GLENDALE UNIFIED SCHOOL DISTRICT

Senior High School

January 13, 2009

Department**:** Science

Course Title: Earth Science 1AB

Course Number:

Grade Level: 9, 10, 11, 12

Semester Hours: 10 (2 semesters)

Approved Texts: Earth Science by Allison, DeGaetano, Pasachoff. (2007)
Austin, TX: Holt, Rinehart, and Winston.

Course Description: Earth Science is a college preparatory elective science course designed to meet the following criteria:

- Provide the student with a broad-based background and appreciation of their ever-changing planet and its place in the universe;
- Provide quantitative analysis and experimental tools to develop the student's scientific and critical thinking skills;
- Provide extensive preparation and comprehensive coordination between energy, mineralogy, meteorology, astronomy, physics and earth sciences; and
- Prepare the student for college courses and careers in the geosciences and astronomy.

The topics covered in this course are organized around the following general headings: Investigation and Experimentation, Earth's Place in the Universe, The Dynamic Earth Process, Energy in The Earth System, Biogeochemical Cycles, Structure and Composition of the Atmosphere, and California Geology.

This course will count toward the 10 units of physical science required for graduation and is being submitted for "g" elective credit, but does not meet the "d" requirement for admission to the University of California system.

COURSE CONTENT

A. Course Purpose

Course Goals and/or Major Student Outcomes:

1. Students will know and understand the Earth around them—the minerals, the geologic formations and changes, the atmosphere, the oceans, the weather, and the Geographical Formations. This knowledge will be adequate to matriculate into college courses.
2. Students will develop critical thinking, problem solving, and analysis skills necessary for successful performance in college courses.

3. Students will be able to test the validity of scientific research as well as the robustness of scientific models and will be able to organize their thinking and resolve the issues of their scientific inquiries.
4. Students will be able to coordinate the various disciplines of meteorology, physics, and mathematics to solve rigorous earth science problems.

B. Course Outline

Unit One—Investigation and Experimentation ***(Text and Supplemental Materials Units: Studying the Earth, Composition of the Earth, History of the Earth, The Dynamic Earth, Reshaping the Crust, Oceans, Atmospheric Forces and Space)***

CA: Content Standards, 2003, Grades 9-12, Investigation & Experimentation Item #1, a-n
Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other four strands, students should develop their own questions and perform investigations. Students will:

- Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
- Identify and communicate sources of unavoidable experimental error.
- Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.
- Formulate explanations by using logic and evidence.
- Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.
- Distinguish between hypothesis and theory as scientific terms.
- Recognize the usefulness and limitations of models and theories as scientific representations of reality.
- Read and interpret topographic and geologic maps.
- Analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem).
- Recognize the issues of statistical variability and the need for controlled tests.
- Recognize the cumulative nature of scientific evidence.
- Analyze situations and solve problems that require combining and applying concepts from more than one area of science.

- Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California.
- Know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e. g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets).

Essential Concepts Found in Major Assignments:

- Observation of time, length, mass, volume, and other physical properties.

- Recognize of the different types of models used by scientists.
- Design experiments to test a theory; become aware of famous theories and how they became accepted as scientific laws.
- Define scientific law and know the process by which theories become laws; become aware of scientific laws that have been disproved.
- Know the requirements of a good hypothesis.
- Understand the need for control groups in scientific experiments.
- Collect, generate, and graphically display data.
- Understand and use precision in measurement.
- Analyze and formulate conclusions from scientific experiments.
- Recognize error; computation of percent error, determine methods to diminish error.
- Experimentation and analysis of scientific data.
- Recognize issues of correlation and reliability in data samples.
- Define earth science and its derivatives.
- Know expected laboratory procedures and protocols.

Laboratory Exercises.

- Measurement Labs Understanding the Metric System (mass, length, volume, time, temperature).

