27.00 per hour for planning Not to exceed $2,349.50 Title III – EL 01.0 42030.0 11100 10000 1130 2700673
7.	Arayama, Melanie Erlewine, Naomi Foster, Yoko Fujie, Chie Jaffe, Michael Koga, Yuri Shiomi, Audrey Tanabe, Saki Yamashita, Kazusa	Teachers, as needed, to translate instructional materials to Japanese Teaching & Learning	7/01/18 through 6/30/19 $27.00 per hour Not to exceed 15 hours per teacher 01.0 07405.0 11100 10000 1130 0000618

		Position	Effective Dates And Salary Rate
Election Hourly/Daily (Cont.)			
8.	Khatchetourian, Daniella	Home/Hospital Teacher, as needed, for Special Education students	2/01/19 through 6/11/19 $30.00 per hour Home/Hospital Instruction 01.0 00000.0 19006 10000 1130 0000600
9.	Kirkwood, Joshua R.	Teacher, as needed, to assist with filming in the District Public Information/ Administrative Services	3/01/19 through 6/30/19 $28.00 per hour Not to exceed 50 hours Public Information/Admin Svcs 01.0 00000.0 00000 71004 1930 0000864
10.	Saunders, Richard	Teacher, as needed, to provide services to Foothill SELPA students WorkAbility Program	3/04/19 through 6/12/19 Hourly rate of pay Not to exceed 65 hours SELPA – Workability 01.0 65200.0 57700 11100 1130 60068
Additional Compensation			
1.	King, Kelly A.	Assistant Superintendent, Educational Services, to serve as Interim Superintendent Superintendent's Office	1/30/19 through 6/28/19 Hourly rate of pay Not to exceed $16,000.00 Superintendent's Office 01.0 00000.0 00000 71005 1313 0000610

		Position	Effective Dates And Salary Rate
Transportation Authorization			
1.	Mandjikian, Houry McLeod, Amber	Consulting teachers needed to travel to provide peer assistance to permanent teacher in the PAR program for the 18-19 school year Teaching & Learning/ Induction Program	7/01/18 through 6/30/19 58 cents per mile Mileage Reimbursement 01.0 07405.0 11100 10000 5210 0000618
2.	Khatchetourian, Daniella	Home/Hospital Teacher, as needed, for Special Education students	2/01/19 through 6/11/19 58 cents per mile Mileage Reimbursement Special Education – Home Hospital Instruction 01.0 00000.0 19006 10000 5210 0000600
Revision to Previous Personnel Report			
1.	Revision to Board Report No. 20, June 19, 2018		
	Page 9, Item 22 Reynolds, Brook	Principal, as needed, to oversee the Elementary Music Program.	8/22/18 through 6/30/19 Daily rate of pay Not to exceed 5 days 01.0 00000.0 00000 27004 1331 410000
	Change the dates to read:		7/02/18 through 6/30/19

	Position	Effective Dates And Salary Rate

Revision to Previous Personnel Report (Cont.)

2. Revision to Board Report No. 6, October 2, 2018

Page 14, Item 39		
Livingston, Cynthia	Retired Administrator, as needed, for Principal Coaching Educational Services	10/01/18 through 6/28/19 Hourly rate of pay Not to exceed 40 hours Educational Services 01.0 00000.0 00000 71001 1334 0007616
Increase the total of hours to read:		Not to exceed 50 hours

3. Revision to Board Report No. 14, March 12, 2019

Page 8, Item 2		
Escobar, Marylou Flamenco, Maria L. Garza, Nancy Huleis, Lana Martin Del Campo, Valentina Ortiz, Rafael Reyes, Paola Sercomb, Marc Tatevosian, Mary Vardani, Agnessa	Teachers, as needed, to provide after-school intervention to students in grades TK-6th at John Muir Elementary	2/01/19 through 6/11/19 $30.00 per hour to work with students Not to exceed $40,000.00 total Title I 01.0 30100.0 1100 10000 1130 40000000
Change effective dates to read:		1/28/19 through 6/11/19
Change account number to read:		01.0 30100.0 11100 10000 1130 4000000

	Position	Effective Dates And Salary Rate

Revision to Previous Personnel Report (Cont.)

4. Revision to Board Report No. 10, December 11, 2018

Page 4, Item 1		
McReynolds, Rebecca Thomas, Angelina	Teachers, as needed, to provide ELA/Math intervention to Kindergarten students at Lincoln Elementary	11/26/18 through 5/31/19 $30.00 per hour Not to exceed $720.00 total Supplemental Funds 01.0 01000.0 11100 10000 1130 3300000
Increase amount to read:		Not to exceed $870.00 total

5. Revision to Board Report No. 7, October 16, 2018

Page 12, Item 14		
Rovello, Cindy Soo-Parker, Alice Vales, Heather	Teachers, as needed, to work with students in the Robotics After School Program at Lincoln Elementary	10/01/18 through 3/29/19 $27.00 per hour to plan $30.00 per hour to teach Not to exceed $540.00 total Supplemental Funds 01.0 01000.0 11100 10000 1130 3300000
Increase amount to read:		Not to exceed $894.00

6. Revision to Board Report No. 8, November 5, 2018

Page 6, Item 1		
Castillo, Liliana O'Rourke, Roxanne	Teachers, as needed, to provide small group reading intervention after school Mann Elementary	11/01/18 through 6/11/19 $30.00 per hour Not to exceed 120 hours total Title I – Alternative Support 01.0 30100.0 11100 10000 1130 3500865
Increase hours to read:		Not to exceed 139 hours total

		Position	Effective Dates And Salary Rate
Personal Services Agreement			
1.	Stanley, Michael	Judge, as needed, for Middle School Honors Solo Recital Educational Services	3/06/19 Not to exceed $200.00 each Instruction – Ed. Services 01.0 00000.0 11404 10000 5811 0006616
2.	Stepanian, Anna	Consultant, as needed, to provide counseling services based on student's IEP or 504 plan; consultation and collaboration with District staff; complete case disposition; participate in IEP meetings; attend case consultation meetings and submit LEA Medi-Cal billing via Paradigm on a monthly basis Special Education	3/01/19 through 6/30/19 $60.00 per hour Up to 25 hours a week Not to exceed $16,000.00 01.0 65120.0 50011 21000 5811 0000600

Conference/Workshop/Meeting Authorization

In accordance with Board of Education Policy 4011 pertaining to conference and workshop attendance, approval has been given to the following persons to attend the conference as designated, with reimbursement for actual and necessary expenses in accordance with Board Policy:

A. The following workshop authorizations are not paid from District General Funds:

1. It is recommended that approval be given to Edmond Hambarsumian, Middle School Teacher from Armenian Sisters Private School, to attend the conference "Strategies, Strategies, Strategies to Strengthen Your Writing Instruction and increase Writing Skills" to be held at Embassy Suites, 211 E. Huntington Drive, Arcadia, CA on April 11, 2019, and to include the Conference Registration Fee not to exceed $259.00.

Title II
01.0 40352.0 11100 10000 5220 0000673

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CLASSIFIED PERSONNEL REPORT NO. 14

CONSENT CALENDAR NO. 3

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED BY: Dr. Cynthia M. Foley, Assistant Superintendent, Human Resources

SUBJECT: CLASSIFIED PERSONNEL REPORT NO. 14

It is recommended that the following report be approved as presented:

	Location	Months/Hours, and Salary Rating
Medical Leave of Absence		
1. Cafeteria Worker I Gharapetian, Maryam	Roosevelt	02/28/19 through 04/30/19
2. Education Assistant I Kostanian, Araksi	Columbus	02/24/19 through 04/29/19
3. Elementary Yard Duty Leader Lee, Melissa	Mountain Avenue	03/22/19 through 05/03/19
Change of Medical Leave of Absence		
1. Custodian I Torres, Luis	Crescenta Valley	10/18/18 through 03/18/19

	Location	Effective Dates, Months/Hours, and Salary Rating
Extension of Medical Leave of Absence		
1. Assistant Physically Handicapped Formento, Efren	College View	12/19/18 through 05/12/19
2. Behavior Intervention Assistant Perez, Javier	Special Education	01/29/19 through 06/29/19
3. Education Assistant II Karaoglanyan, Tagui	Hoover	02/25/19 through 04/30/19
Family & Medical Leave of Absence		
1. Administrative Secretary Der-Barseghian, Araksi	Cerritos	07/21/19 through 09/30/19
Extension of Family & Medical Leave of Absence		
1. Occupational Therapist Lopez, Stacey	Special Education	01/28/19 through 04/03/19
2. Translator/Interpreter Gasparyan, Ruzanna	Special Projects	02/02/19 through 04/07/19
3. Typist Clerk II Allen, Stephanie	Monte Vista	11/17/18 through 03/01/19
Maternity Leave of Absence		
1. Administrative Secretary Der-Barseghian, Araksi	Cerritos	07/21/19 through 09/30/19

	Location	Effective Dates, Months/Hours, and Salary Rating
Change of Maternity Leave of Absence		
1. Education Assistant I Lepe Rodriguez, Jessica	Pacific Avenue	02/01/19 through 03/17/19
Extension of Maternity Leave of Absence		
1. Occupational Therapist Lopez, Stacey	Special Education	01/28/19 through 04/03/19
2. Translator/Interpreter Gasparyan, Ruzanna	Special Projects	02/02/19 through 04/07/19
3. Typist Clerk II Allen, Stephanie	Monte Vista	11/17/18 through 03/01/19
Parental Leave of Absence		
1. Translator/Interpreter Gasparyan, Ruzanna	Special Projects	04/08/19 through 06/28/19
Change of Parental Leave of Absence		
1. Typist Clerk II Allen, Stephanie	Monte Vista	03/04/19 through 05/31/19

	Location	Effective Dates, Months/Hours, and Salary Rating

Election from Eligibility List

1. Administrator: Planning, Development and Facilities
   Kassabian, Hagop — Planning & Development — 04/09/19; 12/8; M90-7
   21.1 98000.0 90000 85051 2310 0000630

2. Health Assistant LVN/RN
   Cardona, Cynthia — Toll — 04/01/19; 10/8; 16-6
   01.0 00000.0 00000 27004 2410 0700000

3. Custodian II
   Lepe, Brandon — Edison — 03/19/19; 12/8; 16-2 (day)
   01.0 00000.0 00000 81006 2211 2500000

4. Lead Custodian
   Enciso, Ceaser — Crescenta Valley — 03/19/19; 12/8; 20-8 (night)
   01.0 00000.0 00000 81006 2211 0100000

Termination - Probation
2019-cl-81989 — 03/15/19

Deceased

1. Education Assistant II - Armenian
   Karaoglanian, Tagui — 03/23/19

	Location	Effective Dates, Months/Hours, and Salary Rating

Additional Assignment Temporary - At Established Rate of Pay

1. Assistant Physically Handicapped

Cusati, Danute	Special Education	03/11/19 Not to exceed 1 hour Special Education - IDEA 01.0 33100.0 57700 11100 2130 0000600

2. Education Assistant-Intensive Support

Quintanilla, Diego	Special Education	04/30/19 through 05/03/19 Not to exceed 6 hours Special Ed S&C EAIS-General Fund 01.0 05000.0 57707 11200 2130 0000600

Change of Assignment

1. Change of Location/Increase in Hours

a. Education Assistant I

Khechoumian, Annette	Cerritos From Columbus	04/01/19; 12/3.5 01.0 91400.0 85000 10000 2110 0000671

2. Provisional Assignment

a. Senior Administrative Secretary

Mungia, Sandra	Glendale From Clerk III 16-9	03/01/19 through 03/15/19 03/25/19 through 04/08/19 25-6 01.0 00000.0 11303 10000 2410 0200000

b. Cook/Baker

Amigon, Marisela	College View From Cafeteria Worker I, 1-6	03/01/19 through 03/30/19 4.5 hours a day 9-4 13.0 53100.0 00000 37000 2212 02000000

	Location	Effective Dates, Months/Hours, and Salary Rating

Revisions to previous Board Reports

1. Revision to Personnel Report #13, March 12, 2019

Page 1

Military Leave of Absence

Behavior Intervention Assistant

Martinez, Joseph	Special Projects	03/21/19 through 05/08/20
Change date to read:		03/21/19 through 04/24/20 Period of Active Duty 400 days District Military Pay Not to exceed 30 days per fiscal year

2. Revision to Personnel Report # 13, March 12, 2019

Page 7, Item 2

Provisional Assignment

Cook/Baker

Jarian, Shakeh	Crescenta Valley From Cafeteria Worker I, 1-9	02/27/19 through 03/06/19 8 hours a day 9-6 13.0 53100.0 00000 37000 2212 0100000
Change dates to read:		02/27/19 through 03/15/19 03/26/19 through 03/29/19

	Location	Effective Dates, Months/Hours, and Salary Rating

Revisions to previous Board Reports - Continued

3. Revision to Personnel Report #13, March 12, 2019

Page 6

Provisional Assignment

Account Clerk II

Petrosian, Michelle	EEELP From Account Clerk I, 13-3	03/01/19 through 03/31/19 8 hours a day 17-2 Self Supporting Combined 01.0 91500.0 85000 10000 2410 0000671
Change account to read:		01.0 91500.0 00000 21000 2410 0000671

	Location	Effective Dates, Months/Hours, and Salary Rating

Revisions to previous Board Reports - Continued

4. Revision to Personnel Report # 12, February 19, 2019

Page 10, Item 1

Personal Services Agreement

1. Hee Eun Lee	Consultant, as needed to provide lessons in the art of Korean rice cake making to FLAG Korean classes at Rosemont Middle School	02/18/19 through 06/11/19 Not to exceed $450.00 Rosemont Korean Donation 01.0 94370.0 11100 10000 5811 0000611
Change amount to read:		Not to exceed $480.00

5. Revision to Personnel Report #7, November 5, 2018

Page 28

Election of Classified Hourly Substitutes through 06/30/19

De Torres, Ebner Sandoval, Sergio Torres, America Zendejas, Ana	Mann	11/01/18 through 06/11/19 Not to exceed $2,320.00 total Title I Alternative Support 01.0 30100.0 11100 10000 2130 3500865
Add amount to read:		Not to exceed $3,000.00 total

	Location	Effective Dates, Months/Hours, and Salary Rating

Revisions to previous Board Reports - Continued

6. Revision to Personnel Report #4, September 17, 2018

Page 15, Item 3

Election of Classified/Non Classified Hourly Substitutes through 06/30/19 - Continued

Yard Duty Assistants

Abnosian, Ara	Jefferson	08/21/18 through 06/11/19
Arakelian, Alvart		$11.00 per hour
Davoudi, Nora		01.0 00000.0 19021 10000 2930 3000000
Davoudi, Shirin		
Davtyan, Anush		
Hakobyan, Arpik		
Hernande-Montague, sofia		
Krikorian, Anoush		
Margarian, Carolin		
Martirosyan, Khatun		
Mehrabi, Meline		
Mercado, Nancy		
Moradyan, Marine		
Nercessian Katalaris, Maro		
Ordubegian, Marita		
Patel, Priti		
Schwani, Kiran		
Shirvanian, Karineh		
Sinany, Manoosh		
Ter-Avetisyan, Ruzanna		
Torres, Erika		
Yaqoobi Masihi, Markarit		

Add names to read:	Aslanian, Armineh
	Shirinyanes, Melina

	Location	Effective Dates, Months/Hours, and Salary Rating

Revisions to previous Board Reports - Continued

7. Revision to Personnel Report #2, August 14, 2018

Page 22, Item 1

Transportation Authorization 2018-19

It is recommended that the individuals be authorized to receive transportation expenses at the rate of 54.50¢ per mile, effective July 1, 2018, through June 30, 2019:

Typist Clerk II		
Hidalgo, Norma	SELPA	07/01/18 through 06/30/19: 54.50¢
McGeorge, Lisa		SELPA-Visually Impaired Program
		01.0 65001.0 57504 11100 5210 0000668
Change account to read:		01.0 65001.0 57504 11300 5210 0000668

8. Revision to Personnel Report #1, July 17, 2018

Page 19, Item 3d

Provisional Assignment

Lead Custodian		
Altamirano, Jaime	Crescenta Valley From Custodian I, 11-7	08/14/18 through 12/31/18 8 hours a day 20-4 01.0 00000.0 00000 81006 2211 0000640
Change dates to read:		08/14/18 through 03/18/19

	Location	Effective Dates, Months/Hours, and Salary Rating

Election of Classified Hourly Substitutes through 06/30/19

Arias, Yolanda — 01/01/19 through 06/30/19
Macias, Robert
Marcial, Emilio
Schillinger, Yvonne
Smith, Armineh
Villegas, Danielle

Election of Classified/Non Classified Hourly Substitutes through 06/30/19

1. Student Assistant I

Cardona, Victoria	SELPA	03/12/19 through 06/30/19
Pinal, Ronald		$12.00 per hour
Wiest, Kyle		01.0 65200.0 57700 11100 2180 0000668

	Location	Effective Dates, Months/Hours, and Salary Rating
Personal Services Agreement		
1. Ardiano, Luis	Coach, as needed for sports practice and games, at Toll Middle School	03/12/19 through 06/11/19 Not to exceed $720.00 total $30.00 per hour Supplemental 01.0 01000.0 11100 10000 5811 0700000
2. Massin, Kevin	Consultant, as needed to provide tutorial support during music elective CTE Pathway course at Roosevelt Middle School	03/13/19 through 06/07/19 Not to exceed $1,500.00 total Title I 01.0 30100.0 11100 10000 5811 0500000

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 4

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Stephen Dickinson, Chief Business and Financial Officer
PREPARED BY:	Karineh Savarani, Director, Financial Services
SUBJECT:	**Warrants – District Funds**

The Interim Superintendent recommends that "A" Form (Payroll Warrants) issued March 6, 2019 – March 27, 2019 as shown below totaling $3,113,610.39, be approved. Funding for Form "A" Warrants is accounted for in the following funds: 01.0 General Fund, 12.0 Child Development Fund, 13.0 Cafeteria Fund, 21.1 Measure S Projects Fund, and 25.0 Capital Facilities Fund.

This agenda item is in support of Board Priority No. 4 – Maintain District Solvency & Financial Responsibility.

REGISTERED NUMBER	WARRANT NUMBER	DESCRIPTION	AMOUNT
063-C	6088461 - 6088463	Certificated	$ 8,031.80
E4P-N	6089599 - 6089695	Classified	1,415,359.32
064-C	6095641 - 6095642	Certificated	(4,926.17)
C3H-N	6099362 - 6099562	Classified	466,700.62
065-C	6104908 - 6104909	Certificated	2,031.76
065-N	6104910 - 6104915	Classified	2,090.46
066-N	6099485 - 6105387	Classified	(87.20)
067-N	6105904 - 6105904	Classified	(2,093.27)
070-N	6106089 - 6106091	Classified	1,458.63
072-N	6107001 - 6107001	Classified	66.48
074-N		Classified	(949.98)
077-C	6109380 - 6109380	Certificated	427.19
E4Q-N	6110625 - 6110714	Classified	1,214,786.93
079-N	6112257 - 6112266	Classified	7,491.47
080-N	6116536 - 6116536	Classified	2,903.48
084-N	6118518 - 6118518	Classified	318.87
		TOTAL	**$ 3,113,610.39**

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GLENDALE UNIFIED SCHOOL DISTRICT

APRIL 2, 2019

CONSENT CALENDAR NO. 5

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Christine J. Ward, Director, Procurement & Contract Services

SUBJECT: **PURCHASE ORDER LISTING**

The Interim Superintendent recommends that the Board of Education approve Purchase Orders totaling $3,445,109.98 for the period of February 25, 2019 through March 15, 2019 as listed on the attached.

SUMMARY OF PURCHASE ORDERS ISSUED FROM FEBRUARY 25, 2019 THROUGH MARCH 15, 2019.

Funding Source	**Number of Purchase Orders**	**Amount**
UNRESTRICTED RESOURCES	254	$ 608,274.55
FEDERAL RESTRICTED RESOURCES	82	$ 333,716.60
STATE RESTRICTED RESOURCES	67	$ 680,948.35
LOCAL RESTRICTED RESOURCES	119	$ 150,878.23
CHILD DEVELOPMENT FUND	8	$ 4,395.67
FOOD SERVICES FUND	4	$ 35,770.84
MEASURE S PROJECTS FUND	6	$ 87,139.76
CAPITAL PROJECTS & IMPROVEMENT FUND	9	$ 546,408.25
WORKERS' COMPENSATION FUND	1	$ 996,380.00
MC LENNAN DONATIONS	1	$ 1,197.73
TOTAL	**551**	**$3,445,109.98**

UNRESTRICTED RESOURCES

PO NUMBER	VENDOR	AMOUNT
0001025647	ALIMED INC	63.91
0001025652	MAINTEX	147.06
0001025653	SUPPLYWORKS CUSTODIAL SUPPLIES - HOOVER HIGH SCHOOL	1,090.27
0001025654	COMMUSA COMPUTER EQUIPMENT - LINCOLN ELEMENTARY SCHOOL	1,868.03
0001025655	ORIENTAL TRADING INC.	296.58
0001025656	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA HOME DEPOT - CUSTODIAL SUPPLIES - ROSEMONT MIDDLE SCHOOL	111.29
0001025658	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA HOME DEPOT - INSTRUCTIONAL SUPPLIES - GLENDALE HIGH SCHOOL	74.64
0001025659	OFFICE DEPOT COMMUNICATION EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	1,008.82
0001025661	CDW GOVERNMENT	47.73
0001025662	CDW GOVERNMENT	231.42
0001025663	PC & MAC EXCHANGE	45.99
0001025664	ULINE SHIPPING SUPPLY	56.14
0001025665	CLEAN SWEEP SUPPLY CO INC	167.32
0001025671	BRIAN KENYON ART STUDIO SERVICE CONTRACT FOR LOGO PAINTING PROJECT - TOLL MIDDLE SCHOOL	1,295.00
0001025676	OFFICE DEPOT COMPUTER EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	26,177.29
0001025678	THOMAS DENTON ENGRAVING	98.00
0001025679	OFFICE DEPOT COMPUTER EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	8,499.12
0001025681	TURF STAR, INC.	454.74
0001025683	GLENDALE BUILDER'S SUPPLIES	444.57
0001025684	ULINE SHIPPING SUPPLY	213.56
0001025690	SUPPLYWORKS	464.61
0001025695	OFFICE DEPOT COMPUTER EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	8,499.12
0001025696	COMPLETE BUSINESS SYSTEMS INSTRUCTIONAL SUPPLIES - JEFFERSON ELEMENTARY SCHOOL	1,633.01
0001025697	CAMCOR, INC. AUDIOVISUAL SUPPLIES - TOLL MIDDLE SCHOOL	2,382.24

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025698	GLOBAL EQUIPMENT COMPANY	122.56
0001025700	SCHOOL HEALTH CORP.	79.27
0001025703	FOLLETT SCHOOL SOLUTIONS, INC.	254.32
0001025705	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - DAILY HIGH SCHOOL	29.55
0001025712	CRESCENTA VALLEY ATHLETICS OFFICE SUPPLIES - DAILY HIGH SCHOOL	1,082.30
0001025714	AUDIOMETRICS	223.33
0001025717	O.H. LYNN PRINTING GRADUATION SUPPLIES - CLARK MAGNET HIGH SCHOOL	1,300.00
0001025718	JOSTENS GRADUATION SUPPLIES - CLARK MAGNET HIGH SCHOOL	2,550.92
0001025721	FARAUDO, KATIE	300.00
0001025723	QUALITY WINDOW BLINDS WINDOW COVERING AT ADMINISTRATION BUILDING - BUSINESS SERVICES	1,109.92
0001025724	JOSTEN'S, INC.	889.69
0001025725	PHIL AND SONS TREE SERVICE SERVICE CONTRACT FOR TREE REMOVAL AT GLENDALE HIGH SCHOOL - FACILITY & SUPPORT OPERATIONS	2,800.00
0001025728	S.A.N.E.	300.00
0001025729	S.A.N.E.	300.00
0001025730	ATKINSON, ANDELSON, LOYA, RUUD PROFESSIONAL SERVICES - EDUCATIONAL SERVICES	1,760.00
0001025732	OFFICE DEPOT	306.59
0001025733	APPLE COMPUTER	489.81
0001025736	AMAZON CAPITAL SERVICES, INC. COMPUTER SUPPLIES - KEPPEL ELEMENTARY SCHOOL	212.37
0001025737	MAINTEX	125.90
0001025740	CDW GOVERNMENT CLASSROOM EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	4,007.70
0001025741	ULINE SHIPPING SUPPLY	238.32
0001025744	CONSOLIDATED PLASTICS CO INC CUSTODIAL SUPPLIES - TOLL MIDDLE SCHOOL	2,307.26
0001025755	SHARP BUSINESS SYSTEMS	657.86
0001025756	O.H. LYNN PRINTING	96.36
0001025757	AMAZON CAPITAL SERVICES, INC. OFFICE EQUIPMENT - KEPPEL ELEMENTARY SCHOOL	87.59
0001025759	S & S WORLDWIDE	318.96
0001025761	CAROLINA BIOLOGICAL SUPPLY CO.	25.67