Unit Two—Earth's Place in the Universe ***(Text and Supplemental Materials Units: Studying the Earth, History of the Earth and Space)***
CA: Content Standards, 2003, Grades 9-12, Items #1a-g, 2a-g

1. Astronomy and planetary exploration reveal the solar system's structure, scale, and change over time. As a basis for understanding this concept:

- Students know how the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system.

- Students know the evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.
- Students know the evidence from geological studies of Earth and other planets suggest that the early Earth was very different from Earth today.
- Students know the evidence indicating that the planets are much closer to Earth than the stars are.
- Students know the Sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium.
- Students know the evidence for the dramatic effects that asteroid impacts have had in shaping the surface of planets and their moons and in mass extinctions of life on Earth.
- Students know the evidence of the existence of planets orbiting other stars.

2. Earth-based and space-based astronomy reveal the structure, scale, and changes in stars, galaxies, and the universe over time. As a basis for understanding this concept:

- Students know the solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light years.
- Students know galaxies are made of billions of stars and comprise most of the visible mass of the universe.

- Students know the evidence indicating that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars.
- Students know that stars differ in their life cycles and that visual, radio, and X-ray telescopes may be used to collect data that reveal those differences.
- Students know accelerators boost subatomic particles to energy levels that simulate conditions in the stars and in the early history of the universe before stars formed.
- Students know the evidence indicating that the color, brightness, and evolution of a star are determined by a balance between gravitational collapse and nuclear fusion.
- Students know how the red-shift from distant galaxies and the cosmic background radiation provide evidence for the "big bang" model that suggests that the universe has been expanding for 10 to 20 billion years.

Essential Concepts Found in Major Assignments:

- Understand formation, features, and astronomy and know examples of the following astronomical bodies: planets, moons, asteroids, meteors, gas planets, comets and satellites.
- Understand the similarities and differences between the terrestrial and jovian planets.
- Understand black holes; be aware of the contributions of Stephen Hawkings.
- Acquire a working knowledge of the tools of astronomy (spectral analysis, sunspot mapping, reflecting and refracting telescopes, navigation, satellites).

- Acquire a working knowledge of stellar evolution and understanding the HR diagram.
- Understand fusion, fission, the formation of elements.
- Understand the use of different types of telescopes and satellites and their collection of data in helping us understand the universe.
- Understand the structure of the Milky Way Galaxy.
- Understand the pros and cons of the big bang theory.
- Know the principle constellations and the myths of astrology and perspective of modern astronomy.
- Know the solar events (solar flares, solar wind, dark matter, corona, eclipse).
- Understand the theoretical basis and acceleration equivalent to gravity, planets in orbit, and cosmological models within the Earth's system.

Laboratory Exercises:

- Use T.I.E., "Telescopes in Education" and connect to the Wilson Observatory's 14" and 24" telescopes monthly via the internet to observe planets and stars.
- Read literature pertaining to and perform amateur astronomy.
- Field Trip to Glendale Community College Planetarium.
- Construct and read a sun dial.
- Construct an instrument to determine Local Noon time and find the sun's altitude at that time and the latitude of the experiment.
- Use the HR diagram to determine what kind of star our sun is.
- Use a star map to locate constellations in the sky.
- Make a solar system model.
- Use a spectrograph to analyze sunlight.
- Demonstrate equinox effects and relate to prehistoric perspectives.
- Prepare Power Point Presentations on each of the planets.

- Prepare Power Point Presentations on the different missions we have sent to outer space and what we have learned.

Unit Three—Dynamic Earth Process ***(Text Units: The Dynamic Earth and Composition of the Earth)***

CA: Content Standards, 2003, Grades 9-12, Earth Science Item #3 a-f,

1. Plate tectonics operating over geologic time have changed the patterns of land, sea, and mountains on Earth's surface. As the basis for understanding this concept:

- Students know features of the ocean floor (magnetic patterns, age, and sea-floor topography) provide evidence of plate tectonics.
- Students know the principal structures that form at the three different kinds of plate boundaries.

- Students know how to explain the properties of rocks based on the physical and chemical conditions in which they formed, including plate tectonic processes.
- Students know why and how earthquakes occur and the scales used to measure their intensity and magnitude.
- Students know there are two kinds of volcanoes: one kind with violent eruptions producing steep slopes and the other kind with voluminous lava flows producing gentle slopes.

Essential Concepts Found in Major Assignments:

- Read earthquake maps; make rough predictions based upon geologic forces, plate tectonics, and history.
- Know the use of a seismograph.
- Know the history of a series of volcanic eruptions, the geologic structure of a volcano and the volcanoes in the U.S.
- Know the theory of Pangea and the dispersion of continents and how this theory explains the current land masses and their positions.
- Know a map of the Earth's principle plate tectonics and the role of the mid-oceanic ridge and subduction in the geologic cycles.
- Understand the influence of mid-oceanic ridges, sea floor spreading, the presence of hydrothermal vents, the abyss on the oceans.
- Understand earthquakes (slip faults, thrust faults, San Andreas fault, earthquake prediction, Richter scale); anticipate large in earthquakes in California.
- Understand the ring of fire, its location, and its role in volcanism and earthquakes.
- Know the components of the Earth and understand its application to mining and mineral resources.
- Understand the rock cycle.
- Know the classes of minerals.
- Know the classes of metal as applicable to the field of Metallurgy.
- Early world use of natural elements (Wood, Metals, Brick, etc.).
- Classify minerals according to crystalline structure (the crystal systems, mineralogical examples and cleavage).
- Know the classes of soil; classify soil samples; understand the process of soil formation and erosion.
- Recognize the main types of geologic formations; analyze an area according to its geology
- Know earth's geographical regions and features.

- Read and interpret geologic and topographic maps.

Laboratory Exercises:

- Students will be able to identify common minerals and rocks using the schools' mineral and rock collections.

- Students will observe several models of convection to connect the idea of mantle convection to plate tectonics.
- Students will use earthquake history data to plot earthquakes on a world map and compare to plate boundaries.
- Students will plot the epicenter of earthquakes using the time difference between p, s and l waves.
- Students will build models of different types of volcanoes and create topographic maps using the models.
- Students will develop home preparedness kits and create a plan for earthquake proofing their homes.
- Students complete the BOSS (Building Oscillation Seismic Simulation) model to understand how resonance will affect buildings of various heights in an earthquake.
- Students will use Moh's Scale of Hardness to classify unknown minerals.
- Students will use major earthquake events to understand how communities can prepare for earthquakes.
- Field Trips to local geological areas.

Unit Four—Energy In The Earth System ***(Test Units: Composition of the Earth, Atmospheric Forces, Oceans and Space)***
CA: Content Standards, 2003,Grades 9-12, Items #4a-d, #5a-g, #6a-d

1. Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. As a basis for understanding this concept:

- Students know the relative amount of incoming solar energy compared with Earth's internal energy and the energy used by society.
- Students know the fate of incoming solar radiation in terms of reflection, absorption, and photosynthesis.
- Students know the different atmospheric gases that absorb the Earth's thermal radiation and the mechanism and significance of the greenhouse effect.
- Students know the differing greenhouse conditions on Earth, Mars, and Venus; the origins of those conditions; and the climate consequences of each.

2. Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. As a basis for understanding this concept:

- Students know how differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat.
- Students know the relationship between the rotation of Earth and the circular motions of ocean currents and air in pressure centers.
- Students know the origin and effects of temperature inversions.

- Students know properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms.
- Students know rain forests and deserts on Earth are distributed in bands at specific latitudes.
- Students know the interaction of wind patterns, ocean currents, and mountain ranges results in the global pattern of latitudinal bands of rain forests and deserts.
- Students know features of the ENSO (El Nino southern oscillation) cycle in terms of sea-surface and air temperature variations across the Pacific and some climatic results of this cycle.