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025774	ORIENTAL TRADING INC.	86.36
0001025776	GLENDALE CHAMBER OF COMMERCE	325.00
0001025777	PHIL AND SONS TREE SERVICE TREE TRIMMING SERVICES AT ROSEMONT MIDDLE SCHOOL - FACILITY & SUPPORT OPERATIONS	1,400.00
0001025778	PHIL AND SONS TREE SERVICE TREE PRUNING SERVICES AT GLENDALE HIGH SCHOOL - FACILITY & SUPPORT OPERATIONS	4,995.00
0001025782	MARIO'S IMPORTS	294.91
0001025786	HAZARD, YOUNG, ATTEA ASSOCIATES PROFESSIONAL SERVICES - HUMAN RESOURCES	29,650.00
0001025787	NORTHSTAR AV	341.64
0001025789	CDW GOVERNMENT	653.80
0001025791	CITY OF GLENDALE	298.38
0001025794	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - KEPPEL ELEMENTARY SCHOOL	20.78
0001025795	BARNES & NOBLE	196.77
0001025796	APPERSON, INC	112.82
0001025798	SUPPLYWORKS	94.26
0001025799	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - JEFFERSON ELEMENTARY SCHOOL	645.86
0001025803	GRAINGER	413.06
0001025805	AMAZON CAPITAL SERVICES, INC. CLASSROOM FURNITURE - FREMONT ELEMENTARY SCHOOL	2,135.07
0001025807	PRPCO BOOKS - SECONDARY SERVICES	1,187.92
0001025809	ADORAMA	534.36
0001025810	CDW GOVERNMENT	63.51
0001025812	ARCMATE MANUFACTURING CORP.	214.00
0001025814	AMAZON CAPITAL SERVICES, INC. CUSTODIAL SUPPLIES - MARSHALL ELEMENTARY SCHOOL	37.76
0001025819	AACI REGISTRATION FOR SPORTS MEDICINE COMPETITION - CRESCENTA VALLEY HIGH SCHOOL	1,040.00
0001025821	JOSTENS GRADUATION SUPPLIES - HOOVER HIGH SCHOOL	3,411.09
0001025825	OFFICE DEPOT BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - DAILY HIGH SCHOOL	5,000.00
0001025826	OHNO CONSTRUCTION EMERGENCY PLUMBING REPAIRS AT ROOSEVELT MIDDLE SCHOOL - FACILITY & SUPPORT OPERATIONS	17,284.22

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025831	CALIFORNIA FITNESS SOURCE	334.76
0001025833	IMAGECUBE PRINTING SERVICES - STUDENT SUPPORT SERVICES	1,115.01
0001025834	OFFICE DEPOT BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - MUIR ELEMENTARY SCHOOL	1,575.00
0001025835	GARIK TERZIAN	300.00
0001025836	STEPHANIE CHOI	350.00
0001025838	AMAZON CAPITAL SERVICES, INC. INSTRUTIONAL MATERIALS - DUNSMORE ELEMENTARY SCHOOL	79.67
0001025839	BARTON, LIONEL	400.00
0001025842	BARNES & NOBLE	41.02
0001025843	GRIGOR D AVAGYAN BLANKET PURCHASE ORDER FOR BOOKS - JEFFERSON ELEMENTARY SCHOOL	6,054.26
0001025844	GRIGOR D AVAGYAN BLANKET PURCHASE ORDER FOR BOOKS - JEFFERSON ELEMENTARY SCHOOL	6,054.26
0001025847	AMAZON CAPITAL SERVICES, INC. BOOKS - EDUCATIONAL SERVICES	139.45
0001025848	RAPTOR TECHNOLOGIES LLC	542.03
0001025849	SUPPLYWORKS	761.37
0001025853	OFFICE DEPOT	306.59
0001025857	JOSTENS GRADUATION SUPPLIES - CRESCENTA VALLEY HIGH SCHOOL	4,243.13
0001025859	MAINTEX FLOORING MATERIALS - FACILITY & SUPPORT OPERATIONS	1,209.30
0001025867	SOUTHLAND DISPOSAL	642.40
0001025868	LAWN MOWER CORNER	217.15
0001025869	BUCKEYE CLEANING CENTERS	770.99
0001025870	NORTHERN SAFETY & INDUSTRIAL	24.59
0001025871	PHIL AND SONS TREE SERVICE	700.00
0001025874	BORREGO SOLAR SYSTEMS, INC. ELECTRICAL MAINTENANCE AT COLLEGE VIEW - FACILITY & SUPPORT OPERATIONS	1,133.00
0001025878	SUPPLYWORKS CUSTODIAL SUPPLIES - FACILITY & SUPPORT OPERATIONS	2,590.95
0001025881	PEST OPTIONS INC PEST CONTROL SERVICES AT VARIOUS SCHOOL SITES - FACILITY & SUPPORT OPERATIONS	6,432.27
0001025886	SUPPLYWORKS	356.23
0001025904	STATE OF CA DEPT OF INDUSTRIAL RELATIONS	450.00
0001025905	GALE SUPPLY COMPANY	109.50

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025906	SUPPLYWORKS	658.32
0001025907	ACADEMIC SUPERSTORE SOFTWARE - EDUCATIONAL SERVICES	5,840.00
0001025909	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA AMPLE SUPPLY COMPANY - OFFICE SUPPLIES - LINCOLN ELEMENTARY SCHOOL	66.99
0001025911	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA GGI INTERNATIONAL - FURNITURE PART - LINCOLN ELEMENTARY SCHOOL	16.41
0001025912	MAINTEX WAREHOUSE STOCK - PROCUREMENT & CONTRACT SERVICES	1,861.50
0001025913	MAINTEX	517.72
0001025916	BARNES & NOBLE	193.96
0001025917	AMAZON CAPITAL SERVICES, INC. BLANKET PURCHASE ORDER FOR INSTRUCTIONAL MATERIALS - DAILY HIGH SCHOOL	368.59
0001025918	SUPPLYWORKS	908.06
0001025920	AMERICAN EXPRESS CPS PANERA BREAD - FOOD PRODUCTS - EDUCATIONAL SERVICES	768.34
0001025921	PROFESSIONAL TURF SPECIALTIES, INC SERVICE CONTRACT FOR RENOVATIONS AT STENGEL FIELD - FACILITY & SUPPORT OPERATIONS	2,900.00
0001025922	SHARP BUSINESS SYSTEMS CLASSROOM EQUIPMENT - WILSON MIDDLE SCHOOL	19,778.28
0001025924	FROG STREET PRESS BOOKS - EDUCATIONAL SERVICES	4,029.58
0001025926	BARNES & NOBLE	41.75
0001025927	FOLLETT SCHOOL SOLUTIONS, INC. BOOKS - EDUCATIONAL SERVICES	7,257.61
0001025932	SCHOOL MATE INSTRUCTIONAL SUPPLIES - LINCOLN ELEMENTARY SCHOOL	1,084.05
0001025933	ARTS ATTACK INSTRUCTIONAL SUPPLIES - JEFFERSON ELEMENTARY SCHOOL	1,650.00
0001025934	SCHOOL SPECIALTY	306.10
0001025935	FLINN SCIENTIFIC INC	46.14
0001025936	OFFICE DEPOT CUSTODIAL SUPPLIES - CRESCENTA VALLEY HIGH SCHOOL	1,164.82
0001025938	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL MATERIALS - EDISON ELEMENTARY SCHOOL	43.24
0001025939	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL MATERIALS - EDISON ELEMENTARY SCHOOL	237.77

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025940	WOODBURN PRESS	701.81
0001025945	SCHOOL OUTFITTERS	493.12
0001025949	AMAZON CAPITAL SERVICES, INC. COMPUTER SUPPLIES - SECONDARY SERVICES	114.72
0001025950	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - DAILY HIGH SHOOL	62.40
0001025953	AREY JONES EDUCATIONAL SOLUTIONS COMPUTER EQUIPMENT - MANN ELEMENTARY SCHOOL	24,140.08
0001025955	SUPPLYWORKS CUSTODIAL SUPPLIES - MANN ELEMENTARY SCHOOL	1,005.43
0001025956	SUPPLYWORKS CUSTODIAL SUPPLIES - EDISON ELEMENTARY SCHOOL	1,311.59
0001025965	NATIONAL COUNCIL OF SUPERVISORS OF MATH	180.00
0001025968	HEMMING MORSE, LLP PROFESSIONAL SERVICES - FINANCIAL SERVICES	10,000.00
0001025969	ULINE SHIPPING SUPPLY	87.59
0001025971	WAXIE SANITARY SUPPLY	133.31
0001025973	WAXIE SANITARY SUPPLY	30.94
0001025974	CLEAN SWEEP SUPPLY CO INC	658.97
0001025975	SHARP BUSINESS SYSTEMS	443.24
0001025976	UPS FREIGHT	28.97
0001025977	FAGEN FRIEDMAN & FULFROST LLP PROFESSIONAL SERVICES - HUMAN RESOURCES	50,000.00
0001025978	O.H. LYNN PRINTING	262.80
0001025979	SHARP BUSINESS SYSTEMS	500.00
0001025980	SUPPLYWORKS	227.01
0001025983	SUPPLYWORKS	709.32
0001025987	TWO GUYS FROM ITALY	145.56
0001025989	PARAGON SYSTEMS INC AUDIOVISUAL EQUIPMENT - VALLEY VIEW ELEMENTARY SCHOOL	3,750.00
0001025990	IMAGE IV SYSTEMS, INC. INSTRUCTIONAL SUPPLIES - CLARK MAGNET HIGH SCHOOL	1,659.88
0001025991	IMAGE IV SYSTEMS, INC.	872.28
0001025992	IMAGE IV SYSTEMS, INC. INSTRUCTIONAL SUPPLIES - CLARK MAGNET HIGH SCHOOL	1,046.73
0001025996	CAMCOR, INC. CLASSROOM EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	1,175.90
0001025997	CAMCOR, INC. AUDIOVISUAL EQUIPMENT - VALLEY VIEW ELEMENTARY SCHOOL	1,175.90
0001025998	COMMUSA	119.50

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025999	CDW GOVERNMENT AUDIOVISUAL EQUIPMENT - VALLEY VIEW ELEMENTARY SCHOOL	1,138.80
0001026001	ABRIL BOOKSTORE & PUBLISHING BOOKS - R.D. WHITE FLAG PROGRAM	1,352.46
0001026002	ABRIL BOOKSTORE & PUBLISHING BOOKS - R.D. WHITE FLAG PROGRAM	1,352.46
0001026006	SCHOLASTIC BOOK CLUBS	223.40
0001026008	PRESIDENT'S EDUCATION AWARDS	410.64
0001026009	PRESIDENT'S EDUCATION AWARDS	199.85
0001026010	VISTA HIGHER LEARNING	931.30
0001026011	FOLLETT SCHOOL SOLUTIONS, INC.	392.88
0001026012	VISTA HIGHER LEARNING BOOKS FOR TOLL MIDDLE SCHOOL FLAG PROGRAM - EDUCATIONAL SERVICES	1,552.16
0001026013	FOLLETT SCHOOL SOLUTIONS, INC. BOOKS FOR TOLL MIDDLE SCHOOL FLAG PROGRAM - EDUCATIONAL SERVICES	1,366.01
0001026015	AMAZON CAPITAL SERVICES, INC. OFFICE FURNITURE - CATEGORICAL PROGRAMS	56.93
0001026016	O.H. LYNN PRINTING	180.68
0001026018	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - JEFFERSON ELEMENTARY SCHOOL	375.88
0001026019	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - MONTE VISTA ELEMENTARY SCHOOL	114.05
0001026020	LAKESHORE	228.72
0001026021	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - MOUNTAIN AVENUE ELEMENTARY SCHOOL	1,324.41
0001026022	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - GLENDALE HIGH SCHOOL	24.01
0001026023	DR. DONS BUTTONS	196.81
0001026024	IMAGEWORKS PES INC.	226.77
0001026025	SCHOOL MATE	858.48
0001026026	OFFICE DEPOT	267.38
0001026031	DOLPHIN EVENT SERVICES GRADUATION RENTALS - CRESCENTA VALLEY HIGH SCHOOL	11,313.32
0001026033	ROB WILTSEY CREATIVE PARTNERS, LLC	350.00
0001026035	THE POWER CONNECTION	182.00
0001026036	CARTY WED STRATEGIES, INC SUBSCRIPTION FOR ONLINE SERVICES - SECONDARY SERVICES	1,200.00
0001026037	SARKIS HANDYMAN	937.36
0001026038	BRIGADE PEST MANAGEMENT INC	145.00

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026040	HADDAD PLUMBERS INC	275.00
0001026046	PRINTING BY HARVEY	87.60
0001026048	J.W. PEPPER & SON, INC.	463.57
0001026052	COPY CENTRAL	302.22
0001026055	PRINTING BY HARVEY	698.61
0001026056	MARK SCHMIDT	150.00
0001026059	TEK TIME SYSTEMS, INC	287.30
0001026061	AMAZON CAPITAL SERVICES, INC. BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - VALLEY VIEW ELEMENTARY SCHOOL	800.00
0001026062	SUPPLYWORKS CUSTODIAL SUPPLIES - TOLL MIDDLE SCHOOL	1,815.95
0001026064	MAXIM HEALTHCARE SERVICES, INC.	231.84
0001026069	IPEVO INC	327.41
0001026070	SUPPLYWORKS	182.22
0001026072	CDW GOVERNMENT COMPUTER EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	1,363.28
0001026075	CDW GOVERNMENT CLASSROOM EQUIPMENT - LINCOLN ELEMENTARY SCHOOL	1,363.28
0001026076	CDW GOVERNMENT CLASSROOM EQUIPMENT - EDISON ELEMENTARY SCHOOL	1,363.28
0001026078	AVO'S CUSTOM TEES	848.62
0001026079	SAMY'S CAMERA	363.00
0001026080	SOUTHWEST SCHOOL & OFFICE SUPPLY	82.40
0001026083	FOLLETT SCHOOL SOLUTIONS, INC. SUBSCRIPTIONS - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	23,015.36
0001026084	GALE SUPPLY COMPANY	109.50
0001026085	GALE SUPPLY COMPANY	132.50
0001026086	CLEAN SWEEP SUPPLY CO INC	184.62
0001026087	IPEVO INC	656.98
0001026091	ROBERT R FORD TRUCKING INC GROUND EQUIPMENT - FACILITY & SUPPORT OPERATIONS	4,623.00
0001026093	SHARP BUSINESS SYSTEMS	214.62
0001026096	DISCOUNT SCHOOL SUPPLY BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - MOUNTAIN AVENUE ELEMENTARY SCHOOL	3,000.00
0001026097	OFFICE DEPOT BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - MOUNTAIN AVENUE ELEMENTARY SCHOOL	2,000.00
0001026098	SCHOOL SPECIALTY BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - MOUNTAIN AVENUE ELEMENTARY SCHOOL	2,000.00

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026099	PORTOS BAKERY	904.00
0001026100	JONES SCHOOL SUPPLY GRADUATION SUPPLIES - TOLL MIDDLE SCHOOL	2,049.55
0001026101	ADAPTCONN, INC. SATELLITE EMERGENCY PHONE SERVICE - FACILITY & SUPPORT OPERATIONS	1,695.00
0001026102	OFFICE DEPOT	477.98
0001026103	AMERICAN GUARD SERVICES INC BLANKET PURCHASE ORDER FOR SECURITY GUARD SERVICES - ROSEMONT MIDDLE SCHOOL	50,000.00
0001026104	NELSON SOUND INC	170.00
0001026105	O.H. LYNN PRINTING	156.04
0001026106	PLAYPOWER LT FARMINGTON, INC. PLAYGROUND EQUIPMENT - GLENOAKS ELEMENTARY SCHOOL	4,190.99
0001026111	COPY CENTRAL	65.04
0001026117	THRIFTY APPLIANCE REPAIR	113.91
0001026118	GOPHER	108.49
0001026120	SHALOM PLUMBING & ROOTER	90.00
0001026122	CLIFTON LARSON ALLEN LLP PROFESSIONAL SERVICES - FINANCIAL SERVICES	8,250.00
0001026123	OFFICE DEPOT	490.66
0001026124	CDW GOVERNMENT CLASSROOM EQUIPMENT - HOOVER HIGH SCHOOL	2,726.55
0001026128	HOLLYWOOD SOUND SYSTEMS GRADUATION SUPPLIES - CRESCENTA VALLEY HIGH SCHOOL	2,300.50
0001026129	AREY JONES EDUCATIONAL SOLUTIONS COMPUTER EQUIPMENT - MANN ELEMENTARY SCHOOL	1,164.09
0001026130	OFFICE DEPOT COMPUTER EQUIPMENT - HOOVER HIGH SCHOOL	27,241.19
0001026139	BAUDVILLE	388.40
0001026142	KAGAN PUBLISHING INC	139.08
0001026144	FLINN SCIENTIFIC INC	294.58
0001026145	LAKESHORE	26.00
0001026146	WEST-LITE SUPPLY CO,INC	162.94
0001026150	AMERICAN EXPRESS CPS THE CITIZEN HOTEL SACRAMENTO - CONFERENCE EXPENSES - STUDENT SUPPORT SERVICES	816.00
0001026151	CHILD AND FAMILY POLICY INSTITUTE OF CA	400.00
0001026152	AMERICAN EXPRESS CPS SOUTHWEST AIRLINES - CONFERENCE EXPENSES - STUDENT SUPPORT SERVICES	535.96
0001026158	CLEAN SWEEP SUPPLY CO INC CUSTODIAL SUPPLIES - DUNSMORE ELEMENTARY SCHOOL	1,104.86

UNRESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026164	OFFICE DEPOT COMPUTER EQUIPMENT - EDUCATIONAL TECHNOLOGY & INFORMATION SERVICES	27,241.19
0001026166	CDW GOVERNMENT	137.02
0001026169	CATERING BY HERACH & ARA	465.81
0001026170	ROB WILTSEY CREATIVE PARTNERS, LLC ADVERTISING SERVICES - PUBLIC INFORMATION	21,000.00
0001026174	PHIL AND SONS TREE SERVICE SERVICE CONTRACT FOR TREE REMOVAL AT MARSHALL ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	2,400.00
0001026175	AMERICAN EXPRESS CPS CALIFORNIA DEPARTMENT OF EDUCATION - CONFERENCE EXPENSES - EDUCATIONAL SERVICES	2,585.00
0001026176	SHARP BUSINESS SYSTEMS CLASSROOM EQUIPMENT - MONTE VISTA ELEMENTARY SCHOOL	6,585.76
0001026177	SHARP BUSINESS SYSTEMS CLASSROOM EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	1,768.86
0001026179	SCHOOL HEALTH CORP.	202.23
0001026180	SUPPLYWORKS	476.10
0001026181	IBOOKPARK INC FLAG PROGRAM BOOKS FOR KEPPEL ELEMENTARY SCHOOL - EDUCATIONAL SERVICES	8,330.76
0001026182	IBOOKPARK INC FLAG PROGRAM BOOKS FOR MONTE VISTA ELEMENTARY SCHOOL - EDUCATIONAL SERVICES	6,000.00
0001026183	IBOOKPARK INC FLAG PROGRAM BOOKS FOR TOLL MIDDLE SCHOOL - EDUCATIONAL SERVICES	1,500.00
0001026184	IBOOKPARK INC FLAG PROGRAM BOOKS FOR ROSEMONT MIDDLE SCHOOL - EDUCATIONAL SERVICES	1,000.00
0001026185	IBOOKPARK INC	500.00
0001026186	IBOOKPARK INC	500.00
0001026188	ZANER-BLOSER INSTRUCTIONAL SUPPLIES - MOUNTAIN AVENUE ELEMENTARY SCHOOL	1,279.20
0001026190	PEARSON CUSTOMER SUPPORT BOOKS - CRESCENTA VALLEY HIGH SCHOOL	8,098.66
0001026193	SUPPLYWORKS CUSTODIAL SUPPLIES - GLENDALE HIGH SCHOOL	2,805.74
	TOTAL	608,274.55

FEDERAL RESTRICTED RESOURCES

PO NUMBER	VENDOR	AMOUNT
0001025649	IXL LEARNING	559.00
0001025660	OFFICE DEPOT	2,889.92
	INSTRUCTIONAL SUPPLIES - ROOSEVELT MIDDLE SCHOOL	
0001025675	OFFICE DEPOT	54,394.38
	COMPUTER EQUIPMENT - WILSON MIDDLE SCHOOL	
0001025694	OFFICE DEPOT	6,799.30
	COMPUTER EQUIPMENT - EDISON ELEMENTARY SCHOOL	
0001025701	PASCO	740.22
0001025702	NCS PEARSON	840.00
0001025710	EARTH'S BIRTHDAY PROJECT	398.40
0001025716	SHARP BUSINESS SYSTEMS	8,683.35
	DUPLICATING EQUIPMENT - CLARK MAGNET HIGH SCHOOL	
0001025731	LEARN BY DOING, INC.	600.00
0001025734	CDW GOVERNMENT	5,343.60
	CLASSROOM EQUIPMENT - WILSON MIDDLE SCHOOL	
0001025742	SOUTHPAW ENTERPRISES	377.91
0001025743	CAMCOR, INC.	226.05
0001025746	NORTHSTAR AV	114.98
0001025747	AMAZON CAPITAL SERVICES, INC.	564.95
	AUDIOVISUAL EQUIPMENT - GLENDALE HIGH SCHOOL	
0001025748	ACP DIRECT	918.23
0001025749	OFFICE DEPOT	19.04
0001025750	AMAZON CAPITAL SERVICES, INC.	41.94
	AUDIOVISUAL SUPPLIES - EDISON ELEMENTARY SCHOOL	
0001025751	CAMCOR, INC.	653.72
0001025752	OFFICE DEPOT	38.08
0001025753	IEFLA	180.00
0001025754	SARGENT-WELCH	311.47
0001025762	PRO-ED	184.29
0001025764	PRO-ED	130.09
0001025765	NCS PEARSON	259.88
0001025766	NCS PEARSON	1,846.91
	TRAINING SUPPLIES - SPECIAL EDUCATION	
0001025767	NCS PEARSON	350.84
0001025768	NCS PEARSON	104.17
0001025769	NCS PEARSON	248.63
0001025770	NCS PEARSON	315.03
0001025771	NCS PEARSON	301.75
0001025772	NCS PEARSON	308.68
0001025773	NCS PEARSON	738.26
0001025775	NCS PEARSON	259.88
0001025779	CABE- CAL ASSOC. FOR BILINGUAL EDUCATION	760.00
0001025785	FUTURE HORIZON, INC	756.00
0001025790	AMAZON CAPITAL SERVICES, INC.	3,829.22
	COMPUTER SUPPLIES - MANN ELEMENTARY SCHOOL	

FEDERAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025792	MONOPRICE INC.	178.31
0001025793	AMAZON CAPITAL SERVICES, INC.	2,759.01
	ROBOTIC KITS - EDISON ELEMENTARY SCHOOL	
0001025811	COMPLETE BUSINESS SYSTEMS	816.76
0001025818	AP* SI SAN GABRIEL	775.00
0001025820	AMAZON CAPITAL SERVICES, INC.	1,621.30
	INSTRUCTIONAL SUPPLIES - ROOSEVELT MIDDLE SCHOOL	
0001025840	TANGIBLE PLAY INC	2,079.00
	COMPUTER SUPPLIES - EDISON ELEMENTARY SCHOOL	
0001025852	SHARP BUSINESS SYSTEMS	9,889.15
	CLASSROOM EQUIPMENT - TOLL MIDDLE SCHOOL	
0001025923	PRO-ED	198.75
0001025925	ACADEMIC THERAPY PUBLICATIONS	49.28
0001025928	AMAZON CAPITAL SERVICES, INC.	205.31
	INSTRUCTIONAL EQUIPMENT - JEFFERSON ELEMENTARY SCHOOL	
0001025929	BELLA PRINTING SERVICES	6,000.61
	PRINTING SERVICES - MANN ELEMENTARY SCHOOL	
0001025931	AMAZON CAPITAL SERVICES, INC.	392.32
	INSTRUCTIONAL SUPPLIES - MUIR ELEMENTARY SCHOOL	
0001025943	READ NATURALLY	1,035.00
	LICENSE RENEWAL - MANN ELEMENTARY SCHOOL	
0001025944	OFFICE DEPOT	7.91
0001025947	COMPLETE BUSINESS SYSTEMS	754.34
0001025948	AMAZON CAPITAL SERVICES, INC.	75.56
	COMPUTER SUPPLIES - MUIR ELEMENTARY SCHOOL	
0001025954	AREY JONES EDUCATIONAL SOLUTIONS	11,587.24
	COMPUTER EQUIPMENT - MANN ELEMENTARY SCHOOL	
0001025960	CSUN, CENTER FOR TEACHING & LEARNING	1,980.00
	CONFERENCE EXPENSES - SPECIAL EDUCATION	
0001025962	COMPLETE BUSINESS SYSTEMS	2,132.62
	OFFICE SUPPLIES - KEPPEL ELEMENTARY SCHOOL	
0001025981	SHARP BUSINESS SYSTEMS	8,467.64
	DUPLICATING EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	
0001025982	SHARP BUSINESS SYSTEMS	7,405.49
	DUPLICATING EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	
0001025984	SHARP BUSINESS SYSTEMS	13,674.36
	DUPLICATING EQUIPMENT - GLENDALE HIGH SCHOOL	

FEDERAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025985	SHARP BUSINESS SYSTEMS DUPLICATING EQUIPMENT - TOLL MIDDLE SCHOOL	12,118.37
0001026000	NCS PEARSON	381.25
0001026003	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA MIRA CANION.COM - BOOKS - GLENDALE HIGH SCHOOL	239.22
0001026004	PRO-ED	42.16
0001026005	PRO-ED	79.50
0001026014	AMAZON CAPITAL SERVICES, INC. BOOKS - MUIR ELEMENTARY SCHOOL	87.38
0001026017	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - FOOTHILL SELPA	28.46
0001026027	BRIDGE OF KNOWLEDGE, LLC SERVICE AGREEMENT FOR TUTORING SERVICES - CATEGORICAL PROGRAMS	13,698.00
0001026029	SOLUTION TREE CONFERENCE EXPENSES - WILSON MIDDLE SCHOOL	6,690.00
0001026063	SOUTHWEST SCHOOL & OFFICE SUPPLY INSTRUCTIONAL SUPPLIES - BALBOA ELEMENTARY SCHOOL	12,000.00
0001026067	CDW GOVERNMENT CLASSROOM EQUIPMENT - MARSHALL ELEMENTARY SCHOOL	5,694.00
0001026071	CDW GOVERNMENT CLASSROOM EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	1,138.80
0001026073	CAMCOR, INC. COMPUTER SUPPLIES - R.D. WHITE ELEMENTARY SCHOOL	1,133.54
0001026074	CDW GOVERNMENT CLASSROOM EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	1,363.28
0001026088	CAMCOR, INC. COMPUTER SUPPLIES - KEPPEL ELEMENTARY SCHOOL	1,370.50
0001026121	OFFICE DEPOT BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - JEFFERSON ELEMENTARY SCHOOL	20,000.00
0001026125	CDW GOVERNMENT COMPUTER CARTS - HOOVER HIGH SCHOOL	2,726.55
0001026131	OFFICE DEPOT COMPUTER EQUIPMENT - GLENDALE HIGH SCHOOL	40,861.78
0001026135	OFFICE DEPOT COMPUTER EQUIPMENT - R.D. WHITE ELEMENTARY SCHOOL	13,620.59

FEDERAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026136	PRO-ED	305.94
0001026137	NCS PEARSON	218.30
0001026138	NCS PEARSON	198.66
0001026163	OFFICE DEPOT COMPUTER EQUIPMENT - HOOVER HIGH SCHOOL	27,241.19
0001026192	APPLE COMPUTER COMPUTER EQUIPMENT - SPECIAL EDUCATION	5,306.00
	TOTAL	333,716.60

STATE RESTRICTED RESOURCES

0001025650	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - DAILY HIGH SCHOOL	135.46
0001025651	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - GLENDALE HIGH SCHOOL	30.41
0001025669	VINTAGE KING AUDIO CLASSROOM EQUIPMENT - SECONDARY SERVICES	34,539.94
0001025707	CDW GOVERNMENT	432.30
0001025713	SHANT AND ANAHID KOUMRIQIAN PARENT REIMBURSEMENT - SPECIAL EDUCATION	84,500.00
0001025715	HENRY TOVMASSIAN CLIENT TRUST ACCOUNT PARENT REIMBURSEMENT - SPECIAL EDUCATION	20,500.00
0001025726	INTEGRATIVE HEALTH & WELLNESS SERVICE AGREEMENT TO CONDUCT DRUG EDUCATION PRESENTATIONS AT GUSD HIGH SCHOOLS - STUDENT SUPPORT SERVICES	6,000.00
0001025727	AMERICAN EXPRESS CPS AME LEADERSHIP INSTITUTE - CONFERENCE EXPENSES - SECONDARY SERVICES	350.00
0001025797	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL MATERIALS - CRESCENTA VALLEY HIGH SCHOOL	15.31
0001025801	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL MATERIALS - CRESCENTA VALLEY HIGH SCHOOL	14.57
0001025802	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL MATERIALS - CRESCENTA VALLEY HIGH SCHOOL	22.96
0001025804	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - HOOVER HIGH SCHOOL	59.94

STATE RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025806	CAROLINA BIOLOGICAL SUPPLY CO.	46.04
0001025813	AMAZON CAPITAL SERVICES, INC. SPECIAL EDUCATION EQUIPMENT - FOOTHILL SELPA	241.95
0001025815	AMERICAN EXPRESS CPS SOUTHWEST AIRLINES - CONFERENCE EXPENSES - SECONDARY SERVICES	222.96
0001025816	SS+K CONSTRUCTION, INC. SERVICE CONTRACT TO DEMOLISH AND DISPOSE SPORTS MEDICINE LAB - CRESCENTA VALLEY HIGH SCHOOL	14,750.00
0001025817	NORTH AMERICAN TECHNICAL SERVICES INSPECTION SERVICES FOR CRESCENTA VALLEY HIGH SCHOOL PROJECT - EDUCATIONAL SERVICES	5,700.00
0001025822	CITY OF GLENDALE TRANSPORTATION EXPENSES - COLLEGE VIEW	1,575.00
0001025823	LA COUNTY MTA TRANSPORTATION EXPENSES - COLLEGE VIEW	5,304.60
0001025827	AMAZON CAPITAL SERVICES, INC. BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - EEELP	2,000.00
0001025828	FAMILY, CAREER AND COMMUNITY LEADERS	468.00
0001025829	FAMILY, CAREER AND COMMUNITY LEADERS	18.00
0001025837	CULVER-NEWLIN, INC CLASSROOM FURNITURE FOR CRESCENTA VALLEY HIGH SCHOOL - EDUCATIONAL SERVICES	32,073.84
0001025841	TERASON CLASSROOM EQUIPMENT FOR CRESCENTA VALLEY HIGH SCHOOL EDUCATIONAL SERVICES	37,057.50
0001025845	APH FOR THE BLIND SPECIAL EDUCATION EQUIPMENT - FOOTHILL SELPA	7,993.50
0001025846	GOLDEN STAR TECHNOLOGY INC. CLASSROOM EQUIPMENT FOR CRESCENTA VALLEY HIGH SCHOOL EDUCATIONAL SERVICES	133,289.20
0001025850	KEY CODE MEDIA, INC. CLASSROOM EQUIPMENT FOR CRESCENTA VALLEY HIGH SCHOOL EDUCATIONAL SERVICES	4,997.68
0001025937	LAKESHORE	166.42
0001025942	AMAZON CAPITAL SERVICES, INC. SPECIAL EDUCATION EQUIPMENT - FOOTHILL SELPA	302.68
0001025951	AMAZON CAPITAL SERVICES, INC. COMPUTER SUPPLIES - CLARK MAGNET HIGH SCHOOL	167.52

STATE RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025952	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA ENTERTAINMENT PARTNERS - SOFTWARE - EDUCATIONAL SERVICES	123.19
0001025957	SKILLS USA CALIFORNIA	590.00
0001025958	OST TRUCKS AND CRANES INC CRANING SERVICES AND RENTALS FOR CRESCENTA VALLEY HIGH SCHOOL PROJECT - EDUCATIONAL SERVICES	6,500.00
0001025959	AMERICAN EXPRESS CPS DOUBLE TREE BY HILTON SACREMENTO - CONFERENCE EXPENSES - SECONDARY SERVICES	5,457.62
0001026007	SPINLIFE.COM REPAIRS - COLLEGE VIEW	330.00
0001026030	TRENCH SHORING COMPANY RENTALS FOR CRESCENTA VALLEY HIGH SCHOOL PROJECT - EDUCATIONAL SERVICES	3,850.00
0001026049	LOS ANGELES TIMES	553.64
0001026054	TEK TIME SYSTEMS, INC	88.83
0001026057	S & S WORLDWIDE INSTRUCTIONAL SUPPLIES - JEFFERSON ELEMENTARY SCHOOL	1,263.00
0001026058	S & S WORLDWIDE	479.00
0001026060	ATKINSON, ANDELSON, LOYA, RUUD PROFESSIONAL SERVICES - SPECIAL EDUCATION	16,804.00
0001026065	ELIZABETH LABORDE	991.45
0001026066	ARC (AMERICAN REPROGRAPHICS COMPANY,LLC) PRINTING SERVICES - EDUCATIONAL SERVICES	1,500.00
0001026068	OFFICE DEPOT	123.51
0001026077	AREY JONES EDUCATIONAL SOLUTIONS CLASSROOM EQUIPMENT - WILSON MIDDLE SCHOOL	2,407.38
0001026081	VIDEORAY LLC ROBOTICS REPAIRS - CLARK MAGNET HIGH SCHOOL	5,000.00
0001026082	B & H PHOTO VIDEO	166.70
0001026108	BURBANK UNIFIED SCHOOL DISTRICT	91.00
0001026113	LA CANADA UNIFIED SCHOOL DISTRICT	177.46
0001026114	LA CANADA UNIFIED SCHOOL DISTRICT	379.36
0001026115	LA CANADA UNIFIED SCHOOL DISTRICT SALARIES & BENEFITS - FOOTHILL SELPA	7,350.12
0001026116	CPI CONFERENCE EXPENSES - FOOTHILL SELPA	4,448.00
0001026119	O.H. LYNN PRINTING	158.78
0001026127	CDW GOVERNMENT CLASSROOM EQUIPMENT - CRESCENTA VALLEY HIGH SCHOOL	2,726.55
0001026132	AMERICAN RED CROSS CLASSROOM EQUIPMENT - CRESCENTA VALLEY HIGH SCHOOL	2,638.80

STATE RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026133	PERFORMANCE HEALTH SUPPLY INC INSTRUCTIONAL SUPPLIES - CRESCENTA VALLEY HIGH SCHOOL	15,881.82
0001026140	S & S WORLDWIDE	220.10
0001026147	SCHOOL SPECIALTY INSTRUCTIONAL SUPPLIES - CRESCENTA VALLEY HIGH SCHOOL	2,490.04
0001026149	ROCKSTAR RECRUITING SERVICE AGREEMENT TO PROVIDE STUDENT SUPPORT, INDIVIDUAL PSYCHOLOGICAL ASSESSMENTS & IEP SERVICES - SPECIAL EDUCATION	80,000.00
0001026153	HARMONY PSYCHOTHERAPY, INC. CONSULTANT TO PROVIDE TOBACCO USE INTERVENTION AND CESSATION CLASSES TO STUDENTS AND ANTI-TOBACCO PRESENTATIONS TO STUDENTS, PARENTS AND STAFF - STUDENT SUPPORT SERVICES, BOARD APPROVED 9/17/2018	12,540.00
0001026154	MED-EL CORPORATION	40.00
0001026159	CENTER FOR APPLIED BEHAVIOR ANALYSIS SERVICE AGREEMENT TO PROVIDE FUNCTIONAL BEHAVIOR ASSESSMENTAND SERVICES - SPECIAL EDUCATION	5,000.00
0001026162	NORAXON USA, INC SOUND SYSTEM EQUIPMENT - CRESCENTA VALLEY HIGH SCHOOL	68,761.05
0001026171	MTGL, INC SERVICE CONTRACT FOR SOIL TESTING AND INSPECTION - CRESCENTA VALLEY HIGH SCHOOL	35,253.00
0001026172	CONTRACTORS CRANE SERVICE RELOCATION SERVICES - CRESCENTA VALLEY HIGH SCHOOL	1,850.00
0001026173	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA ALL VALLEY RV RENTALS - RV RENTALS - GLENDALE HIGH SCHOOL	1,697.28
001023357A	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA QUASAR SCIENCE- FREIGHT CHARGES - GLENDALE HIGH SCHOOL	40.89
	TOTAL	680,948.35

LOCAL RESTRICTED RESOURCES

0001025646	KAPLAN EARLY LEARNING CO	104.32
0001025648	ORIENTAL TRADING INC.	64.63
0001025657	SCHOOLSFIRST FEDERAL CREDIT UNION - VISA HOME DEPOT - CUSTODIAL SUPPLIES - DUNSMORE ELEMENTARY SCHOOL	48.15
0001025666	CLEAN SWEEP SUPPLY CO INC	639.27
0001025667	GALE SUPPLY COMPANY	398.58
0001025668	SHARP BUSINESS SYSTEMS AUDIOVISUAL EQUIPMENT - LA CRESCENTA ELEMENTARY SCHOOL	3,761.34

LOCAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025672	CDW GOVERNMENT COMPUTER EQUIPMENT - VALLEY VIEW ELEMENTARY SCHOOL	1,335.90
0001025673	OFFICE DEPOT AUDIOVISUAL EQUIPMENT - VALLEY VIEW ELEMENTARY SCHOOL	12,918.66
0001025674	CAMCOR, INC.	330.38
0001025677	CHILDREN'S HOSPITAL LOS ANGELES	100.00
0001025680	AMERICAN VAN EQUIPMENT	353.76
0001025681	TURF STAR, INC.	862.95
0001025682	CART MART INC	93.42
0001025683	GLENDALE BUILDER'S SUPPLIES	120.59
0001025685	MCKINLEY EQUIPMENT CORPORATION	122.57
0001025686	GMS ELEVATOR SERVICES, INC MAINTENANCE SERVICES AT VARIOUS SITES - FACILITY & SUPPORT OPERATIONS	2,838.00
0001025687	ARC IMAGING RESOURCES	512.01
0001025688	EWING IRRIGATION PRODUCTS REPAIR SUPPLIES FOR STENGEL FIELD - FACILITY & SUPPORT OPERATIONS	1,026.23
0001025689	SUNBELT RENTALS, INC EQUIPMENT RENTAL - FACILITY & SUPPORT OPERATIONS	1,262.05
0001025691	HOME DEPOT CREDIT SERVICES TOOLS - FACILITY & SUPPORT OPERATIONS	3,122.17
0001025692	UNITED REFRIGERATION, INC.	15.50
0001025693	VIRGIL'S GLENDALE HARDWARE CENTER	448.91
0001025704	GOPHER	121.98
0001025706	DEMCO	41.42
0001025708	SARGENT-WELCH INSTRUCTIONAL SUPPLIES & CLASSROOM EQUIPMENT - ROOSEVELT MIDDLE SCHOOL	1,473.20
0001025709	DUSTIN BARR	250.00
0001025711	DR PAUL SHERMAN	250.00
0001025719	KIM, JEANNIE	945.00
0001025720	HEE EUN LEE	450.00
0001025722	BETHANY PFLUEGER	250.00
0001025735	WESTERN CHAPTER ISA	160.00
0001025738	NEWSELA, INC SUBSCRIPTIONS - FREMONT ELEMENTARY SCHOOL	2,000.00
0001025739	COMMUSA COMMUNICATION EQUIPMENT FOR VARIOUS SITES - EEELP	2,344.50
0001025745	CAMCOR, INC.	141.69
0001025758	AMAZON CAPITAL SERVICES, INC. INSTRUCTIONAL SUPPLIES - ROSEMONT MIDDLE SCHOOL	196.01
0001025760	DISCOUNT SCHOOL SUPPLY	35.78
0001025780	ROBERT R FORD TRUCKING INC	783.25

LOCAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025781	CITY OF GLENDALE	425.00
0001025783	NATIONAL SEMINARS TRAINING	149.00
0001025784	ATKINSON, ANDELSON, LOYA, RUUD	135.00
0001025800	S & S WORLDWIDE	61.49
0001025830	ONCE UPON A TIME	783.38
0001025851	AREY JONES EDUCATIONAL SOLUTIONS	3,256.88
	COMPUTER EQUIPMENT - MONTE VISTA ELEMENTARY SCHOOL	
0001025854	S & S WORLDWIDE	285.69
0001025855	S & S WORLDWIDE	1,518.91
	INSTRUCTIONAL SUPPLIES - EEELP/VERDUGO WOODLANDS ELEMENTARY SCHOOL	
0001025856	S & S WORLDWIDE	980.23
0001025858	TREMCO, INC.	1,096.83
	MAINTENANCE SUPPLIES - FACILITY & SUPPORT OPERATIONS	
0001025860	FERGUSON ENTERPRISES INC.#1350	190.98
0001025861	J M MCKINNEY CO	852.25
0001025862	TENNANT SALES AND SERVICE	36.24
0001025863	HARTER SURFACES	81.58
0001025864	BATTERY HUT	71.18
0001025865	KAROL'S GENERAL GARAGE & BODY SHOP	941.21
0001025866	KLH MARKETING	344.26
0001025868	LAWN MOWER CORNER	94.15
0001025872	RYAN HERCO PRODUCTS CORP.	902.05
0001025873	U.S. BLINDS	509.17
0001025875	CALIFORNIA SMOG & TEST ONLY	60.00
0001025876	TURF STAR, INC.	785.76
0001025877	MONOPRICE INC.	119.94
0001025879	PEP BOYS	284.00
0001025880	SUNBELT RENTALS, INC	1,712.27
	EQUIPMENT RENTALS - FACILITY & SUPPORT OPERATIONS	
0001025881	PEST OPTIONS INC	255.00
0001025882	STAR FORD	650.00
0001025883	SCOTTY'S INDUSTRIAL PRODUCTS	169.55
0001025884	GAY'S AUTOMOTIVE & TOWING INC.	121.00
0001025885	SMARDAN SUPPLY CO	1,533.00
	DRINKING WATER SYSTEM IMPROVEMENT AT FREMONT ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	
0001025887	EWING IRRIGATION PRODUCTS	208.49
0001025888	DESOTO SALES, INC.	204.96
0001025889	CASTERS & INDUSTRIAL SUPPLIES	88.53
0001025890	AA1 GRAPHICS & SIGNS	153.30
0001025891	QUALITY WINDOW BLINDS	760.59
0001025892	NAPA AUTO PARTS	2,728.28
	AUTOMOTIVE PARTS AND SUPPLIES - FACILITY & SUPPORT OPERATIONS	
0001025893	STAR FORD	457.56
0001025894	HARTER SURFACES	199.29
0001025895	VORTEX INDUSTRIES, INC	603.98

LOCAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025896	ROCKLER WOODWORKING & HARDWARE	261.15
0001025897	AIRGAS USA, LLC	376.62
0001025898	FERGUSON ENTERPRISES INC.#1350	75.12
0001025899	BATTERY SYSTEMS, INC	633.18
0001025900	ARC (AMERICAN REPROGRAPHICS COMPANY,LLC)	65.76
0001025901	PILGRIM FENCE CO. FENCING SERVICES - FACILITY & SUPPORT OPERATIONS	1,380.00
0001025902	BUCHANAN GLASS REPAIR SERVICES - FACILITY & SUPPORT OPERATIONS	1,147.60
0001025903	CITY OF GLENDALE ALARM PROGRAM	328.00
0001025908	ARC (AMERICAN REPROGRAPHICS COMPANY,LLC)	512.01
0001025914	SMART YARDS SERVICE CONTRACT TO INSTALL ARTIFICIAL TURF IN THE PLAYGROUND AREA AT VALLEY VIEW ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	18,379.00
0001025930	WORLD BOOK INC.	648.00
0001025941	AMAZON CAPITAL SERVICES, INC. HEALTH SUPPLIES - EEELP	30.65
0001025961	BLU CONSTRUCTION SERVICE CONTRACT TO INSTALL CONCRETE SIDEWALK AT FREMONT ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	4,945.00
0001025963	BLU CONSTRUCTION SERVICE CONTRACT TO INSTALL CONCRETE SIDEWALK AT MOUNTAIN AVENUE ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	4,850.00
0001025964	BLU CONSTRUCTION SERVICE CONTRACT TO EXTEND CHAIN LINK FENCE AT MOUNTAIN AVENUE ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	4,750.00
0001025967	MIGUEL CERVANTES	150.00
0001025970	SONRISE ELECTRIC INC	300.00
0001025972	HEARTLAND CUSTOMER SOLUTIONS, LLC	240.15
0001025986	GALE SUPPLY COMPANY	748.09
0001025993	AMAZON CAPITAL SERVICES, INC. AUDIOVISUAL SUPPLIES - EEELP	43.75
0001025994	AMAZON CAPITAL SERVICES, INC. COMMUNICATION SUPPLIES - EEELP	32.80
0001026081	VIDEORAY LLC ROBOTICS REPAIRS - CLARK MAGNET HIGH SCHOOL	2,778.78
0001026089	CAMCOR, INC. COMPUTER SUPPLIES - DUNSMORE ELEMENTARY SCHOOL	3,400.63
0001026090	CAMCOR, INC.	146.84

LOCAL RESTRICTED RESOURCES (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026092	OFFICE DEPOT CLASSROOM FURNITURE - KEPPEL ELEMENTARY SCHOOL	3,785.17
0001026094	HEE EUN LEE	500.00
0001026095	KIM, JEANNIE CONSULTANT TO PROVIDE KOREAN DRUM LESSONS AT KEPPEL ELEMENTARY SCHOOL - EDUCATIONAL SERVICES, BOARD APPROVED 12/11/2018	1,697.50
0001026107	CHARLES MUSIC	412.30
0001026109	PRINTEFEX	120.45
0001026110	CENTER FOR DEVELOPING KIDS,INC	130.00
0001026112	BURBANK UNIFIED SCHOOL DIST	345.05
0001026134	NAESP PEAP ACA ORDERS	257.34
0001026141	JONES SCHOOL SUPPLY	136.83
0001026155	CV FIRE PROTECTION, INC SERVICE CONTRACT FOR FIRE SPRINKLER CERTIFICATION FOR CLOUD PRE-SCHOOL - FACILITY & SUPPORT OPERATIONS	1,500.00
0001026156	CV FIRE PROTECTION, INC SERVICE CONTRACT FOR FIRE SPRINKLER CERTIFICATION FOR GLENOAKS ELEMENTARY SCHOOL - FACILITY & SUPPORT OPERATIONS	1,500.00
0001026157	A & P ELECTRIC, INC. SERVICE CONTACT TO PROVIDE AND INSTALL DEDICATED CIRCUITS AT ROOSEVELT MIDDLE SCHOOL - FACILITY & SUPPORT OPERATIONS	4,850.00
0001026160	AMAZON CAPITAL SERVICES, INC. BLANKET PURCHASE ORDER FOR PHYSICAL EDUCATION SUPPLIES - GLENOAKS ELEMENTARY SCHOOL	1,000.00
0001026161	CALIFORNIA PRO SPORTS	674.67
0001026165	OFFICE DEPOT CLASSROOM EQUIPMENT - MONTE VISTA ELEMENTARY SCHOOL	17,706.77
0001026167	SO CAL BREAKERS ELECTRICAL REPAIR & SUPPLIES - FACILITY & SUPPORT OPERATIONS	4,748.00
0001026187	DISCOUNT SCHOOL SUPPLY	366.00
0001026189	FLINN SCIENTIFIC INC	748.30
0001026191	SUPPLYWORKS	443.52
	TOTAL	150,878.23
	CHILD DEVELOPMENT FUND	
0001025699	U.S. TOY COMPANY CO	248.99
0001025824	DEPARTMENT OF SOCIAL SERVICES LICENSE FEES - EEELP	2,662.00
0001025832	AMAZON CAPITAL SERVICES, INC. BLANKET PURCHASE ORDER FOR INSTRUCTIONAL SUPPLIES - CERRITOS ELEMENTARY SCHOOL	837.00

CHILD DEVELOPMENT FUND (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001025919	EVERYCHILD CALIFORNIA	129.00
0001025966	GRAINGER	189.02
0001025988	GALE SUPPLY COMPANY	194.91
0001025995	AMAZON CAPITAL SERVICES, INC. OFFICE SUPPLIES - EEELP	30.65
0001026143	DISCOUNT SCHOOL SUPPLY	104.10
	TOTAL	4,395.67
	FOOD SERVICES FUND	
0001025692	UNITED REFRIGERATION, INC.	77.37
0001025788	OFFICE DEPOT	303.24
0001025808	SERVE SMART K12 PRODUCTS CAFETERIA EQUIPMENT - FOOD SERVICES	30,071.23
0001026047	COUNTY OF LOS ANGELES CAFETERIA FOOD SAFETY INSPECTION DISTRICTWIDE - FOOD SERVICES	5,319.00
	TOTAL	35,770.84
	MEASURE S PROJECTS FUND	
0001026028	A.J. FISTES CORPORATION SERVICE AGREEMENT FOR CEILING REPAIS - WILSON MIDDLE SCHOOL	24,570.00
0001026032	PSOMAS SERVICE AGREEMENT FOR LAND SURVEYING SERVICES - HOOVER HIGH SCHOOL	11,500.00
0001026050	LOS ANGELES TIMES	730.08
0001026053	EWING IRRIGATION PRODUCTS	851.87
0001026148	MTGL, INC SERVICE AGREEMENT FOR SOIL TESTING AND INSPECTION SERVICES - FRANKLIN ELEMENTARY SCHOOL	3,500.00
0001026178	EBERHARD EQUIPMENT TURF MAINTENANCE EQUIPMENT - LINCOLN ELEMENTARY SCHOOL	45,987.81
	TOTAL	87,139.76
	CAPITAL PROJECTS & IMPROVEMENT FUND	
0001025915	CERTIFIED WHOLESALE ELECTRIC BUILDING MAINTENANCE, DISTRICTWIDE - PLANNING, DEVELOPMENT & FACILITIES	72,927.00
0001025946	THE BANK OF NEW YORK MELLON CLEAN RENEWABLE ENERGY BOARDS (CREB) LEASE AGREEMENT PLANNING, DEVELOPMENT & FACILITIES	430,292.03

CAPITAL PROJECTS & IMPROVEMENT FUND (CONTINUATION)

PO NUMBER	VENDOR	AMOUNT
0001026039	VIRGIL'S GLENDALE HARDWARE CENTER	69.19
0001026041	MORFLOW AIR & HEATING, INC	479.00
0001026042	SCORPION PAINTING INC	2,675.00
	REPAIRS AT PALMER PROPERTY - FACILITY & SUPPORT OPERATIONS	
0001026043	SHALOM PLUMBING & ROOTER	514.21
0001026044	MONTEREY PARK FLOORING & WINDOW COVER	862.82
0001026045	THE POWER CONNECTION	309.00
0001026168	MTGL, INC	38,280.00
	SERVICE AGREEMENT FOR SOIL TESTING AND INSPECTION SERVICES - CLOUD PRESCHOOL	
	TOTAL	546,408.25
	WORKERS' COMPENSATION FUND	
0001026034	ALLIANCE OF SCHOOLS FOR	996,380.00
	WORKERS' COMPENSATION - FINANCIAL SERVICES	
	TOTAL	996,380.00
	MC LENNAN DONATIONS	
0001026051	HOOVER HIGH SCHOOL - A.S.B.	1,197.73
	QUARTERLY INTEREST - FINANCIAL SERVICES	
	TOTAL	1,197.73

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 6

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Stephen Dickinson, Chief Business and Financial Officer
PREPARED BY:	Craig Larimer, Financial Analyst
SUBJECT:	**Appropriation Transfer and Budget Revision Report**

The Interim Superintendent recommends that the Board of Education approve Appropriation Transfers and Budget Revisions for Fund 01.0 Unrestricted and Restricted.

This agenda item is in support of Board Priority No. 4 – Maintain District Solvency & Financial Responsibility.

GLENDALE UNIFIED SCHOOL DISTRICT
April 2, 2019
CONSENT CALENDAR NO. 6
BUDGET TRANSFER AND ADJUSTMENT REPORT

GENERAL FUND UNRESTRICTED (01.0) Resource Codes 00000.0 thru 19999.0

REVENUES		BUDGET TRANSFERS	BUDGET ADJUSTMENTS
8010-8099	Local Control Funding Formula	$0	$0
8100-8299	Federal	$0	$0
8300-8599	Other State	$0	$0
8600-8799	Local	$0	$69,544
8910-8999	Transfers In/Contributions	$0	$0
TOTAL REVENUES		$0	$69,544

APPROPRIATION OBJECT		BUDGET TRANSFERS	BUDGET ADJUSTMENTS
1000	Certificated Salaries	$0	$0
2000	Classified Salaries	$0	$9,417
3000	Employee Benefits	$0	$2,758
4000	Instructional Supplies	$39,939	$0
5000	Contract Services	$61	$2,193
6000	Capital Outlay	($40,000)	$0
7000	Other Outgo/Indirect/Transfers Out	$0	$0
TOTAL BUDGETED APPROPRIATIONS		$0	$14,368

NET INCREASE/DECREASE IN FUND BALANCE	$0	$55,176

April 2, 2019
BUDGET TRANSFER AND ADJUSTMENT REPORT
CONSENT CALENDAR NO. 6
BUDGET TRANSFER AND ADJUSTMENT DETAIL REPORT
GENERAL FUND, UNRESTRICTED (01.0) Resource Codes 00000.0 thru 19999.0

BUDGET TRANSFERS

Dept./School	Program Description	1,000	2,000	3,000	4,000	5,000	6,000	7,000	9,000	Total	Transfer provides funds for:
Jefferson	General Fund	0	0	0	0	0	0	0	0	$0	Supplies
Various	Supplemental Program	0	0	0	39,500	500	(40,000)	0	0	$0	Supplies and Services
Lincoln	General Fund	0	0	0	307	(307)	0	0	0	$0	Supplies
Lincoln	General Fund	0	0	0	132	(132)	0	0	0	$0	Supplies
		$0	**$0**	**$0**	**$39,939**	**$61**	**($40,000)**	**$0**	**$0**	**$0**	

Dept./School	Program Description	1,000	2,000	3,000	4,000	5,000	6,000	7,000	9,000	Total	Adjustment appropriates funds for:
FASO	Civic Center	0	0	0	0	49	0	0	0	$49	Insurance Fees
District	District	0	0	0	0	0	0	0	54,980	$54,980	Rebate from Office Depot
FASO	Civic Center	0	0	0	0	219	0	0	0	$219	Insurance Fees
CVHS	Athletics Support Program	0	9,417	2,758	0	0	0	0	0	$12,175	Coaching Stipend
CVHS	Athletics Support Program	0	0	0	0	1,925	0	0	0	$1,925	Coaching Stipend
District Misc. Income	General Fund	0	0	0	0	0	0	0	196	$196	Recycling
		0	0	0	0	0	0	0	0	$0	
		$0	**$9,417**	**$2,758**	**$0**	**$2,193**	**$0**	**$0**	**$55,176**	**$69,544**	

Object Codes

1000 Certificated Salaries
2000 Classified Salaries
3000 Employee Benefits
4000 Books & Supplies
5000 Services & Other Operating Supplies
6000 Capital Outlay
7000 Other Outgo
9000 Reserves

GLENDALE UNIFIED SCHOOL DISTRICT
April 2, 2019
CONSENT CALENDAR NO. 6
BUDGET TRANSFER AND ADJUSTMENT REPORT

GENERAL FUND RESTRICTED (01.0) Resource Codes 20000.0 thru 99999.0

REVENUES		BUDGET TRANSFERS	BUDGET ADJUSTMENTS
8010-8099	Local Control Funding Formula	$0	$0
8100-8299	Federal	$0	$219,439
8300-8599	Other State	$0	$0
8600-8799	Local	$0	$20,492
8910-8999	Transfers In/Contributions	$0	$0
TOTAL REVENUES		$0	$239,931

APPROPRIATION OBJECT		BUDGET TRANSFERS	BUDGET ADJUSTMENTS
1000	Certificated Salaries	($13,050)	$38,019
2000	Classified Salaries	$953	$0
3000	Employee Benefits	($13,649)	$8,104
4000	Instructional Supplies	$39,800	$137,677
5000	Contract Services	$446	$37,831
6000	Capital Outlay	($14,500)	$0
7000	Other Outgo/Indirect/Transfers Out	$0	$18,300
TOTAL BUDGETED APPROPRIATIONS		$0	$239,931

NET INCREASE/DECREASE IN FUND BALANCE	$0	$0

GLENDALE UNIFIED SCHOOL DISTRICT
April 2, 2019
CONSENT CALENDAR NO. 6
BUDGET TRANSFER AND ADJUSTMENT REPORT
GENERAL FUND, RESTRICTED (01.0) Resource Codes 20000.0 thru 99999.0

BUDGET TRANSFERS	Program Description	Resource										
Total Budget Trsfrs	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx		1000	2000	3000	4000	5000	6000	7000	9000	Total	Transfer provides funds for:
Categorical Program	CREATES	58115.0	0	0	0	8,554	(8,554)	0	0	0	$0	Supplies
VARIOUS	TITLE I	30100.0	(12,550)	680	(13,876)	31,246	9,000	(14,500)	0	0	$0	Classified Salaries, Supplies and Services
Columbus	Donations	95100.0	(500)	273	227	0	0	0	0	0	$0	Classified Salaries and Benefits
			0	0	0	0	0	0	0	0	$0	
			($13,050)	**$953**	**($13,649)**	**$39,800**	**$446**	**($14,500)**	**$0**	**$0**	**$0**	

BUDGET ADJUSTMENTS		Resource										
Dept/Site	Program Description	Code	1000	2000	3000	4000	5000	6000	7000	9000	Total	Adjustment appropriates funds for:
EEELP	Admin Center Donations	94230.0	0	0	0	2,000	0	0	0	0	$2,000	To allocate income
Fremont	School Site Donations	95100.0	0	0	0	2,000	0	0	0	0	$2,000	To allocate income (Computer program license)
Superitendent office	Glendale Education Foundation	94302.3	0	0	0	0	10,000	0	0	0	$10,000	To allocate income (Middle School transportation)
Verdugo Woodlands	School Site Donations	95100.0	0	0	0	0	984	0	0	0	$984	To allocate income (Field Trip)
Categorical program	Adelante Latinos	94340.0	0	0	0	350	0	0	0	0	$350	To allocate income
Categorical program	Donation from Knapp, Petersen & Clarke	94003.0	0	0	0	0	2,000	0	0	0	$2,000	To allocate income (GATE-Scholastic Bowl)
Fremont	School Site Donations	95100.0	0	0	0	193	0	0	0	0	$193	To allocate income
Fremont	School Site Donations	95100.0	0	0	0	0	33	0	0	0	$33	To allocate income
Rosemont	School Site Donations	95100.0	0	0	0	1,000	0	0	0	0	$1,000	To allocate income (Chromebooks)
Toll	School Site Donations	95100.0	331	0	69	0	0	0	0	0	$400	To allocate income
Educational Services	Donation from Capital Group Co Charitable Foundation	94377.0	0	0	0	334	0	0	0	0	$334	To allocate income (Japanese FLAG prg at Verdugo W
Educational Services	Donation from Capital Group Co Charitable Foundation	94386.0	0	0	0	334	0	0	0	0	$334	To allocate income (Japanese FLAG prg at Dunsmore
Verdugo Woodlands	School Site Donations	95100.0	0	0	0	0	814	0	0	0	$814	To allocate income (Field Trip)
Categorical program	Adelante Latinos	94340.0	0	0	0	50	0	0	0	0	$50	To allocate income
District	TITLE I	30100.0	37,688	0	8,035	131,416	24,000	0	18,300	0	$219,439	2018-19 TITLE I
			0	0	0	0	0	0	0	0	$0	
	Total Budget Adjustments		**$38,019**	**$0**	**$8,104**	**$137,677**	**$37,831**	**$0**	**$18,300**	**$0**	**$239,931**	

Object Codes
1000 Certificated Salaries
2000 Classified Salaries
3000 Employee Benefits
4000 Books & Supplies
5000 Services & Other Operating Expenses
6000 Capital Outlay
7000 Other Outgo
8000 Income
9000 Designated Reserves

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 7

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Stephen Dickinson Chief Business, and Financial Officer

PREPARED BY: Kent Smith Director Facility and Support Operations
Keith Jones, Assistant Director, Facility and Support Operations

SUBJECT: **Approval of Extension of Contract for Fire Extinguisher Inspection**

The Interim Superintendent recommends that the Board of Education approve the extension of the contract with Sheldon Fire Extinguisher Co., Inc. for the inspection of District fire extinguishers for the amount of not to exceed $22,000 per year.

This agenda item is in support of Board Priority No. 4 – Maintain District Solvency & Financial Responsibility. On February 24, 2016, The District entered into a contract with Sheldon Fire Extinguisher Co., Inc. to provide all labor and material to perform the annual fire extinguisher inspection for GUSD for the amount of not to exceed $22,000 per year.

Pursuant to California Education Code Section 17596, this contract may be extended up to five (5) years by mutual consent. Since the vendor has not increased their cost for this service, they have proposed to extend the term of the existing contract for the 2018-19 and 2019-20 fiscal years, granting this third and fourth extension through June 30, 2020.

Staff recommends that the Board approve the contract extension between Glendale Unified School District and Sheldon Fire Extinguisher Co., Inc. to perform the annual fire extinguisher inspection for the District.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 8

TO:	Board of Education
FROM:	Dr. Kelly King, Interim Superintendent
SUBMITTED BY:	Dr. Lena Richter, Director, Categorical Programs & Intervention
SUBJECT:	**Consolidated Programs School Plans for Student Achievement (SPSAs) Addendum**

The Interim Superintendent recommends that the Board of Education approve the amended 2018-2019 Consolidated Programs School Plans for Student Achievement (SPSA) for schools participating in one or more state/federal programs.

School Site Councils and staff members from all sites have developed SPSAs to utilize the Categorical Programs funds to improve student achievement.

These plans are based on the Local Educational Agency (LEA) Plan and include updates to reflect the LCFF Supplemental funding source. All individual 2018-2019 SPSAs were approved by each School Site Council in the Spring of 2018 and approved by the GUSD Board of Education on June 19, 2018. Recently, all SPSAs were amended and approved by School Site Councils to match the actual budget amounts that were released in January 2019.

The current SPSA utilizes the on-line template developed by the California Department of Education (CDE). Plan development began in the Spring with the review of available achievement data. Annual goals, actions and budget were completed by school site teams and the School Site Council (SSC), and then approved by SSC. The SPSAs are aligned to support the District's LCAP and revised annually based on updated data and budget information. All SPSAs must be reviewed and approved by the Governing Board of the District. In addition, the SPSAs have been reviewed by the Categorical Programs Office with the provisions of applicable state/federal laws and regulations and for consistency with District Board Policies, Board Priorities, and the Glendale Unified School District Strategic Plan.

Copies of all SPSAs are available for review at the school sites and the Categorical Programs Office.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 9

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Felix Melendez, Executive Director, Secondary Education

SUBJECT: **Approval of Supplementary Textbook for Use in High Schools in the Area of English**

The Interim Superintendent recommends that the Board of Education approve the supplementary textbook, My Mother's Voice, for use in high schools in the area of English. The book has been reviewed for content and evaluated by the members of the English Curriculum Study Committee.

In accordance with Glendale Unified School District Board Policy 6161.1, the textbook was available for review by parents and/or members of the community prior to being presented to the Board of Education for their consideration. The Secondary Education Council has reviewed the information and made a recommendation of approval of the textbook to the Board of Education.

HIGH SCHOOLS

Department: English

English, Grade 9
My Mother's Voice by Kay Mouradian
Published by Balboa Press, 2013

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 10

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBMITTED BY: Felix Melendez, Executive Director, Secondary Education

SUBJECT: **Approval of New Course of Study Outlines for Use in Middle and High Schools in the Areas of Career Technical Education and Visual and Performing Arts**

The Interim Superintendent recommends that the Board of Education approve new course of study outlines (Stage and Video Production 1-2; Studio Art Seminar Honors; Cinematography 1-2; Cinematography 3-4; and Cinematography 5-6 Honors) for use in middle and high schools in the areas of Career Technical Education and Visual and Performing Arts.

The course of study outlines are submitted for approval by the Board of Education. The course outlines have been reviewed for content and evaluated by the members of the Career Technical Education and Visual and Performing Arts Curriculum Study Committees. The Secondary Education Council has reviewed the information and made a recommendation of approval of the course outlines to the Board of Education.

MIDDLE SCHOOLS

Department: **Career Technical Education**

Course Title: Stage and Video Production 1-2

Grade Level(s): 8

School(s) Course Offered: Rosemont Middle School

UC/CSU Approved (Y/N, Subject): N/A

Course Credits: 10

Recommended Prerequisite: Drama (semester course), Application, or Audition

Recommended Textbook(s): "Introduction to Theatre Arts," Suzi Zimmerman, 2003
Pioneer Drama Service Publishing

Course Overview: Stage and Video Production is an introductory course in the Arts, Media and Entertainment industry sector. Students enrolled in Stage and Video production will experience a hands-on performance class incorporating play production and video production in a year-long "industry standard" elective. Semester One is a concentration on video production that will enable students to shoot and edit their own videos in a variety of styles. Students will learn the history of movie-making, visit actual movie studios, and hear from industry professionals about the craft and career options in this exciting field, in the creative capital of the world, the city of Los Angeles.

The second semester focus will be on acting, staging, movement, and character development for performing a full-length play in front of a live audience. Students will learn to stage a scene, perform the voice and body language of specific characters, improvise on cue, and finally play a significant role in a play production for an audience of students and parents at the end of the semester. In addition, they will learn to act in front of a camera, explore voice-over acting, and try different parts.

The objective of this class is for students to obtain a hands-on experience in the production of stage and video. Students will acquire a strong foundation of knowledge, practical methods and procedures in video production and acting, and understand how these disciplines operate on a professional level. Students will be prepared for coursework in high school, university, and eventually in career paths involving video, theatre, entertainment or media production. The competencies of this course align with the Common Core State Standards, the Visual and Performing Arts Standards, and the California Career Technical Education Model

Curriculum Standards. This course is a pathway to high school level theater, cinematography, and stage arts.

HIGH SCHOOLS

Department:	**Career Technical Education / Visual and Performing Arts**
Course Title:	Studio Art Seminar Honors
Grade Level(s):	11-12
School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Pending, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	AP Studio Art
Recommended Textbook:	"Real Artists Don't Starve: Timeless Strategies for Thriving in the New Creative Age" by Jeff Goins
Course Overview:	Studio Art Seminar Honors is a coursed designed to provide students in the Studio Art pathway a fourth year course to work on specific projects and work-based learning opportunities in career training. This course is designed to allow fourth-year studio art students the chance to build their portfolio for college applications, internships, and professional presentation. Assignments will focus on visual problem solving, creative thinking and self-expression. Students will continue development of portfolio by pursuing an area of focus (subject, topic/theme or genre), and continued development of their artistic voice and style in a variety of selected media. This area of focus will be a yearlong, in-depth study. By the end of this course it is expected that students will have a cultivated portfolio that showcases the breadth of their artistic

skills and interests, as well as their ability to sustain a more in-depth creative exploration. Students are required to maintain a sketchbook, which will include weekly drawing assignments and preliminary studies of projects. In addition to creating portfolio artworks, all assignments throughout the course will require students to analyze, critique, and discuss the meaning and purpose of various artworks and how the artists employ the elements of art and principles of design to communicate meaning and feeling. This class is project based and hands on. Emphasis is placed on understanding of critique processes, evaluation utilizing the Elements and Principle of Art Making, research of art historical figures, and professionalism of finish product. The class will culminate with a gallery showing developed, organized, and executed by the students.

Department:	**Career Technical Education**
Course Title:	Cinematography 1-2 (revision)
Grade Level(s):	9-12
School(s) Course Offered:	Glendale High, Crescenta Valley, Clark Magnet
UC/CSU Approved (Y/N, Subject):	Pending, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	None
Recommended Textbook(s):	Video: Digital Communication & Production, 4th Edition, by Jim Stinson, 2018 Lynda.com
Course Overview:	Cinematography 1-2 is the introductory course for the Arts, Media and Entertainment industry sector, Design, Visual and Media Arts

pathway. Students enrolled in Cinematography 1-2 will be introduced to the basic art, history, theory, and technique of cinematography. Instructional emphasis is placed on the creation, evaluation, adaptation, and interpretation of the following: (i) production safety and crew responsibilities; (ii) storytelling; (iii) pre-production, production, and post production stages; and (iv) genre and history of film and television. In every lesson unit, students will analyze and apply film production elements and academic principles in demonstrating their mastery of a filmmaker's knowledge and skills via project-based learning opportunities. Students are also guided through in-depth academic learning through study in significant historical events in film, genre analysis, and auteur study. The overall objective of this class is for students to acquire a strong foundation of knowledge of film production at a professional level and to prepare them for university coursework or a career work path in film/television production. In addition, the competencies in this course are aligned with the Common Core State Standards and the California Career Technical Education Model Curriculum Standards. This is the first course in the Cinematography pathway and is a UC approved Fine Arts (f) course.

Department: **Career Technical Education**

Course Title: Cinematography 3-4

Grade Level(s): 9-12

School(s) Course Offered: Glendale High, Crescenta Valley, Clark Magnet

UC/CSU Approved (Y/N, Subject): Pending, "f" Fine Art credits

Course Credits: 10

Recommended Prerequisite: Cinematography 1-2

Recommended Textbook(s):	Television Production & Broadcast Journalism, 3rd Edition, by Philip L. Harris and Gil Garcia, 2018 Lynda.com
Course Overview:	Cinematography 3-4 Honors is the concentration course for the Arts, Media and Entertainment industry sector and Design, Visual and Media Arts pathway. Students enrolled in Cinematography 3-4 will have the opportunity to demonstrate mastery of film and television production, production management, multi-camera production, and leadership skills. During the course of the year, students will develop techniques introduced in Cinematography 1-2, including cinematography, editing, sound production, production workflow, production safety and best practices. Students will take responsibility for school-based productions, including communicating with administration, publicity, and program creation. Students will manage scheduling, run production meetings, make company decisions, and solve problems for the project-based student-run campus production studio. Students will be responsible for applying their classroom instruction and material studied in the textbook in a hands-on production setting. Students will be able to use and understand content-specific film/television vocabulary. This course requires students to utilize skills in critical thinking, collaboration, creativity, risk-taking and problem solving.
Department:	**Career Technical Education**
Course Title:	Cinematography 5-6 Honors
Grade Level(s):	9-12
School(s) Course Offered:	Glendale High, Crescenta Valley, Clark Magnet
UC/CSU Approved (Y/N, Subject):	Pending, “f” Fine Art credits

Course Credits:	5 or 10
Recommended Prerequisite:	Cinematography 3-4
Recommended Textbook(s):	Video: Digital Communication & Production, 4th Edition, by Jim Stinson, 2018 Television Production & Broadcast Journalism, 3rd Edition, by Philip L. Harris and Gil Garcia, 2018 AVID Media Composer Fundamentals I & II, Avid Learning Series User Certification. Publisher: Avid Technology, Inc. Lynda.com
Course Overview:	Cinematography 5-6 Honors is the capstone course for the Arts, Media and Entertainment industry sector and Design, Visual and Media Arts pathway. This course will develop the concepts and techniques introduced in Cinematography 3-4. New and varied techniques of producing and directing will be explored. Further development of self-expression, perception, and artistic concepts will be realized through short films. Continued development of evaluation criteria through class work and outside observation will assist in developing a personal concept of filmmaking and television production. Students will also prepare for an exam in film editing using the software which would lead to industry certification. Participation in this exam will be contingent upon the arrangement made with the vendor. Students will also learn the finer qualities of pre-production, production and post-production to ready them for extended college level education and/or an entry-level position within the motion picture industry. The final product will be a demo reel of their class films.

Glendale Unified School District School

Middle School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Stage & Video Production 1-2
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	8
School(s) Course Offered:	Rosemont Middle School
UC/CSU Approved (Y/N, Subject):	N/A
Course Credits:	10
Recommended Prerequisite:	Drama (semester course), Application, or Audition
Recommended Textbook(s):	"Introduction to Theatre Arts," Suzi Zimmerman, 2003 Pioneer Drama Service Publishing

Course Overview: Stage and Video Production is an introductory course in the Arts, Media and Entertainment industry sector. Students enrolled in Stage and Video production will experience a hands-on performance class incorporating play production and video production in a year-long "industry standard" elective. Semester one is a concentration on video production that will enable students to shoot and edit their own videos in a variety of styles. Students will learn the history of movie-making, visit actual movie studios, and hear from industry professionals about the craft and career options in this exciting field, in the creative capital of the world, the city of Los Angeles.

The second semester focus will be on acting, staging, movement, and character development for performing a full-length play in front of a live audience. Students will learn to stage a scene, perform the

voice and body language of specific characters, improvise on cue, and finally play a significant role in a play production for an audience of students and parents at the end of the semester. In addition they will learn to act in front of a camera, explore voice-over acting, and try different parts.

The objective of this class is for students to obtain a hands-on experience in the production of stage and video. Students will acquire a strong foundation of knowledge, practical methods and procedures in video production, and acting, and understand how these disciplines operate on a professional level. Students will be prepared for coursework in high school, university, and eventually in career paths involving video, theatre, entertainment or media production. The competencies of this course align with the Common Core State Standards, the Visual and Performing Arts Standards, and the California Career Technical Education Model Curriculum Standards. This course is a pathway to high school level theater, cinematography, and stage arts.

First Semester-Course Content:

VIDEO PRODUCTION

Unit 1: **History of Film** *(2 weeks)*

STANDARDS
CCTE Anchor Standards: 3.0
CTE Pathway Standards: DVMA - A1.3, A3.0, PA - B7.0
Common Core Standards: LS 11-12.3., 11-12.6., WS 11-12.7., US 11-12.7.

A. The impact of silent movies to talkies will be introduced, leading into "The Golden Age of Hollywood" and how the studio system of the 40's and 50's defined Hollywood. The first Technicolor film, The 1939 classic: Wizard of OZ will introduce the magic of technicolor and the birth of special effects as we move onto the ground-breaking film, Star Wars, which brought THX –the new surround sound to the screen through George Lucas and ILM studios. Computer graphics (CG) and green screens will also be examined.

B. Students will create a poster with marketing for Wizard of OZ, act out a scene from Star Wars on stage, using the props provided. They will also research a topic from the silent film era and write one page about it. As well as, study the newest innovations from George Lucas's Industrial Light and Magic studios.

Unit 2: **Lighting, Sound, and Costuming in Hollywood films** *(2 weeks)*

STANDARDS
CCTE Anchor Standards: 1.0
CTE Pathway Standards: PA - B9.3
Common Core Standards: LS 11-12.6.

A. Students will analyze how lighting, sound, costumes, and make-up, contribute to the look and story of Hollywood movies. A behind-the-scenes look at sets, crews and costume and make-up designers will give students a taste of what each of these career paths entails.

B. Students will apply make-up on a student as a character from Pirates of the Caribbean or Greatest Showman; research the job description of a crew member from one of the movies studied; act out a "mock" movie shoot on stage, with students standing-in as the crew; list the tools/equipment various crew members keeps in their "daily tool box."

Unit 3: **Career Paths in the Los Angeles Film Industry** *(1 week)*

STANDARDS
CCTE Anchor Standards: 2,0, 3.0, 5.0
CTE Pathway Standards: PMA - C2.0, C3.0
Common Core Standards: RSIT 11-12.4., 11-12.7., WS 11-12.7.

A. Students will view the long list of credits at the end of a major motion picture, and begin to discover the vast number of professional crafts and career paths available on a movie set. Lighting and sound crews, make-up and prop departments, foley artists, and carpenters are just a few of the jobs that will be discussed. This unit will culminate with two special field trips: Warner Brothers and Sony Studios tours. Also, there will be industry guest speakers from: Disney, Pixar, Sony and Independent film-makers.

B. Students will write a research report on one movie industry craft or crew position and act out a monologue, playing the role of a movie industry crew person. They will also interview a "film industry" professional for their report and research modern film industry innovators such as George Lucas and Steven Spielberg.

Unit 4: **Introduction to I-Movie Software** *(2 weeks)*

STANDARDS
CCTE Anchor Standards: 2.0, 4.0
CTE Pathway Standards: PA - B6.6, B9.2
Common Core Standards: LS 11-12.6., WS 11-12.6.

A. Introduction to I-Movie Software on the Ipad. As a class, students will watch "I-Movie" tutorials and perform the set-up instructions while learning all the mechanics of ipad movie making in class. Every two students, will pair up, and work on one IPAD to learn the mechanics together.

B. Students will create an "I-Movie" photo montage with theme music, create an "I-Movie" trailer for practice and shoot 4 quick classroom scenes and practice editing.

Unit 5: **Storyboarding and Storytelling Basics** *(2 weeks)*

STANDARDS
CCTE Anchor Standards:
CTE Pathway Standards: DVMA - A2.0, PA - B3.3
Common Core Standards: LS 11-12.6., WS 11-12.6., RLST 11-12.3.

A. Students will learn the "index card" method of storyboarding simple scenes and shoots. In addition, they will analyze the basics of news reporting, how TV commercials "sell the sizzle" not the "steak", marketing basics, and how to include conflict and inciting incidents in dramatic or comic videos.

B. Students will create a storyboard a TV commercial, a storyboard of a comedy skit and watch a TV news clip, writing down the key points in each report.

Unit 6: **Camera, Lighting and Sound for "I-Movie" production** *(2 weeks)*

STANDARDS
CCTE Anchor Standards: 1.0, 2.0, 4.0
CTE Pathway Standards: PA - B6.0, B6.5, B6.6
Common Core Standards: LS 11-12.3., 11-12.6., RHSS 11-12.7., RLST 11-12.3.

A. Students will be given a "hands-on" introduction to shooting their own video on the Ipad, including: tripod mounting, professional audio connections, mic techniques and boom mics. They will explore composition, framing, and learn studio lighting standards.

B. Students will set up for a video shoot with all components in position; boom mic two actors in a scene; light an actor and the set; frame three actors in one scene correctly. Students will be assigned to will write, shoot, edit, and produce four video projects for a grade. Each "crew" will begin with a story idea, storyboard, and crew assignments for the shoot, such as sound person, lighting person, camera/director or actor. The video assignments topics will include: News, Sports, Weather Show; TV Commercial; Dramatic or Comedy Skit; "Rosemont Rocks" school promotional video.

Unit 7: **Editing** *(6 weeks)*

STANDARDS
CCTE Anchor Standards: 1.0, 2.0, 4.0
CTE Pathway Standards: DVMA - A2.2, PA - B8.0, B9.2, B9.4
Common Core Standards: RLST 11-12.3., RHSS 11-12.7.

A. Students will learn "in the moment" editing skills as they edit their own four video projects.

B. Students will edit their own videos to include: Media Acquisition and Management; Timeline and Clips; Cuts and Transitions; Titles and Audio Tracks; Music Cues. There will then be a "Final Film Festival," an evening presentation of all student videos to parents and community members. The classroom will be transformed into a movie theater with popcorn and beverages.

Unit 8: **Career Portfolio** *(2 weeks)*

STANDARDS
CCTE Anchor Standards: 2.0, 3.0, 4.0
CTE Pathway Standards: B9.0
Common Core Standards: LS 11-12.6., WS 11-12.6.

A. Students will create a portfolio of all of their work completed in the class. It will be a working project as they advance in their education and experience of Arts, Media and Entertainment.

B. Students will create and provide headshots, demos and project samples. They will hand in their final a "professional" portfolio based on acting and filming done in class. Students will also learn to write a quality resume and then present their portfolio to the class on stage using a microphone.

Second Semester-Course Content:

STAGE PRODUCTION

Unit 1: **Pantomime and Movement on Stage** *(1 week)*

STANDARDS
CCTE Anchor Standards: 2.0, 2.1, 2.2, 2.3, 8.1
CTE Pathway Standards: PA - B1.1
Common Core Standards: LS 11-12.3., LS 11-12.6.

A. Marcel Marceau made pantomime a popular art form that even influenced the "Moonwalk" of Michael Jackson. Students will learn the techniques and

physicality of this genre culminating in pantomime scenes and group improvisations on stage.

B. Students will create a "human machine" with 4 other people and perform it; pantomime a wall, a walk, and trapped in a box, on stage as well as critique a video of early pantomime and modern pantomime works; pantomime the tense-release techniques behind all pantomime movement; direct each other in a pantomime scene.

Unit 2: **Improvisational Acting** *(3 weeks)*

STANDARDS
CCTE Anchor Standards: 2.1
CTE Pathway Standards: PA - B1.7, B6.0, B6.5
Common Core Standards: LS 11-12.3., LS 11-12.6.

A. Students will learn advanced acting techniques as they improvise scenes and situations on stage. Characters will be explored, voices and accents, as well as spontaneity and teamwork. This advanced approach to teaching actors to "think on their feet" and explore new ideas in expressing character and emotion will enable students to become efficient in their acting and listening skills.

B. Students will draw a "character type" from a jar and perform it in an instant scene; critique each improvisational scene with a written response; act out a character with a distinct voice, walk, and catch phrase; create an "instant scene" from suggestions given by an audience.

Unit 3: **Acting for the camera** *(3 weeks)*

STANDARDS
CCTE Anchor Standards: 2.0, 4.0, 4.2
CTE Pathway Standards: PA - B9.0
Common Core Standards: LS 11-12.3., LS 11-12.6.

A. Students will learn advanced techniques for public speaking, announcing, and TV commercials. Students will learn to show confidence and energy on camera, articulate clearly, and speak with persuasion. Students will analyze how TV commentators speak, look at the camera, and express a personality.

B. Students will perform a news announcement "for the camera" and learn the 4 industry-standard processes of on-camera announcing. They will also study a video of news shows and commercials and looks for influences as well as get to demonstrate a product "on camera." Lastly, students will interview a guest on a "talk show."

Unit 4: **Character Acting** *(3 weeks)*

STANDARDS
CCTE Anchor Standards: 1.0, 2.0, 2.2, 2.3, 2.4, 2.5
CTE Pathway Standards: PA - B6.1, B8.2, B9.0
Common Core Standards: LS 11-12.3., LS 11-12.6.

A. Students will delve into the multi-faceted art of playing a true character, rather than just "playing yourself." 50 different "character types" will be taught with voice, walk, and vocal inflection allowing students to choose their 10 favorites to master. Voice-over techniques will also be studied as students analyze voice actors from popular Disney-style films and television shows. Students will be tested on their ability to walk and talk like the characters they have worked on, and eventually be able to play these character in a group scene.

B. Students will compare which professional acting choices fit a character best; act out a job interview scene as a strange and creative character; practice reading voice-over scripts while working on accents and dialects and perform a monologue, in costume, of their favorite character.

Unit 5: **Play Production** *(10 weeks)*

STANDARDS
CCTE Anchor Standards: 2.0
CTE Pathway Standards: PA - B6.0, B6.6, B8.2, B9.0
Common Core Standards: LS 11-12.3., LS 11-12.6.

A. Students will audition for their favorite role in the upcoming school play. Possible productions will be large-group shows such as Pinocchio, Peter Pan, or Wizard of Oz. Once each student is given a role, the entire show will be rehearsed, staged, costumed, and polished, as a class project. Rehearsal rooms will be used for small groups of actors to run lines for their scenes, while other actors are on stage working with the director. Volunteers, who are acting in the play, but wish to do more, will be able to work on the costume and make-up crew, help with scenery or work on publicity. Theatre terminology and professional "Broadway standards and practices" will be used in the daily regimen of rehearsing and working on the show. A dress rehearsal with costume-fittings will occur. Two performances will be open to parents and students.

B. In this unit, students will memorize all of his/her lines for the play, keep a script notebook with staging and director's notes, rehearse one of your scenes with a small group whenever there's time and then create an actor's bio for the publicity department. They will also follow director's staging and move on stage appropriately and learn the 9 quadrants of the stage such as stage right, down

stage, etc. Finally, students will accomplish acting like your "character" rather than "yourself" and create a character "walk" and "accent" and use it every time you are on stage.

Additional Recommended Materials and activities:

1. "A Newbies Guide to Using I-Movie for the Ipad Minute Help Guides," (2012) Createspace Publishing

2. Guest Instructors:
   Clark High school Cinematography students
   Glendale High school Cinematography students
   Film industry parent volunteers to help on student video shoots.

Glendale Unified School District

High School

Date

*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education / Visual and Performing Arts
Course Title:	Studio Art Seminar Honors
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	11-12
School(s) Course Offered:	Hoover High School
UC/CSU Approved (Y/N, Subject):	Yes, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	AP Studio Art
Recommended Textbook:	"Real Artists Don't Starve: Timeless Strategies for Thriving in the New Creative Age" by Jeff Goins
Course Overview:	Studio Art Seminar Honors is a coursed designed to provide students in the Studio Art pathway a fourth year course to work on specific projects and work-based learning opportunities in career training. This course is designed to allow fourth-year studio art students the chance to build their portfolio for college applications, internships, and professional presentation. Assignments will focus on visual problem solving, creative thinking and self-expression. Students will continue development of portfolio by pursuing an area of focus (subject, topic/theme or genre), and continued development of their artistic voice and style in a variety of selected media. This area of focus will be a yearlong, in-depth study. By the end of this course it is expected that students will have a cultivated portfolio that showcases the breadth of their artistic skills and interests, as well as their ability to sustain a more in-depth creative exploration.

Students are required to maintain a sketchbook, which will include weekly drawing assignments and preliminary studies of projects. In addition to creating portfolio artworks, all assignments throughout the course will require students to analyze, critique, and discuss the meaning and purpose of various artworks and how the artists employ the elements of art and principles of design to communicate meaning and feeling. This class is project based and hands on. Emphasis is placed on understanding of critique processes, evaluation utilizing the Elements and Principle of Art Making, research of art historical figures, and professionalism of finish product. The class will culminate with a gallery showing developed, organized, and executed by the students.

First Semester-Course Content

Unit 1: **Portfolio Review/ Proposal Development** *(6 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.1; A1.2; A1.3; A1.7; A1.9; A2.2; A2.3; A2.4; A2.6; A2.7; A2.8; A3.1; A3.4; A4.6; A5.2; A5.3; A5.6; A7.1; A7.5 A8.1

A. Students will meet with teacher for individual review of portfolio, and discuss student interests and areas for further development and study. This discussion will be an opportunity to inform and direct an emphasis for their year-long project (this may be specific subject matter, topic/theme, genre or formal problem that they wish to explore further). After stating the focus and their intent/desired outcomes for this project, students will select media and techniques they will need to learn/improve.

B. Once their project proposal is drafted, students will create an image board and have a formal conference with their teacher for feedback and approval. Once approved, students will create a project calendar of projected dates for completion of the various stages of each artwork: conception/planning/sketching, execution, critique and revision, completed works. Students will also execute the first of the series of art works which will serve as a "thesis statement", and a spring board point for remaining portfolio works. Students will present their proposal, and

initial art work in small groups for critique, the group will offer collaborative analysis and discussion.

Unit 2: **Executing the Series (First Semester Works)** *(6-8 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.1; A1.2; A1.3; A1.5; A1.7; A1.8; A2.2; A2.3; A2.4; A2.6; A2.7; A2.8; A2.9; A3.2; A3.4; A4.3; A4.6; A5.2; A5.3; A5.4; A5.6; A7.1; A8.4

A. The unit provides students with the necessary framework to guide the execution of their subsequent 3-5 artworks. They will meet with their teacher to first review potential techniques that they must practice/master in order to execute the desired style of artwork. After, executing various practice assignments in their sketchbooks each student will then refer to their image board for additional resources to determine the content of their 1st semesters' series of artworks. In these works, students will further examine how the application of elements and principles of design supports individual voice and the clarifies the communication of the intended story/meaning.

B. Once the sketches have been finalized and approved students may begin the execution of the artworks, applying and expanding upon the concepts developed in their first thesis work. Throughout this each stage of this process students will meet regularly with the teacher for progress critiques. Bi-weekly small group critiques will also be held in order to receive peer feedback. The process will be repeated for artworks 2, 3, 4, etc... As the series develops it is expected that many students will expand or alter the course of their work, thus building acuity, and intentions for this series. Students will participate in a written self-evaluation, classroom critique, and rubric-based assessments to reflect upon their designs.

Unit 3: **Expanding Ideas/ Mentors and Masters** *(4-5 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.1; A1.2; A1.3; A1.5; A1.7; A1.9; A2.2; A2.3; A2.4; A2.6; A3.1; A3.2; A3.4; A3.6; A4.4; A5.3; A5.6; A5.7; A7.1; A8.1; A8.4; A8.5

A. This unit establishes the framework needed for students to further develop an understanding of importance of masters and mentors, and the powerful influence and learning from studying other creatives. Students will research and explore 3 artists as mentors, and discuss and analyze works of art by these chosen masters to develop a greater understanding of how these artists manipulate the elements and principles of design to communicate a powerful art aesthetic. Lecture will provide a foundation for a long and rich history of artists looking to masters and mentors for guidance and motivation. Students will research a brief history of their subject's lives, focusing on key pieces of information which helped to form the artists creative vision and direction. Students will delve into theses artists lives, what influences their artmaking, what if any lasting impact have these artists had on the world of art, and what specific aspects of these artists works are the students intending to emulate? Students will present their findings in both written and visual format.

B. Students will create a research paper and educate their audience regarding their mentor artists. Students will execute 1-2 artworks that respond to the discoveries made in study of their mentor subjects. Students will narrow and refine the pieces by concentrating on a specific concepts or processes. Influence my come from symbolism, iconography, and content, and/ or technical aspects, and/or application of the elements and principles of art. Students will create a presentation format which includes a written and visual component, as well as participate in a written self-evaluation, classroom critique, and rubric-based assessment to reflect upon their designs.

Unit 4: **Public Art and Competitions –Presentation and Professionalism** *(4 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.1; A1.2; A1.3; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; 2.6; A3.1; A3.2; A3.4; A4.2; A4.3; A4.4; A5.6; A5.7; A8.4, A8.5

A. To expand on last year's exploration, this unit provides students with the opportunity to continue to investigate the skill set necessary for understanding the boundaries and standards required for submission in a visual arts competition. Students will survey current available open calls and competitions, local, national, or international, and make application. Competitions may require conformity to a specified theme, or may have a more open-ended constraint, for example acrylic painting in any genre**.** Students will develop title and artist statement to elaborate on intention and creative interpretation of the theme. Students must consider how does the work relate to the premise, or answer the listed requirements? What materials will best show their personal skill level and convey their message most appropriately?

B. Students will investigate and participate in a local, national, or international competition by creating a work of art which reflects a given premise or theme. In considering content, students will explore the relationship between their personal style, potential thematic social issues, and examine how an artist can strike a balance between satisfying personal expression whilst communicating universal message. Students will select a preferred media and create an art work (drawing, painting, collage, digital, sculpture) for submission to the competition. Students will develop an artist's statement which explains the inspiration, and meaning of the work, and how it expresses the given theme. Students will photograph and prepare the photo and the art work for submission. Students will participate in collaborative critique and rubric-based assessments to reflect upon their designs.

Second Semester-Course Content

Unit 5: **Review and Focus for Semester 2 Body of Work** *(6-7 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.1; A1.2; A1.3; A1.5; A1.7; A1.8; A2.2; A2.3; A2.4; A2.6; A2.7; A2.8; A2.9; A3.2; A3.4; A4.3; A4.6; A5.2; A5.3; A5.4; A5.6; A7.1; A8.4

A. Students analyze then synthesize their work from first semester and decide on next steps for their final body of work. Discussions with the teacher review and cement findings. Afterwards the students create an outline and timeline. They make a list of materials and tools required. Class discussions commence where students share their progress and artwork with the class and receive feedback. Decisions are made as to the media and process while fine-tuning the major themes. Midway through the quarter the class will have a critique in which each student displays and presents their work, what their expectations were at the beginning of the process and how their results shifted their art practice. After this mid-point critique each student has a discussion with the teacher to outline next steps and specific goals for the rest of the year.

B. In response to their previous work and shifting interests, students will choose a piece of their own artwork from 1st semester and write a visual analysis examining the conceptual, aesthetic and process-based decisions that went into the work's creation. From this analysis, students generate a new piece of artwork using a different media and/or process, while seeking to maintain the conceptual basis behind the original work. The goals of this assignment are to emphasize critical thinking and analysis of their art work, refine and expand their technical abilities, and demonstrate their capability to

communicate an idea, theme or emotion. One-on-one discussions with the teacher and group brainstorming refine each student's ideas and goals. what their expectations were at the beginning of the process and how their results shifted their art practice. Students will continue to fill out their portfolio by creating an additional 2 works which reflect this new growth and awareness. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

Unit 6: **Career Development** *(3 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.2; A1.3; A1.5; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; A2.6; A3.2; A3.5; A4.3; A4.6; A5.2; A5.3; A5.6; A5.7; A7.1; A7.2; A7.3; A7.5; A8.4; A8.6

A. Where can studying Art or Design take you? What kinds of careers exist for those who study creative subjects at high school? While becoming an architect, fine artist, sculptor or gallery assistant is an option for those who study Art or Design, there are many other careers available for those who are able to envision, design and create beautiful and/ or functional things. Art education propels people towards creative and unexpected destinations – many of which have not even been discovered yet. This unit introduces students to the vast number of related careers available in the arts. Students will hear from professionals in a variety of fields, and prepare formal professional materials necessary for entering the professional world. Summative assessments and written/verbal critique will allow students to analyze and improve their work.

B. Students will utilize "The Art Careers Project", to research careers in the creative fields. Students will begin to understand the process of branding oneself by creating a presentation which highlights their personal style, skills, and achievements. Guest speakers will provide students an avenue to delve and question professionals as to what skills they look for in potential employees. Students will create a resume, cover letter, and business, postcard with the intention of presenting this package to a professional organization i.e. a local gallery, advertising agency, interior designer, etc… A rubric will be used for assessing proficiency and students will participate in a written self-evaluation, and verbal critique with peer input.

Unit 7: **Gallery Showing** *(2-3 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.2; A1.3; A1.5; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; A2.6; A3.2; A3.5; A4.3; A4.6; A5.2; A5.3; A5.6; A5.7; A7.1; A7.2; A7.3; A7.5; A8.4; A8.6

A. The previous April, students will have visited a both a local museum and gallery exhibitions to both view art and evaluate curatorial strategies, specifically, how the artworks are displayed, their order and grouping, the lighting, the color of the walls and shape of gallery, text and titles, and analysis of the catalog or publications. Afterword a group discussion will underscore the connections and relationships to installing and curating their own exhibition. The students will use their journal and sketchbook entries, and on-site photos contributions to discussions and notes. Written/verbal critique, and public feedback will allow students to analyze and improve their work.

B. Students will select 5-8 of their strongest portfolio works and professionally mount for school gallery display. The students will curate and hang a final group show which will include the organization of a formal opening. Students will be responsible for designing an online and paper invitation, evites, and other social media advertising, snacks, music, awards, and after show dismantling. Students will draft a statement of purpose about their work detailing process, siting influences, concepts, and use of materials. A rubric will be used for assessing proficiency and students will participate in a written self-evaluation, and verbal critique with peer input.

Unit 8: **Final Portfolio Presentation** *(3 weeks)*

STANDARDS
Visual and Performing Arts:
1.1; 1.2; 1.3; 1.4; 1.5; 1.6; 1.7; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 3.3; 3.4; 4.1; 4.2; 4.3; 4.4; 4.5; 5.2; 5.3; 5.4
CTE Arts Media and Entertainment Arts - A. Design, Visual and Media Arts Pathway:
A1.2; A1.3; A1.5; A1.7; A1.8; A1.9; A2.2; A2.3; A2.4; A2.6; A3.2; A3.5; A4.3; A4.6; A5.2; A5.3; A5.6; A5.7; A7.1; A7.2; A7.3; A7.5; A8.4; A8.6

A. Students will receive an overview of the different programs available for creating an online portfolio (Google Slides, Weebly, WordPress for tech savvy students, etc.…)

Lecture presentation and student research will investigate the many types of offerings and organization techniques employed in artists websites. Discussions will center around analysis of user-friendly effectiveness, consistency, flow, clarity of artists voice. Students will choose several models as guidelines and select a program to create an online portfolio. Students will also learn about display, photography and documentation of art work. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

B. Students will gather all art work from present, and past art classes, or self-generated works. With individual and peer assessment, students will choose a minimum of 10 works of art to begin an online portfolio. All work will be professionally photographed and manipulated to upload onto the chosen format. Students will organize the images into a unifying flow, and draft and upload a personal artist's statement to complete the narrative. Students will present their artist statement, and online portfolio in conjunction with 3-4 physical works. Students will invite administration, family, and other staff members to their presentation. Project based assignments will allow students to design concepts around summative assessments and written/verbal critique will allow students to analyze and improve their work.

Additional Recommended Materials:

- "Color Theory: An Essential Guide to Color from Basic Principles to Practical Application" by Patti Mollica
- "Way of Seeing" by John Berger

Glendale Unified School District School

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Cinematography 1-2 (revision)
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	9-12
School(s) Course Offered:	Glendale High, Crescenta Valley, Clark Magnet
UC/CSU Approved (Y/N, Subject):	Pending, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	None
Recommended Textbook(s):	Video: Digital Communication & Production, 4th Edition, by Jim Stinson, 2018 Lynda.com

Course Overview: Cinematography 1-2 is the introductory course for the Arts, Media and Entertainment industry sector, Design, Visual and Media Arts pathway. Students enrolled in Cinematography 1-2 will be introduced to the basic art, history, theory, and technique of cinematography. Instructional emphasis is placed on the creation, evaluation, adaptation, and interpretation of the following: (i) production safety and crew responsibilities, (ii) storytelling, (iii) pre-production, production, and post production stages, (iv) genre and history of film and television. In every lesson unit, students will analyze and apply film production elements and academic principles in demonstrating their mastery of a filmmaker's knowledge and skills via project-based learning opportunities. Students are also guided through in-depth academic learning through study in significant historical events in film, genre analysis, and auteur study. The overall objective of this class is for students to acquire a strong foundation

of knowledge of film production at a professional level and to prepare them for university coursework or a career work path in film/television production. In addition, the competencies in this course are aligned with the Common Core State Standards and the California Career Technical Education Model Curriculum Standards. This is the first course in the Cinematography pathway and is a UC approved Fine Arts (f) course.

First Semester-Course Content

Unit 1: **Camera Basics & Safety** *(4 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 1. Analyze the environment and be able to interpret and explain theirs and others ideas.
Standard 2-Creative Expression: 2. Understand the tools and mechanics of cinematography.
Standard 5-Connections, Relations and Application: 2. Explore various careers available in the movie making industry.
Arts, Media & Entertainment Career Ready Standards: 1, 2, 6, 9
Production and Managerial Arts Pathway Standards: C1.0, C1.2, C1.3, C1.4, C3.0, C3.1
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. The impact of the role of a Director of Photography or Cinematographer is analyzed in relation to the various occupations in the Arts, Media and Entertainment/Production & Managerial Arts Industry sector. Shot framing and composition, camera movements. Classroom policies, procedures, emergency situations, and workplace safety are reviewed for assessment and comprehension. The purpose of this project is to give students hands-on experience with the camera, focusing on the material and techniques taught in lessons.

B. Sample Assignments:
- Create a poster explaining the Safety Rules and procedures
- Shoot a single-camera short film using linear editing
- Evaluate films and reflect on how the cinematography impacts the message of the film
- Storyboard a short film using proper camera framing and movement.
- Film a space using a range of different shots.
- Identify shots in a short film, and reflect upon the reason these shots were used.

Unit 2: **Lighting for Film** *(4 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 1. Analyze the environment and be able to interpret and explain theirs and others ideas.
Standard 2-Creative Expression: 2. Understand the tools and mechanics of cinematography.
Standard 5-Connections, Relations and Application: 2. Explore various careers available in the movie making industry.
Arts, Media & Entertainment Career Ready Standards: 1, 2, 6, 9
Production and Managerial Arts Pathway Standards: C1.0, C1.2, C1.3, C1.4, C3.0, C3.1
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn and basic elements of exposure, three point lighting, and how to evaluate a scene for lighting. Students will learn the differences associated with color temperature, hard light v. soft light, and the importance of white balancing.

B. Sample Assignments:
- Demonstrate proper exposure and white balance on both a scene taking place indoors and one outdoors
- Use hard light and soft light sources to light a scene. Explain how each affects your scene.
- Identify the tools needed to properly light a scene.

Unit 3: **Editing (Set-up, Import, Basics)** *(4 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 2-Creative Expression: 3. Develop reading comprehension by using instructional material to follow computer applications.
Standard 4-Aesthetic Valuing: 1. Demonstrate the importance of ongoing evaluation from preliminary sketch through finished product and presentation.
Arts, Media & Entertainment Career Ready Standards: 4
Production and Managerial Arts Pathway Standards: C2.3, C4.3, C4.4
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will be introduced to non-linear editing and learn how to use industry standard editing software. Practical math-solving skills will be acquired and practiced through direct application to problem solving entailing measurements and precise timing. Lastly, there will be an emphasis on communication and teamwork skills.

B. Sample Assignments:
- Storyboard a music video planning out pacing and transitions as appropriate for song
- Read and follow an instructional manual to edit a project
- Shoot and edit a music video or other simple non-sync story
- Evaluate films and reflect on how the editing impacts the message of the film

Unit 4: **Storytelling and Storyboarding** *(6 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 2. Use the art elements and principles of design to solve social and environmental problems in inventive ways.
Standard 2-Creative Expression: 4. Demonstrate a continuity of thought from pre planning to the completed artwork.
Standard 3-Historical and Cultural Context: 4. Develop an awareness of the role of movies and storytelling in historical and contemporary world periods.
Standard 4-Aesthetic Valuing: 2. Demonstrate the steps of art criticism through oral and written reports.
Arts, Media & Entertainment Career Ready Standards: 10
Production and Managerial Arts Pathway Standards: C4.1, C5.1
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. The purpose of this project is to get students to think about their visual storytelling and the traditional 3 act structure to create an experience for the viewer. Students will watch and critique films on the 3 act structure. They will write their own outline, treatment, or script that demonstrates the 3 act story structure and character development.

B. Sample Assignments:
- Develop a main character and write a film treatment
- Write a script using proper script format
- Storyboard a silent film using cinematography and visual design to communicate the story to the audience
- Shoot and edit a silent film
- Evaluate films and reflect on how the cinematography, editing, and visual design communicates the message of the film.

Second Semester-Course Content

Unit 1: **Genre History** *(4 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 3. Continue developing an understanding the basic concepts of the principles of design, including pattern, contrast, emphasis, balance, movement, rhythm and unity.
Standard 3-Historical and Cultural Context: 1. Explore and relate the role of movies in culture. 2. Recognize a variety of cultures and the influence they have on movies. 6. Connect their assignments with various historical periods.
Standard 5-Connections, Relations and Application: 1. Make the connection between cinematography and their other classes by incorporating writing, history, math, etc. into their assignments.
Arts, Media & Entertainment Career Ready Standards: 5, 11, 12
Production and Managerial Arts Pathway Standards: C2.1, C4.2, C7.3, C7.4
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will acquire a condensed knowledge of filmmaking from the innovation of motion picture through sync sound. The assignments are to specifically address genres such as comedy, horror, advertising, and non-fiction/documentary. Students will recognize how historical/cultural factors and technological advances influenced filmmaking.

B. Sample Assignments:
- Evaluate early silent comedians and compare how sync sound influenced the comedy genre
- Evaluate the genre of horror and analyze the filmmaking techniques used to create drama/suspense
- Evaluate documentary filmmaking and identify ways in which non-fiction can be structured to tell a story

Unit 2: **Intro to Audio Production** *(4 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 3. Continue developing an understanding the basic concepts of the principles of design, including pattern, contrast, emphasis, balance, movement, rhythm and unity.
Standard 3-Historical and Cultural Context: 1. Explore and relate the role of movies in culture. 2. Recognize a variety of cultures and the influence they have on movies. 6. Connect their assignments with various historical periods.

Standard 5-Connections, Relations and Application: 1. Make the connection between cinematography and their other classes by incorporating writing, history, math, etc. into their assignments.
Arts, Media & Entertainment Career Ready Standards: 4
Production and Managerial Arts Pathway Standards: C2.3, C4.3, C4.4
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn how a microphone records sound, pick up patterns, and how to select a microphone for recording. During production students will learn proper placement of a microphone on set and how to set recording levels. In post production students will mix on camera dialog, voice over, music, and sound effects tracks balancing levels and ducking music as needed to provide a rich sound for production.

B. Sample Assignments:
- Select microphones and mix sound for a live multi-camera production
- Select microphones and record sound for single camera short film
- Select microphones and record sound for a news package that includes voice over and on camera interviews
- Mix sound for a short film
- Mix sound for a news program

Unit 3: **Genre in Practice** *(4 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 3. Continue developing an understanding the basic concepts of the principles of design, including pattern, contrast, emphasis, balance, movement, rhythm and unity.
Standard 3-Historical and Cultural Context: 1. Explore and relate the role of movies in culture. 2. Recognize a variety of cultures and the influence they have on movies. 6. Connect their assignments with various historical periods.
Standard 5-Connections, Relations and Application: 1. Make the connection between cinematography and their other classes by incorporating writing, history, math, etc. into their assignments.
Arts, Media & Entertainment Career Ready Standards: 5, 11, 12
Production and Managerial Arts Pathway Standards: C2.1, C4.2, C7.3, C7.4
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will practice what they have learned about genre, and engage in projects where they execute the production theory and practice studied in the Genre History unit.

B. Sample Assignments:
- Script and storyboard a short comedy, horror, suspense, or advertisement.
- Shoot a short comedy, horror, suspense, or advertisement.
- Evaluate peer created projects based on elements from the genre studied

Unit 4: **Single Camera Narrative Sync Sound** *(6 weeks)*

STANDARDS
California State Visual and Performance Art:
Standard 1-Artistic Perception: 4. Expand knowledge of the art elements, including line, shape, form, texture, value, color and space.
Standard 2-Creative Expression: 1. Develop and use imagery in two and three-dimensional work to express personal beliefs, interests and perception of the visual world.
Standard 3-Historical and Cultural Context: 3. Relate how movies express and reflect culture. 5. View, discuss, analyze and write about movies as a unique form of expression throughout history.
Standard 5-Connections, Relations and Application: 3. Learn to manage time and resources, as well as work as a team in a movie production
Arts, Media & Entertainment Career Ready Standards: 3, 7, 8
Production and Managerial Arts Pathway Standards: C5.2, C6.3, C6.4, C6.5, C7.2
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. The approach into sync sound will begin with comprehending key terms in basic audio properties such as sound waves, vibrations, and the process of how sound is recorded. Analysis of storytelling through sound will be reinforced through guided discussions of underscoring and reinforcement (microphones). Design principles will be explored such as recording sound, electrical and other safety provisions, XLR cabling, amplification and speaker positioning, and scoring. Students will need to use their knowledge of filmmaking to work within time restraints managing their time effectively and creating a final project that meets time limits. Students to demonstrate their knowledge of production from start to finish.

B. Sample Assignments:
- Create a commercial that meets specific time limit requirements
- Create a non-fiction documentary film using narration and visuals to communicate information researched
- Create a short film incorporating sound design for specified genre.

Glendale Unified School District School

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Cinematography 3-4
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	9-12
School(s) Course Offered:	Glendale High, Crescenta Valley, Clark Magnet
UC/CSU Approved (Y/N, Subject):	Pending, "f" Fine Art credits
Course Credits:	10
Recommended Prerequisite:	Cinematography 1-2
Recommended Textbook(s):	Television Production & Broadcast Journalism, 3rd Edition, by Philip L. Harris and Gil Garcia, 2018 Lynda.com

Course Overview: Cinematography 3-4 Honors is the concentration course for the Arts, Media and Entertainment industry sector and Design, Visual and Media Arts pathway. Students enrolled in Cinematography 3-4 will have the opportunity to demonstrate mastery of film and television production, production management, multi-camera production, and leadership skills. During the course of the year, students will develop techniques introduced in Cinematography 1-2 including cinematography, editing, sound production, production workflow, production safety and best practices. Students will take responsibility for school based productions including communicating with administration, publicity, and program creation. Students will manage scheduling, run production meetings, make company decisions, and solve problems for the project-based student-run campus production studio. Students will be responsible for applying their classroom instruction and material studied in the textbook

in a hands-on production setting. Students will be able to use and understand content-specific film/television vocabulary. This course requires students to utilize skills in critical thinking, collaboration, creativity, risk-taking and problem solving.

First Semester-Course Content

Unit 1: **Intermediate Single Camera Operation** *(6 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 1, 2, 4, 5, 9, 10
Production and Managerial Arts Pathway Standards: C1.0, C1.2, C1.3, C1.4, C3.0, C3.1
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn manual camera operation including, but not limited to manual exposure, manual focus, basic camera builds and accessories, exposure calculations when using neutral density filtration, depth of field, and high-speed motion picture capture. Students will be presented with the three types of camera lenses.

B. Sample Assignments:
- Complete exposure calculation assessment
- Design an exposure triangle
- Complete camera build assessment
- Lighting ratio sample project
- Variable frame rate sample project
- Variable neutral density project

Unit 2: **Multi-Camera Production** (*6 weeks*)

STANDARDS
California State Visual and Performance Art:
Arts, Media & Entertainment Career Ready Standards: 1, 2, 6, 7, 8, 9
Production and Managerial Arts Pathway Standards: C1.0, C1.2, C1.3, C1.4, C3.0, C3.1
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn the roles and responsibilities associated with the different positions in multi-camera production including director, technical director, line graphics operator, sound engineer, camera operator, floor director, and teleprompter. Students will rotate through the positions and execute the tasks assigned to them in each role. Students will communicate appropriately with others on crew and use appropriate headphone etiquette.

B. Sample Assignments:
- Read a shot list and operate a camera
- Operate a teleprompter and monitor speed based on talent reading
- Operate sound board and mix mic levels appropriately
- Manage the studio floor, crew, and assist talent
- Operate the video switcher
- Operate line graphics
- Direct multi-camera production

Unit 3: **Distribution** (*6 weeks*)

STANDARDS
California State Visual and Performance Art:
Arts, Media & Entertainment Career Ready Standards: 5
Production and Managerial Arts Pathway Standards: C7.0, C7.1, C7.2, C7.3, C7.4, C7.5, C7.6
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn about methods of distribution and produce a film or television program for an audience beyond the classroom. Students will learn about copyright licensing, music rights, and intellectual property.

B. Sample Assignments:
- Distribute a daily or weekly newscast on the school's channel
- Create an original show with continual episodes.
- Obtain re-recording or licencing rights to use of creative work owned by an outside entity

Second Semester-Course Content

Unit 1: **On location production (single camera & multi-camera)** (*6 weeks*)

STANDARDS
California State Visual and Performance Art:
Arts, Media & Entertainment Career Ready Standards: 4
Production and Managerial Arts Pathway Standards: C5.0, C5.1, C5.1
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will work in the community to videotape events for local broadcast. Students manage production, select appropriate equipment, work with clients outside of school, and deliver a finished product for multimedia distribution.

B. Sample Assignments:
- Record sporting events for weekly sports report
- Recording school and district events
- Recording community events

Unit 2: **Independent Filmmaking** (*9 weeks*)

STANDARDS
California State Visual and Performance Art:
Arts, Media & Entertainment Career Ready Standards: 3, 10,
Production and Managerial Arts Pathway Standards: C4.0, C4.1, C4.2, C4.3, C4.4, C4.5, C6.0, C6.1, C6.2, C6.3, C6.4, C6.5
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will take on the responsibility for producing, directing, editing, and delivering a short film or television production. Students will produce, script, storyboard, direct, hire cast and crew, shoot, and edit their work. The work may be included in the school's distribution channel.

B. Sample Assignments:
- Produce packages for a daily or weekly newscast
- Produce Public Service Announcements (PSA's)
- Produce creative short intros and outros for daily or weekly newscast.

Unit 3: **Producing: Company Leadership, Administration and Organization (Artistic Perception; Connections, Relationships and Applications)** (*9 weeks*)

STANDARDS
California State Visual and Performance Art:
Arts, Media & Entertainment Career Ready Standards: 11, 12
Production and Managerial Arts Pathway Standards: C2.0, C2.1, C2.2, C2.3
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. In this unit students will participate in organization-wide decision making; collaborate with faculty on steering the film/television production company; perform administrative duties of the company; and participate in the production or broadcasting standards or content advisory committee meetings. To this end students will produce a film or television program, create production calendar and schedules, organize and supervise crew members, track deadlines, and facilitate communication.

B. Sample Assignments:
- Attend advisory committee meetings or broadcast standards committee meetings.

- Meet with school administrators or community members to plan a film production.
- Create schedules, delegate responsibilities, and communicate outcomes
- Work within a team to acriculate tasks and communicate on issues that arise within the team.
- Analyze and address needs of the production and develop a plan of action.
- Find ways to meet the specific needs of the production within the parameters of the equipment and time provided.

Honors Final Exam Details:

Throughout the course students will develop and maintain a portfolio demonstrating their technical and artistic mastery in the various areas of filmmaking and visual communication. Students will demonstrate creativity, critical thinking, communication, and collaboration as they assemble and refine their portfolio projects. Of particular emphasis will be the analysis and self critique of their own work and how it Relates to their educational and career goals. The students' completed portfolios will include an artist's statement, on-line résumé and filmography, behind the scenes photos, self evaluations, and a variety of completed video productions demonstrating a breadth in the various areas of filmmaking.

Glendale Unified School District School

High School

Date
*(Meeting date will be typed in **after** Board Approval)*

Department:	Career Technical Education
Course Title:	Cinematography 5-6 Honors
Course Code:	(*Educational Services will assign course number **after** Board Approval)*
Grade Level(s):	9-12
School(s) Course Offered:	Glendale High, Crescenta Valley, Clark Magnet
UC/CSU Approved (Y/N, Subject):	Yes, "f" Fine Art credits
Course Credits:	5 or 10
Recommended Prerequisite:	Cinematography 3-4
Recommended Textbook(s):	Video: Digital Communication & Production, 4th Edition, by Jim Stinson, 2018 Television Production & Broadcast Journalism, 3rd Edition, By Philip L. Harris and Gil Garcia, 2018 AVID Media Composer Fundamentals I & II, Avid Learning Series User Certification. Publisher: Avid Technology, Inc. Lynda.com
Course Overview:	Cinematography 5-6 Honors is the capstone course for the Arts, Media and Entertainment industry sector and Design, Visual and Media Arts pathway. This course will develop the concepts and techniques introduced in Cinematography 3-4. New and varied techniques of producing and directing will be explored. Further development of self-expression, perception, and artistic concepts will be realized through short films. Continued development of evaluation criteria through class work and outside observation will assist in developing a personal concept of filmmaking and television production. Students will also prepare for an exam in film editing using the software which would lead to industry

certification. Participation in this exam will be contingent upon the arrangement made with the vendor. Students will also learn the finer qualities of pre-production, production and post-production to ready them for extended college level education and/or an entry-level position within the motion picture industry. The final product will be a demo reel of their class films.

First Semester-Course Content

Unit 1: **Pitch, Storybeat** (*2 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 2, 3, 10
Production and Managerial Arts Pathway Standards: C2.3, C6.0, C6.3, C6.0, C6.1, C6.2
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn to develop a concept into a pitch for delivery to a buyer. They will further develop approved pitches into story beats. Students will pitch their ideas.

B. Sample Assignments:
- Design a Logline
- Pitch story to peer group or advisory board
- Design story beats following the three act structure
- Outline the plot points for the short film

Unit 2: **Treatment, Scriptwriting** (*4 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 2, 3, 10
Production and Managerial Arts Pathway Standards: C2.3, C6.0, C6.3, C6.0, C6.1, C6.2
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will learn to develop a concept into a pitch for delivery to a buyer. They will further develop approved pitches into story beats and a proper treatment. That treatment will be developed into a formal script

B. Sample Assignments:
- Complete a treatment for the short film
- Script using proper script format
- Complete various script breakdowns including

Unit 3: **Pre-production Development** (*6 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 5, 6, 9
Production and Managerial Arts Pathway Standards: C3.0, C3.1, C4.0, C4.1, C4.2, C4.3, C4.4, C4.5
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will take a film script and break it down into elements to produce to create the film. This will involve identifying and working with community members to obtain rights and releases, coordinating schedules, budgeting, and call sheets. Students will research and secure equipment, talent, locations, props, wardrobe, and other elements needed to complete production.

B. Sample Assignments:
- Design and execute a fundraising campaign for film
- Design and follow a budget
- Draw and present storyboards to shareholders
- Create pre-visualization and animatics for shareholders
- Hold casting sessions (auditions, callbacks) for talent
- Scout locations identifying suitability for scrips as well as production needs
- File paperwork for location shoot permits and contracts for all on screen talent clearances
- Design call sheets and production schedules

Unit 4: **Production** (*6 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 1, 4, 7
Production and Managerial Arts Pathway Standards: C1.0, C1.1, C1.2, C1.3, C1.4
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will execute the production of the script. Individual students will be responsible for leading their assigned production division within the categories of Art Design, Cinematography, Sound Design, Directing, Producing.

B. Sample Assignments:
- Secure properties for locations
- Rentals, Reservations and Catering
- Shooting on location a scene outside of the cinematography classroom studio
- Complete Principal Photography of all scenes
- Complete Production Sound of all scenes

Second Semester-Course Content

Unit 5: **Editing Rough Cut Assembly, Picture Lock** (*9 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 8, 12
Production and Managerial Arts Pathway Standards: C2.0, C2.1, C2.2, C5.0, C5.1, C5.2
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will manage the pieces of the film produced in production and assemble into a film. Initial edits will be evaluated for their relevance to the story as a whole as well as how they relate to any final delivery requirements like time length. Students will revise production elements as needed with ADR, pick ups, and Foley.

B. Sample Assignments:
- Sync recorded material
- Screen and create notes on dailies
- Create or obtain foley sound
- Record ADR/Looping
- Schedule and obtain pick up shots
- Perform rough Assembly and Trimming
- Screen rough to focus group audience for story notes
- Complete final revisions for picture lock

Unit 6: **Music Composition and Sound Mastering** (*3 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 11
Production and Managerial Arts Pathway Standards: C6.3, C6.4, C6.5, C7.0, C7.1, C7.2, C7.3, C7.4, C7.5, C7.6
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Students will score the short film with original music. They will get clearance for any recording rights for music to be used that is under copyright. Students will mix the sound for their film using industry standards practice and technology.

B. Sample Assignments:
- Sound Mastering and Leveling
- Research and obtain copyright clearance
- Meet with music composer to give direction
- Provide communication and notes with music composer.

Unit 7: **Color Grading & Finishing** (*3 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 11
Production and Managerial Arts Pathway Standards: C6.3, C6.4, C6.5, C7.0, C7.1, C7.2, C7.3, C7.4, C7.5, C7.6
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. Student will complete the "feature style" short film for public display to help garner industry and stakeholder buy in. Students will use industry standard technology to colorgrade their film and create needed visual effects. Students will complete their short films films using industry standard practice and technology.

B. Sample Assignments:
- Color Correction and Grading of short film
- Visual Effects Composition for short film
- Design opening titles and closing credits for short film

Unit 8: **Distribution** (*3 weeks*)

STANDARDS
Arts, Media & Entertainment Career Ready Standards: 11
Production and Managerial Arts Pathway Standards: C6.3, C6.4, C6.5, C7.0, C7.1, C7.2, C7.3, C7.4, C7.5, C7.6
Common Core Standards: CCSS LS; CCSS RSIT; CCSS WS:

A. The final cut of the film will be displayed at a public venue. Students will research the film festival market and submit their film to competitive film festivals. Students will create marketing materials for their film. The students will add new created content to their cinema demo reel.

B. Sample Assignments:
- Design Graphics and Marketing materials
- Set up a Social Media contact
- Multimedia Distribution
- Complete festival research and submission budget
- Design a final Demo Reel

Honors Final Exam Details:

Students will develop and produce a 5-10 minute short film. The film is to be a summative display of all the other techniques and storytelling concepts learned over the course of the semester. The film should demonstrate a strong understanding of character. Dialogue should be efficient, unique between characters and reveal a compelling backstory.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 11

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBJECT: **Approval of New, Revised or Retired Board Policies Relating to Students and Instruction**

The Interim Superintendent recommends that the Board of Education approve new, revised, or retired Board Policies (BP) 5119 (Students Expelled From Other Districts); BP 5144 (Discipline); BP 5146 (Married, Pregnant, and Parenting Students); BP 6000 (Concepts and Roles); BP 6152 (Class Assignment); BP 6190 (Evaluation of the Instructional Program); and BP 6112.1 (School Day-Minimum Requirements) as recommended by the California School Boards Association (CSBA) and to comply with Education Code and federal and state laws.

BP 5119 – Students Expelled From Other Districts

CSBA Update: March 2007
Last GUSD Update: N/A

Board Policy (BP) 5119 has been created, based on suggested language from the California School Boards Association (CSBA), regarding the enrollment of students who have been expelled from other school districts. This new policy discusses the parent/guardian's responsibility to inform the school district about the disciplinary action taken in another school district. The proposed policy also describes the hearing process should a parent/guardian want to enroll their student who has been previously expelled.

BP 5144 – Discipline

CSBA Update: December 2018
Last GUSD Update: June 2018

BP 5144 is updated using CSBA language to reflect new law (AB 2657), which prohibits seclusion and behavioral restraint of students as a means of discipline, and to encourage staff development regarding equitable implementation of discipline.

BP 5146 – Married, Pregnant, and Parenting Students

CSBA Update: December 2018
Last GUSD Update: May 2016

BP 5146 is updated, using CSBA suggested language, to reflect a new law (AB 2289), which requires notification to parents/guardians and to pregnant and parenting students of their rights under the law; authorizes an excused absence for a parenting student to care for a sick child without a physician's note; provides that a pregnant or parenting student is entitled to eight weeks of parental leave, or longer if deemed medically necessary by the student's physician; and authorizes the use of uniform complaint procedures for complaints alleging noncompliance with the law.

BP 6000 – Concepts and Roles

CSBA Update: July 2006
Last GUSD Update: N/A

Board Policy 6000 has been created, based upon CSBA suggested language, that helps define the Board's and Superintendent's roles and responsibilities as related to Instruction. It also defines comparability as it relates to general fund programs and supplemental and federally funded programs and services.

BP 6152 – Class Assignment

CSBA Update: March 2016
Last GUSD Update: October 2002

BP 6152 is updated, using CSBA language, to reflect AB 1012, 2015 which prohibits, unless certain conditions are satisfied, the assignment of a student in grades 9-12 to (1) any course period "without educational content" for more than one week in any semester or (2) any course that he/she previously completed with a grade determined by the district to satisfy minimum requirements for high school graduation and admission to California postsecondary institutions. The revised policy also calls for the use of multiple objective academic measures when assigning students to appropriate courses and classes, consistent with B 359, 2015 mandating policy on placement in mathematic courses.

BP 6190 – Evaluation of the Instructional Program

CSBA Update: October 2018
Last GUSD Update: February 2016

BP 6190 is updated using CSBA language to delete references to the obsolete API and add the California School Dashboard as a source for multiple state and local indicators of strengths and areas in need of improvement in each priority area addressed by the LCAP. The section on "Federal Program Monitoring" is deleted as the focus of the policy is on program effectiveness rather than compliance with program requirements.

BP 6112.1 – Minimum Requirements

CSBA Update: N/A
Last GUSD Update: November 2010

BP 6112.1 has been retired as it is not supported by CSBA and the language contained within it is included in the Board Policy and Administrative Regulations 6112, School Days.

Upon approval of the policies, updates to the accompanying Administrative Regulations will be made as needed following current District procedures.

Copies of the new, revised and retired policies are attached to this report.

Students

Students Expelled From Other Districts

The Board may grant admission to students expelled from other districts in accordance with law and when consistent with the Board's goal to provide a safe and secure environment for students and staff.

If a student expelled from another district is granted enrollment, in accordance with the procedures specified below, he/she shall either establish legal residence in this District or enroll pursuant to an interdistrict attendance agreement. (Education Code 48915.1, 48915.2)

Enrollment During the Term of the Expulsion

The District shall not enroll a student expelled by another district for any of the offenses listed in Education Code 48915(a) or (c) (mandatory expulsion offenses) during the term of the student's expulsion, unless the enrollment is at a community day school. (Education Code 48915.2)

Upon receiving a request for enrollment from a student expelled from another district for acts other than those specified in Education Code 48915(a) or (c), the Board shall hold a hearing to determine whether the student poses a continuing danger to students or staff. The hearing shall be conducted and notice shall be provided in accordance with procedures governing expulsion of students described in Education Code 48918. (Education Code 48915.1)

If the student or parent/guardian neglects to inform the District that the student was expelled from his/her previous district for an act other than those listed in Education Code 48915(a) or (c), the Board shall record and discuss this lack of compliance during the hearing. (Education Code 48915.1)

If the Board finds that a student expelled for acts other than those specified in Education Code 48915(a) or (c) does not pose a continuing danger to students or staff, the student may be admitted or conditionally admitted during the term of expulsion. If the Board determines that the student does pose a continuing danger to students or staff, the student shall not be admitted. (Education Code 48915.1)

Enrollment After the Term of the Expulsion

A student expelled for an act specified in Education Code 48915(a) or (c) may enroll in the District after the term of his/her expulsion if the Board finds, at a hearing, that the student does not pose a continuing danger to students or staff. The hearing shall be conducted and notice shall be provided in accordance with procedures governing expulsion of students described in Education Code 48918. (Education Code 48915.2)

Students

Students Expelled From Other Districts

A student expelled for any act other than those specified in Education Code 48915(a) or (c) may request enrollment after the term of his/her expulsion in accordance with the District's procedures for establishing residency or interdistrict transfer.

Legal Reference: Education Code, Sections 46600; 46601; 48200; 48645.1; 48660-48666; 48915; 48915.1,; 48915.2; 48918

Policy Adopted: 04/02/2019

Students – Welfare

Discipline

The Governing Board is committed to providing a safe, supportive, and positive school environment which is conducive to student learning and to preparing students for responsible citizenship by fostering self-discipline and personal responsibility. The Board believes that high expectations for student behavior, use of effective school and classroom management strategies, provision of appropriate intervention and support, and parent involvement can minimize the need for disciplinary measures that exclude students from instruction as a means for correcting student misbehavior.

The Superintendent or designee shall develop effective, age-appropriate strategies for maintaining a positive school climate and correcting student misbehavior at District schools. The strategies shall focus on providing students with needed supports; communicating clear, appropriate, and consistent expectations and consequences for student conduct; and ensuring equity and continuous improvement in the implementation of District discipline policies and practices.

In addition, the Superintendent or designee's strategies for correcting student misconduct shall reflect the Board's preference for the use of positive interventions and alternative disciplinary measures over exclusionary discipline measures.

Disciplinary measures that may result in loss of instructional time or cause students to be disengaged from school, such as detention, suspension, and expulsion, shall be imposed only when required or permitted by law or when other means of correction have been documented to have failed. (Education Code 48900.5)

School personnel and volunteers shall not allow any disciplinary action taken against a student to result in the denial or delay of a school meal. (Education Code 49557.5)

The administrative staff at each school may develop disciplinary rules to meet the school's particular needs consistent with law, Board policy, and District regulations. The Board, at an open meeting, shall review the approved school discipline rules for consistency with Board policy and state law. Site-level disciplinary rules shall be included in the District's comprehensive safety plan. (Education Code 32282, 35291.5)

At all times, the safety of students and staff and the maintenance of an orderly school environment shall be priorities in determining appropriate discipline. When misconduct occurs, staff shall attempt to identify the causes of the student's behavior and implement appropriate discipline. When choosing between different disciplinary strategies, staff shall consider the effect of each option on the student's health, well-being, and opportunity to learn.

Students – Welfare

Discipline

Staff shall enforce disciplinary rules fairly, consistently, and in accordance with the District's nondiscrimination policies. Restraint and seclusion should only be used as a safety measure of last resort, and should never be used as punishment or discipline or for staff convenience.

The Superintendent or designee shall provide professional development as necessary to assist staff in developing the skills needed to effectively implement the disciplinary strategies adopted for District schools, including, but not limited to, consistent school and classroom management skills, effective accountability and positive intervention techniques, and development of strong, cooperative relationships with parents/guardians.

District goals for improving school climate, based on suspension and expulsion rates, surveys of students, staff, and parents/guardians regarding their sense of school safety, and other local measures, shall be included in the District's local control and accountability plan, as required by law.

At the beginning of each school year, the Superintendent or designee shall report to the Board regarding disciplinary strategies used in District schools in the immediately preceding school year and their effect on student learning.

Legal Reference:	Education Code, Sections 32280-32288; 35146; 35291; 35291.5; 35291.7; 37223; 48900–48926; 48980-48985; 49330-49335; 49550-49562; 52060-52077 Civil Code, Section 1714.1 Code of Regulations, Title 5, Sections 307; 353 United States Code, Title 24, Sections 1751-1769j; 1773
Policy Adopted:	11/04/1956
Policy Amended:	06/16/1959; 01/06/1976; 06/04/1985; 01/20/1987; 05/21/1996; 01/14/2003; 06/19/2018; 04/02/2019

Formerly BP 5320

Students – Welfare

Married, Pregnant, and Parenting Students

The Board of Education recognizes that responsibilities related to marriage, pregnancy, or parenting and related responsibilities may disrupt a student's education and increase the chance of a student dropping out of school. The Board therefore desires to support married, pregnant, and parenting students to continue their education, attain strong academic and parenting skills, and promote the healthy development of their children.

The District shall not exclude or deny any student from any educational program or activity, including any class or extracurricular activity, solely on the basis of the student's pregnancy, childbirth, false pregnancy, termination of pregnancy, or related recovery. In addition, the District shall not adopt any rule concerning a student's actual or potential parental, family, or marital status that treats students differently on the basis of sex. (Education Code 221.51, 230; 5 CCR 4950; 34 CFR 106.40)

The Superintendent or designee shall annually notify parents/guardians at the beginning of the school year of the rights and options available to pregnant and parenting students under the law. In addition, pregnant and parenting students shall be notified of the rights and options available to them under the law through annual school year welcome packets and through independent study packets. (Education Code 222.5, 48980)

A. Married Students

For school-related purposes, married students under the age of eighteen (18) who enter into a valid marriage shall have all the rights and privileges of students who are 18, even if the marriage has been dissolved. (Family Code 7002)

B. Education and Support Services for Pregnant and Parenting Students

Pregnant and parenting students shall retain the right to participate in the regular education program or an alternative program. The classroom setting shall be the preferred instructional strategy unless an alternative is necessary to meet the needs of the student and/or the student’s child.

Any alternative education program, activity, or course that is offered separately to pregnant or parenting students, including any class or extracurricular activity, shall be equal to that offered to other District students. A student's participation in such programs shall be voluntary. (Education Code 221.51; 5 CCR 4950)

If required for students with any other temporary disabling condition, the Superintendent or designee may require a student, based on pregnancy, childbirth, false

pregnancy, termination of pregnancy, or related recovery, to obtain certification from a physician or nurse practitioner indicating that the student is physically and emotionally able to continue participation in the regular educational program or activity. (Education Code 221.51; 5 CCR 4950; 34 CFR 106.40)

To the extent feasible, the District shall provide educational and related support services either directly or in collaboration with community agencies and organizations, to meet the needs of pregnant and parenting students and their children. Such services may include, but are not limited to:

1. Child care and development services for the children of parenting students on or near school site(s) during the school day and during school-sponsored activities.

2. Parenting education and life skills instruction.

3. Special school nutrition supplements for pregnant and lactating students pursuant to Education Code 49553, 42 USC 1786, and 7 CFR 246.1-246.28.

4. Health care services, including prenatal care.

5. Tobacco, alcohol, and/or drug prevention and intervention services.

6. Academic and personal counseling.

7. Supplemental instruction to assist students in achieving grade-level academic standards and progressing toward graduation.

As appropriate, teachers, administrators, and/or other personnel who work with pregnant and parenting students shall receive related professional development.

C. Absences

Pregnant or parenting students may be excused for absences for medical appointments and other purposes specified in BP/AR 5113 - Absences and Excuses.

A student shall be excused for absences to care for a sick child for whom the student is the custodial parent. A note from a physician shall not be required for such an absence. (Education Code 48205)

Students – Welfare

Married, Pregnant, and Parenting Students

D. Parental Leave

A pregnant or parenting student shall be entitled to eight weeks of parental leave in order to protect the health of the student who gives or expects to give birth and the infant, and to allow the pregnant or parenting student to care for and bond with the infant. Such leave may be taken before the birth of the student's infant if there is a medical necessity and after childbirth during the school year in which the birth takes place, inclusive of any mandatory summer instruction. The Superintendent or designee may grant parental leave beyond eight weeks if deemed medically necessary by the student's physician. (Education Code 46015; 34 CFR 106.40)

The student, if age 18 years or older, or the student's parent/guardian shall notify the school of the student's intent to take parental leave. No student shall be required to take all or part of the parental leave. (Education Code 46015)

When a student takes parental leave, the attendance supervisor shall ensure that absences from the regular school program are excused until the student is able to return to the regular school program or an alternative education program. A pregnant or parenting student shall not be required to complete academic work or other school requirements during the period of the parental leave. (Education Code 46015)

Following the leave, a pregnant or parenting student may elect to return to the school and the course of study in which the student was enrolled before taking parental leave or to an alternative education option provided by the District. Upon return to school, a pregnant or parenting student shall have opportunities to make up work missed during the leave, including, but not limited to, makeup work plans and reenrollment in courses. (Education Code 46015)

When necessary to complete high school graduation requirements, the student may remain enrolled in school for a fifth year of instruction, unless the Superintendent or designee makes a finding that the student is reasonably able to complete District graduation requirements in time to graduate by the end of the fourth year of high school. (Education Code 46015)

E. Accommodations

When necessary, the District shall provide accommodations to enable a pregnant or parenting students to access the educational program.

Students – Welfare

Married, Pregnant, and Parenting Students

A pregnant student shall have access to any services available to other students with temporary disabilities or medical conditions. (34 CFR 106.40)

The school shall provide reasonable accommodations to any lactating student to express breast milk, breastfeed an infant child, or address other needs related to breastfeeding. A student shall not incur an academic penalty for using any of these reasonable accommodations, and shall be provided the opportunity to make up any work missed due to such use. Reasonable accommodations include, but are not limited to: (Education Code 222)

1. Access to a private and secure room, other than a restroom, to express breast milk or breastfeed an infant child.

2. Permission to bring onto a school campus a breast pump and any other equipment used to express breast milk.

3. Access to a power source for a breast pump or any other equipment used to express breast milk.

4. Access to a place to store expressed breast milk safely.

5. A reasonable amount of time to accommodate the student's need to express breast milk or breastfeed an infant child.

F. Complaints

Any complaint alleging discrimination on the basis of pregnancy or marital or parental status, District noncompliance with the requirements of Education Code 46015, or District noncompliance with the requirement to provide reasonable accommodations for lactating students shall be addressed through the District's uniform complaint procedures in accordance with 5 CCR 4600-4687 and BP/AR 1312.3 - Uniform Complaint Procedures.

A complainant who is not satisfied with the District's decision may appeal the decision to the California Department of Education (CDE). If the District or the CDE finds merit in an appeal, the District shall provide a remedy to the affected student. (Education Code 222, 46015; 5 CCR 4600- 4670)

Students – Welfare

Married, Pregnant, and Parenting Students

G. Program Evaluation

The Superintendent or designee shall periodically report to the Board regarding the effectiveness of District strategies to support married, pregnant, and parenting students, which may include data on participation rates in District programs and services, academic achievement, school attendance, graduation rate, and/or student feedback on District programs and services.

Legal Reference: Education Code, Sections 221.51; 222; 222.5; 230; 8200-8498; 46015; 48205; 48206.3; 48220; 48410; 48980; 49553; 51220.5; 51745; 52610.5
Civil Code, Section 51
Family Code 7002
Health and Safety Code, Section 104460
Code of Regulations, Title 5, Sections 4600-4670; 4950
Code of Regulations, Title 22, Sections 101151-101239.2; 101351-101439.1
United States Code, Title 20, Sections 1681-1688
United States Code, Title 42, Section 1786
Code of Federal Regulations, Title 7, Sections 246.1-246.28
Code of Federal Regulations, Title 34, Section 106.40
Attorney General Opinions, 87 Ops. Cal. Atty. Gen. 168 (2004)
Court Decisions: American Academy of Pediatrics et al v. Lungren et al (1997) 16 Cal.4th 307

Policy Adopted: 06/04/1985

Policy Amended: 05/21/1996; 01/14/2003; 05/03/2016; 04/02/2019

Formerly BP 5435

Instruction

Concepts and Roles

The Board of Education desires to provide a comprehensive, research-based curriculum that motivates every student to succeed. The District's educational program shall provide students with opportunities to attain the skills, knowledge, and abilities they need to be successful in school and develop to their full potential.

Strategies for improving the educational program shall take into consideration the needs of individual students and subpopulations of students. Students who are failing or at risk of failing to meet academic standards shall be provided with alternative programs and/or supplemental assistance designed to raise achievement.

Inasmuch as parents/guardians are critical partners in their children's education, parents/guardians shall be provided with opportunities to be meaningfully involved both in support of their children's education program at school and with learning at home.

A. The Board shall:

1. Establish standards of student achievement for core subjects at each grade level that are aligned with the District's vision for student learning, the specific needs and strengths of the students, the expectations of parents/guardians and the community, and available resources.

2. Establish graduation requirements.

3. Ensure that a process is in place, involving teachers, administrators, students, and parents/guardians, for the development and review of the District's curriculum.

4. Adopt the District curriculum and courses of study to be offered.

5. Adopt textbooks and other instructional materials.

6. Support the professional staffs implementation of the curriculum by providing consistent policy direction, allocating resources based on educational program priorities, ensuring that collective bargaining agreements do not constrain the District's ability to achieve curricular goals, recognizing staff accomplishments, and including reasonable annual goals related to student learning in the Superintendent evaluation process.

Instruction

Concepts and Roles

7. Provide a continuing program of professional development to keep instructional staff, administrators, and Board members updated about current issues and research pertaining to curriculum, instructional strategies, and student assessment.

8. Review and evaluate the educational program on the basis of state and federal accountability measures, disaggregated student achievement data, and other indicators and ensure that evaluation results are used to improve programs, curriculum, and/or instructional practices as necessary to enhance student achievement.

9. Communicate clear information about District instructional goals, programs, and progress in student achievement to the community and media.

B. The Superintendent or designee shall:

1. Review research related to curriculum issues.

2. Select and/or develop curricula for recommendation to the Board in accordance with the District's curriculum development and review process.

3. Ensure the articulation of the curriculum between grade levels and with postsecondary education and the workplace.

4. Determine the general methods of instruction to be used.

5. Assign instructors and schedule classes for all curricular offerings.

6. Recommend instructional materials to the Board and direct the purchase of approved materials and equipment.

7. Evaluate and report to the Board on student achievement as demonstrated through testing and other types of appraisal, and recommend necessary changes in curriculum, programs, and instruction as indicated by student performance data.

C. Comparability in Instruction

The District shall provide comparable educational opportunities for all students. Instruction in the core curriculum shall be in no way diminished when students receive supplementary services funded by special governmental programs. Services funded by

Instruction

Concepts and Roles

any categorical program shall supplement, not supplant, the District-provided core curriculum and any services which may be provided by other categorical programs.

Legal Reference: Education Code, Sections 51000-51007
Code of Regulations, Title 5, Sections 3940; 4424
United State Code, Title 20, Section 6321

Policy Adopted: 04/02/2019

Instruction

Class Assignment

The Board of Education believes students should be assigned to classes and/or grouped in a manner that provides the most effective learning environment for all students.

A. When assigning students to specific courses and classes, the Principal or designee may consider the following criteria as appropriate for the grade level and course:

1. Staff recommendation, including, but not limited to, the recommendations of teachers and counselors.

2. Skills and classroom management style of individual teachers.

3. Student skill level as indicated by multiple objective academic measures, such as student assessment results, grade point average, and grades in prerequisite courses.

4. Balance of high, medium, and low academic achievers.

5. Student interests, readiness, behavior, and motivation.

6. Student/teacher ratios and, if relevant, class size reduction considerations.

B. The Principal may accept from parents/guardians any information, which would be helpful in making placement decisions. However, parents/guardians who provide such information shall be informed that requests for a specific teacher shall be one of many factors which may be taken into account when determining his/her child's placement.

C. During the school year, the Principal or designee may make any adjustments in class placement, which he/she considers beneficial to the student or the educational program.

D. Additional Requirements for Grades 9-12

Except for a student enrolled in an alternative school, community day school, continuation high school, or opportunity school, or as otherwise specified below, no student enrolled in grades 9-12 shall be assigned:

1. To any course without educational content for more than one week in any semester, including any of the following situations: (Education Code 51228.1)

a. The student is sent home or released from campus before the conclusion of

the designated school day.

b. The student is assigned to a service, instructional work experience, or other course in which he/she is assigned to assist a certificated employee, but is not expected to complete curricular assignments, in a course the certificated employee is teaching during that period and where the ratio of certificated employees to students assigned to the course for curricular purposes is less than one to one.

c. The student is not assigned to any course for the relevant course period.

2. To a course that he/she has previously completed and received a grade determined by the District to be sufficient to satisfy minimum high school graduation requirements and the requirements and prerequisites for admission to California public postsecondary institutions, unless the course has been designed to be taken more than once because students are exposed to a new curriculum year to year and are therefore expected to derive educational value from taking the course again. (Education Code 51228.2)

An exception to item #1 or #2 above may be made only if all of the following conditions are satisfied: (Education Code 51228.1, 51228.2)

1. The student, or the student's parent/guardian if he/she is younger than age 18 years, has consented in writing to the assignment.

2. A school official has determined that the student will benefit from being assigned to the course period.

3. The principal or assistant principal has stated in a written document maintained at the school that, for the relevant school year, no students are assigned to those classes unless the school has obtained the student's or parent/guardian's consent and determined that the student will benefit from the assignment.

In addition, under no circumstances shall a student be assigned to a course period without educational content or a course he/she has already satisfactorily completed because there are insufficient curricular course offerings for the student to take during the relevant period of the school day. (Education Code 51228.1, 51228.2)

The above limitations on class assignments shall not affect the authority of the

Instruction

Class Assignment

Superintendent or designee to permit the enrollment of a student in a dual enrollment, independent study, evening high school program, or other class or course authorized by law. (Education Code 51228.1, 51228.2)

Any complaint that the District has not complied with the requirements in this section regarding assignments in grades 9-12 may be filed in accordance with the District's procedures in AR 1312.3 - Uniform Complaint Procedures. A complainant not satisfied with the District's decision may appeal the decision to the California Department of Education (CDE). If the District or the CDE finds merit in an appeal, the District shall provide a remedy to the affected student. (Education Code 51228.3; 5 CCR 4600-4687)

Legal Reference: Education Code, Sections 35020; 35160; 51224.7; 51228.1; 51228.2; 51228.3; 51704-51879.9
Code of Regulations, Title 5, Sections 4600-4687

Policy Adopted: 10/15/2002

Policy Amended: 04/02/2019

Instruction

Evaluation of the Instructional Program

The Board of Education recognizes that it is accountable to the students, parents/guardians, and community for the effectiveness of the District's educational program in meeting District goals for student learning. The Superintendent or designee shall conduct a continual evaluation of the curriculum and the instructional program in order to improve student achievement.

The Superintendent or designee shall provide the Board and the community with regular reports on student achievement. The reports shall include data for each District school and for each numerically significant student subgroup, as defined in Education Code 52052, including, but not limited to, school and subgroup performance on statewide achievement indicators and progress towards goals specified in the District's local control and accountability plan (LCAP).

In addition, the Superintendent or designee shall conduct an evaluation of any new instructional program implemented in the District and shall regularly assess District progress toward increasing student achievement in all subject areas taught in the District. The findings of such evaluations and assessments shall be reported to the Board.

Based on these reports, the Board shall take appropriate actions to maintain the effectiveness of programs and, as needed, to improve the quality of education that District students receive.

A. Annual Monitoring of Consolidated Application Programs

The Board and the Superintendent or designee shall annually determine whether the District's categorical programs funded through the state's consolidated application are effective in meeting the needs of the students they are intended to serve. As a basis for this evaluation, the Superintendent or designee shall recommend for Board approval the specific, measurable criteria that shall be used at each school and at the District level. These criteria may include, but are not necessarily limited to, the progress of all students participating in the program and of each numerically significant subgroup toward goals contained in the District's LCAP, the school's single plan for student achievement, and/or other applicable District or school plans.

B. Western Association of Schools and Colleges (WASC) Accreditation

1. The Board believes that accreditation by the Western Association of School and Colleges (WASC) can foster excellence and ongoing academic improvement in the District's schools. The results of the accreditation process also may demonstrate to parents/guardians and the community that the schools are meeting their goals and objectives and the WASC criteria for school effectiveness through a viable instructional program.

Instruction

Evaluation of the Instructional Program

2. The Superintendent or designee shall undertake procedures whereby the District's schools may achieve and maintain full WASC accreditation status.

   a. The schools shall conduct a self-study in accordance with WASC requirements.

   b. The schools will cooperate with the WASC committee during a site visit.

   c. The schools will develop and review action plans to increase the effectiveness of the instructional program for students.

3. The Superintendent or designee shall regularly report to the Board on the status of District schools and any WASC recommendations for school improvement.

4. Not later than 60 days after receiving the results of an inspection of a school by WASC or any other accrediting agency, the Superintendent or designee shall notify parents/guardians in writing of the inspection results and/or shall post the information on the District's or school's web site. (Education Code 35178.4)

5. If any District school loses its accreditation status: (Education Code 35178.4)

   a. The Board shall give official notice as a regularly scheduled Board meeting.

   a. The Superintendent or designee shall provide written notification to each parent/guardian of a student in the school that the school has lost its accreditation status, including the potential consequences of the loss of accreditation status.

   b. This notice shall also be posted on the District’s web site and the school’s web site.

Legal Reference: Education Code, Sections 33400 - 33407; 35178.4; 44662; 48985; 51041; 51226; 52052; 52060-52077; 62005.5; 64000 - 64001
Code of Regulations, Title 5, Sections 3930 - 3937; 3942
United States Code, Title 20, Section 6311

Instruction

Evaluation of the Instructional Program

Policy Adopted: 02/20/2001

Policy Amended: 10/15/2002; 02/02/2016; 04/02/2019

Instruction

School Day - Minimum Requirements

The Board of Education recognizes that it is occasionally necessary and desirable to shorten the school day. The Board of Education therefore authorizes the Superintendent to allow a minimum school day, providing the total number of instructional minutes meets requirements as stipulated in the Education Code. Three minimum days per semester are provided to accommodate final examination schedules at the senior high schools. One minimum day at the end of the first, third, and fourth quarters shall be provided for secondary faculties for completing grade reports. Three minimum days per school year at the elementary level shall be provided for departmental or grade level meetings, inservice programs, record keeping, or completing grade reports, within the individual schools, as determined by the Principal with consideration of staff needs and requests. At all levels, one minimum day is provided for the day of Back-to-School Night and one minimum day on the day of Open House Night. The requirements for such minimum day schedules follow:

A. Elementary School

1. Kindergarten: The minimum school day shall be not less than 60 minutes, inclusive of recesses.

2. Grades 1-3: The minimum school day shall be not less than 170 minutes, exclusive of recesses and noon intermissions.

3. Grades 4-6: The minimum school day shall be not less than 180 minutes, exclusive of recesses and noon intermissions.

B. Secondary Schools

1. Middle and senior high schools: The minimum school day shall be not less than 240 minutes, exclusive of "snack" and noon intermission. The time required for passing between classes is a part of the school day.

C. Special Classes - Elementary and Secondary

1. Special classes have the same minimum day as regular elementary and secondary classes listed above.

~~Instruction~~

~~School Day - Minimum Requirements~~

~~Legal Reference: Education Code, Sections 46111-46117; 46141-46147~~

~~Policy Adopted: 06/16/1959~~

~~Policy Amended: 10/02/1973; 07/02/1985; 12/06/1994; 10/15/2002; 11/16/2010~~

~~(Formerly BP 6122)~~

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 12

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED BY: Dr. Mary Mason, Executive Director, Elementary Education
Mr. Felix Melendez, Executive Director, Secondary Education

SUBJECT: **Acceptance of DonorsChoose Awards**

The Interim Superintendent recommends that the Board of Education accept funding from DonorsChoose to support projects submitted by Marshall Elementary School and Rosemont Middle School.

DonorsChoose is an organization that connects concerned individuals, called "Citizen Philanthropists," with classroom teachers, to provide funds or materials for class projects. Public school teachers create student project proposals and submit the one-page essay and list of resources needed. These concerned individuals fund the student projects of their choice, in whole or in part.

DonorsChoose purchases the student materials and ships items directly to the school, using a network of partnerships and vendors. Teachers are required to complete a feedback package, including documenting the project with photographs, which in turn are shared with the individual that funded the project.

The following projects were submitted and awarded by DonorsChoose:

Marshall Elementary School – Elizabeth Tamez, Teacher
Project: Technology and Science: Meeting Our Unique Needs!
This project was awarded an All-New Fire HD 8 Kids Edition Tablet, 8" HD Display, 32 GB with Blue Kid-Proof Case and Headphones with Microphone and Volume Control, valued at $239.60. The item will provide Ms. Tamez's K-3 Special Education students the ability to learn by using technology, while meeting their own unique needs. Most of the students in the class have challenges, which make it difficult for them to write with a pencil, cut with scissors or draw a picture with crayons due to limited motor skills. The Kindle Table provides access to a touchscreen, which will enable these students to access their learning while meeting their unique needs. Additionally, students who cannot read or have visual perceptual difficulties will be able to do research and watch videos so they

are not limited to a textbook they cannot read and make their learning experience even more powerful.

Rosemont Middle School – Mary Inglish, Teacher
Project: Chromebooks Needed for Classroom Research!
This project was awarded two HP 11.6" Chromebooks valued at $573. The items will be used daily in Ms. Inglish's eighth grade classroom to research and learn information in new and exciting ways. Students will have access to up-to-date information for research and other assignments.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 13

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

PREPARED BY: Dr. Cynthia M. Foley, Assistant Superintendent, Human Resources

SUBJECT: **Agreement with Pepperdine University**

The Interim Superintendent recommends that the Board of Education approve the attached Directed Teaching Agreement between Glendale Unified School District and Pepperdine University and that the Assistant Superintendent, Human Resources, be authorized to execute the agreement.

The agreement will commence on August 1, 2019 and terminates on July 31, 2024.

DIRECTED TEACHING AGREEMENT

This Agreement is made between Pepperdine University ("Pepperdine") on behalf of Pepperdine Teacher Preparation Programs and the hereinafter mentioned school district ("District"). It is the parties' intent that this agreement is a cooperative agreement for the benefit of the public and that entering into this agreement does not trigger any compliance or reporting obligation on the part of Pepperdine. This agreement does not in any way enlarge the University's obligations under federal or state law regulation.

RECITALSA. Pepperdine has established an approved program (the "Program") of directed teaching for training education students of the University;

B. Directed teaching experiences are a required and integral part of the Program;

C. Pepperdine desires the cooperation of **Glendale Unified School District** in the training of students through the directed teaching experiences, which will provide a benefit to the public; and

D. Pursuant to the provisions of Section 44320 of the California Education Code, the governing board of a District is authorized to enter into agreements with any university or college accredited by the State Board of Education as a teacher education institution, to provide teaching experience through directed teaching to students enrolled in teacher education curricula of such institution; and

E. Any such agreement may provide for the payment in money or services for the services rendered by the District in an amount not to exceed the actual cost to the District of the services rendered by the District.

Now, therefore, it is mutually agreed between the parties hereto as follows:

SPECIAL PROVISIONS

DATE: **February 1, 2018**

PARTIES: Pepperdine University and **Glendale Unified School District**

TERM: From August 1, 2019 to July 31, 2024.

CONTRACT SERVICES: Not to exceed three Clinical Experiences per year, per mentor.

RATE AND AMOUNT: $150 Master Teaching Stipend per student, per session of Clinical Observation of student by Master Teacher. $150 Master Teaching Stipend per student teacher, per session of directed mentoring for Clinical Experience.

METHOD OF PAYMENT: Check one.
_____Stipend is to be paid directly to the District.

XXXX_ Stipend is to be paid directly to the Master Teacher.

GENERAL TERMS

1. Directed Teaching

A. The District shall provide teaching experience through directed teaching in schools and classes of the District, not to exceed the number of directed teaching assignments. Such directed teaching shall be provided in such schools or classes of the District, and under the direct supervision and instruction of such employees of the District, as the District and Pepperdine through their duly authorized representatives may agree upon.

B. The District may, for good cause, refuse to accept for directed teaching any student of Pepperdine assigned to directed teaching in the District. In such event, Pepperdine shall terminate the assignment of such student to the directed teaching program in the District.

C. The term "directed teaching" as used herein and elsewhere in this Agreement means active participation in the duties and functions of classroom teaching under the direct supervision and instruction of employees of the District who hold valid clear teaching credentials issued by the California Commission on Teacher Credentialing authorizing them to serve as classroom teachers in the schools or classes in which the direct teaching is provided, and who have completed a minimum of three years successful teaching experience.

D. Pepperdine student teachers without emergency or substitute credentials may not be asked by the school districts to serve and be paid for substitute teaching. Such students are not regarded as properly certified and require full-time supervision. Those holding substitute or emergency credentials may substitute only for their master teacher when s/he is out ill; when it is determined by the principal that such substitution is in the best interest of the student teacher and the students in the classroom; only after the first four weeks of that student's first student teaching assignment; the student teacher is paid by the District; and the number of days is kept to a minimum.

E. Pepperdine will pay for the performance by the District of all services required to be performed by the District under this Agreement at the aforesaid rates for each session of part-time directed teaching or full-time directed teaching provided by the District pursuant to this Agreement.

F. The term "session of directed teaching" as used herein and elsewhere in this Agreement is considered to be a full day of directed teaching for five (5) days a week for a minimum of eight (8) weeks for elementary credential candidates (for this, the elementary credential candidates receives four (4) semester units of practice teaching credit) and six (6) periods a day for five (5) days a week for a minimum of eight (8) weeks for secondary credential candidates (for this, the secondary credential candidates receive four (4) semester units of practice teaching credit). The credential candidate must complete two (2) sessions for a minimum total of sixteen (16) weeks.

G. An assignment of a Pepperdine student to directed teaching in classes of schools of the District shall be for one (1), two (2), or three (3) sessions as mutually agreed between Pepperdine and the District.

H. An assignment of a Pepperdine student to directed teaching in the District shall be deemed to be effective for the purposes of this Agreement as of the date the student presents to the proper authorities of the District the assignment papers or other documents provided by Pepperdine affecting such assignment, but no earlier than the date of such assignment as shown on such card or other documents.

I. In the event the assignment of a Pepperdine student to directed teaching is terminated by Pepperdine for any reason after the student has been in directed teaching and has been at the assignment for a minimum of two weeks, the District shall receive payment for the assignment on account of such student as though there had been no termination of the assignment. Said payment not to exceed $150 per student per session of terminated assignment.

J. If applicable, within a reasonable time following the close of each session of Pepperdine, the District shall submit an invoice in triplicate, to Pepperdine for payment, at $150 per student, per term, for all directed teaching provided by the District under and in accordance with this Agreement during said session. This process may be altered in writing according to individual district procedures as to how the invoicing will proceed.

K. Notwithstanding any other provision of this Agreement, Pepperdine shall not be obligated by this Agreement to pay the District any amount in excess of the total sum.

L. In accordance with California Education Code Section 44320(b), each credential candidate, prior to assignment to District, must obtain at his or her sole expense a "Certificate of Clearance", which includes a complete Live Scan Service. The University will ensure that students receive a Certificate prior to beginning their assignment in the district.

M. In accordance with California Education Code Section 49406, each credential candidate prior to assignment to District must obtain at his or her sole expense an examination, by a licensed physician or surgeon within the past 60 days to determine that he or she is free of active tuberculosis, or provide a current certificate that shows s/he is free of communicable tuberculosis prior to beginning their assignment in the District.

1. <u>Minimum Insurance Requirements</u>

A. District. The District shall maintain insurance in full force and effect, at its sole expense, the following minimum insurance coverage or comparable program of self-insurance:

i. Commercial General Liability (Minimum Requirement):
$1,000,000 Combined Single Limit

ii. Coverage:

Premises/Operations
Liability Medical Payments
Liability
Personal Injury Liability

iii. The District shall maintain in full force and effect, at its sole expense, Workers' Compensation and Employers Liability Insurance in a form and amount covering District's full liability under the Workers' Compensation Insurance and Safety Act of the State of California as amended from time to time. Coverage:

1. Statutory limits per State of California

2. Employers Liability
   $1,000,000 Each Accident
   $1,000,000 Each Employee

District shall provide University with 30 days written notice before cancellation, or any reduction or material change in coverage.

B. University shall maintain insurance in full force and effect, at its sole expense:

i. Commercial General Liability (Minimum Requirement):
   $2,000,000 General Aggregate
   $1,000,000 Combined Single Limits

ii. Coverage:
   Premises/Operations Liability Medical
   Payments Liability Contractual Liability
   Personal Injury Liability
   Independent Contractors

iii. The University will maintain in full force and effect, at its sole expense Workers' Compensation and Employers Liability Insurance in a form and amount covering University's full liability under the Workers' Compensation Insurance and Safety Act of the State of California as amended from time to time. Coverage:

1. Statutory limits per State of California

2. Employers Liability
   $1,000,000 Each Accident
   $1,000,000 Each Employee

A certificate of general liability insurance with the District named as an additional insured shall be provided by Pepperdine University' Insurance and Risk Department to the District 30 days in advance of the commencement of this agreement.

The District will require 30 days written notice before cancellation, or any reduction or material change in coverage.

3. Indemnity

District shall defend, indemnify and hold Pepperdine, its officers, employees and agents harmless from and against any and all liability, loss, expense (including reasonable attorneys' fees), or claims for injury or damages arising out of the performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, attorneys' fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of the District, its officers, agents, or employees.

Pepperdine shall defend, indemnify and hold the District, its officers, employees and agents harmless from and against any and all liability, loss, expense (including reasonable attorneys' fees), or claims for injury or damages arising out of the performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, attorneys' fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of Pepperdine, its officers, agents or employees.

4. Miscellaneous

A. Termination. Either party may terminate this Agreement with or without cause by providing written notice to the other party. Termination will be effective at the end of the school year during which the notice is issued. The notice required under this paragraph shall be sent by registered mail.

B. Any notice required to be given pursuant to this Agreement shall be in writing and shall be served by personal service or first class mail. When served by first class mail, service shall be conclusively deemed effective three (3) days after deposit thereof in the United States mail, postage prepaid, addressed to the party to whom such notice is to be given as herein provided:

Notice to Pepperdine:
Pepperdine University
Graduate School of Education and Psychology
6100 Center Drive, 5th Floor
Los Angeles, CA 90045
ATTN: Teacher Preparation Program Director

Notice to District:
Dr. Cynthia M. Foley
Assistant Superintendent, Human Resources
223 N. Jackson St.
Glendale, CA 91206

C. District and Pepperdine agree that neither will unlawfully discriminate against any individual on the basis of age, sex, race, creed, color, religious belief, national origin, and disability, status as a disabled veteran, or veteran of the Vietnam era.

D. Neither party shall use the other's name or any corporate or business name which is reasonably likely to suggest that the two are related without first obtaining the written consent of the other party.

E. The Agreement constitutes the entire understanding between the parties with respect to the subject matter hereof and may be modified only by a writing signed by both parties.

F. The parties hereto shall not have either the power or the right to assign this Agreement or any part thereof to any person or party for any reason, and any attempt to do so shall be void and of no legal effect.

G. This Agreement shall be governed by and construed under the laws of the State of California, which shall be the forum for any lawsuit arising from or incident to this Agreement.

H. Should either party reasonably retain an attorney to enforce the terms of this Agreement, the prevailing party shall be entitled to recover reasonable attorney's fees and costs including fees and costs of corporate staff and counsel.

I. In the event that any provision of this Agreement shall be held void, voidable, or unenforceable, the remaining provisions of this Agreement shall remain in full force and effect in accordance with its terms disregarding such unenforceable or invalid provision.

J. Each party is an independent agent and shall not act as, or be an agent or employee of, the other party.

In witness thereof, the parties hereto have caused this Agreement to be signed by its duly authorized representative.

School District
Representative Cynthia M. Foley, Ed.D.

Print Name	Signature	Date

Dr. Reyna Garcia-Ramos,
Program Director

Print Name	Signature	Date

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 14

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBJECT: **Acceptance of Every Kid Counts College Savings Account Grant**

The Interim Superintendent recommends that the Board of Education accept the Every Kid Counts College Savings Grant award in the amount of $197,915.

In February 2019, Glendale Unified School District submitted an application for an Every Kid Counts (EKC) College Savings Program grant, administered through the California Student Aid Commission, in the amount of $300,000. The one-time funding is to be used to sponsor or administer programs that incentivize families with children to open and maintain college savings accounts. The programs must have been in operation or development on or before December 31, 2018. If approved, funding would be disbursed May 1, 2019 through June 30, 2021.

The goal of the grant is to provide qualifying entities with funds for the following purposes:

1. To award seed, matching, or incentive grants for individual family college savings accounts.
2. To do outreach to educate families about the existence of local college savings accounts.
3. To support an established evaluation consortium that monitors, collects data on, and provides analysis on short-term and long-term college savings program trends and the development of best practices.
4. To fund one-time administrative costs related to the Every Kid Counts College Savings Program.
5. Any combination of items 1-4 above.

The District has been notified that an award in the amount of $197,915 has been awarded. It is intended to expand on the pilot college savings plan program launched in the 2017-18 school year, where 100 families at two high poverty schools enrolled in ScholarShare 529 accounts through a donation from the Glendale Educational Foundation and matching funds from the State. Through this grant, it is anticipated to serve students in the 2019-20 and 2020-21 school years by targeting all first grade students to help families

who are socio-economically disadvantaged open college savings accounts for their children. In order to accomplish this outcome, funding would be used to:

- develop outreach events, materials and resources
- hire full-time clerical support
- provide seed money for individual student college savings plans up to $75.00 per student

Additionally, the District will reach out to local businesses and foundations, particularly those that are geared towards children and education, for ongoing donorship and financial support. Engaging activities would be provided so donors can see where their dollars are being spent.

GLENDALE UNIFIED SCHOOL DISTRICT

April 2, 2019

CONSENT CALENDAR NO. 15

TO: Board of Education

FROM: Dr. Kelly King, Interim Superintendent

SUBJECT: **Acceptance of Gifts**

The Interim Superintendent recommends that the following gifts to the District be accepted and that letters of appreciation be written to the donors:

a. The Saeva Family wish to donate to the District Disney activity kits for student incentives at Dunsmore Elementary School.

b. Benchmark Arts, Inc. wish to donate to the District a backdrop for student filming at Dunsmore Elementary School.

c. Parents and Community for Fremont School wish to donate to the District $2,000.00 to be used to pay for Newsela Pro License at Fremont Elementary School.

d. John C. Fremont PTA wish to donate to the District $193.27 to be used to purchase instructional materials and supplies for use at Fremont Elementary School.

e. Dr. Vahe Panossian, Huntington Orthopedics wishes to donate to the District various furniture items to be used as needed in the District.

f. Knapp, Petersen & Clarke wish to donate to the District through the Categorical Programs Department $2,000.00 to be used to support the GATE Scholastic Bowl.

g. Bill Gallimore and Bob Crocker wish to donate to the District through the Categorical Programs Department $250.00 to be used to support the Adelante Latinos event.

h. Crescenta Valley High School Administrators wish to donate to the District through the Categorical Programs Department $100.00 to be used to support the Adelante Latinos event.

i. Glendale High School Administrators wish to donate to the District through the Categorical Programs Department $100.00 to be used to support the Adelante Latinos event.

j. Guilloume Fine Art wish to donate to the District through the Categorical Programs Department four art books to be used to support the Adelante Latinos event.

k. Warner Bros. Consumer Products wish to donate to the District through the Categorical Programs Department a variety of products totaling $758.00 in value to be used to support the Adelante Latinos event.

l. Kiwanis Club of Jewel City Glendale CA Foundation wish to donate to the District through the Early Education and Extended Learning Program $2,000.00 to be used for supplies as needed for the ASES Field Day.

m. Capital Group Co. Charitable Foundation wishes to donate to the District through the Educational Services Department $668.00 to be used to support the Japanese FLAG Program at Dunsmore and Verdugo Woodlands Elementary Schools.

n. Glendale Educational Foundation wish to donate to the District through the Superintendent's Office $10,000.00 to be used to provide buses for the middle school after school sports program.

o. Mr. & Mrs. Najarian wish to donate to the District $1,000.00 to be used to purchase Chromebooks for use at Rosemont Middle School.