3. Climate is the long-term average of a region's weather and depends on many factors. As a basis for understanding this concept:

- Students know weather (in the short run) and climate (in the long run) involve the transfer of energy into and out of the atmosphere.
- Students know the effects on climate of latitude, elevation, topography, and proximity to large bodies of water and cold or warm ocean currents.
- Students know how Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition, and other factors, such as solar radiation and plate movement.
- Students know how computer models are used to predict the effects of the increase in greenhouse gases on climate for the planet as a whole and for specific regions.

Essential Concepts Found in Major Assignments:

- Know the concept of thermal energy as opposed to heat and temperature.
- Know the properties of infrared, ultraviolet, and visible light, and other types of electromagnetic spectrum.
- Understand the contributions of solar wind to aurora as mediated by the magnetosphere of the Earth, electromagnetic storms, sunspots, etc.
- Understand the 3Cell Model of global wind circulation patterns.
- Understand the Coriolis affect and its impact on atmospheric wind patterns and ocean currents.
- Know how the differential heating of the Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat.
- Understand the Five Principal Climate Zones of the Earth and how they are classified.
- Understand how Earth’s climate has changed over time as shown by the Greenland Ice Core Project.
- Understand the influence of ocean currents on global weather patterns and marine life.
- Understand the refraction of light in sunsets and mirages.
- Understand the radiation balance created by absorption, scattering, reflection and re-emission of energy.

- Understand the influence of mid-oceanic ridges, sea floor spreading, the presence of hydrothermal vents and the abyss on the oceans.
- Understand the different atmospheric gases and how they impact the greenhouse effect.

Laboratory Exercises:

- Weather prediction & instruments of the weather station.
- Use computer to access school and area weather data.
- NOAA weather based activities on the Internet.
- Ocean Currents Lab - to study the affect of temperature and salinity on ocean currents.
- Create a biosphere illustrating greenhouse conditions.
- Coriolis Lab.
- Energy model addressing energy crisis issues in California.
- Weather forecasting for school paper.
- Field trip to local power plant.
- Construct a solar generator to cook a hot dog.
- Graphic analysis of reflection, refraction, and polarization.
- Experiment: Investigating the Warming of the Earth by Radiant Energy.

Unit Five—Biogeochemical Cycles ***(Text Units: Composition of the Earth, Oceans, Atmospheric Forces and Space)***
CA: Content Standards, 2003, Grades 9-12, Items #7a-d

1. Each element on Earth moves among reservoirs, which exist in the solid earth, in oceans, in the atmosphere, and within and among organisms as part of biogeochemical cycles. As a basis for understanding this concept:

- Students know the carbon cycle of photosynthesis and respiration and the nitrogen cycle.
- Students know the global carbon cycle: the different physical and chemical forms of carbon in the atmosphere, oceans, biomass, fossil fuels, and the movement of carbon among these reservoirs.
- Students know the movement of matter among reservoirs is driven by Earth's internal and external sources of energy.
- Students know the relative residence times and flow characteristics of carbon and out of its different reservoirs.

Essential Concepts Found in Major Assignments:

- Understand the laws of thermodynamics and that matter is always conserved.
- Understand the carbon cycle and its relation to sedimentary rocks.
- Understand the carbon cycle and its part in photosynthesis and respiration.

- Understand the nitrogen cycle and how the atmosphere of the earth has changed over the last 4 billion years.
- Understand the importance of nitrogen fixation on the growth of living organisms.
- Understand the earth is a system containing essentially a fixed amount of each stable chemical atom or element and each element can exist in several different chemical reservoirs. Each element on earth moves among reservoirs in the solid earth, oceans, atmosphere, and organisms as part of geochemical cycles.
- Understand economic problems and solutions caused by the depletion of oil, coal, mineral reserves.
- Understand the Sun is the major external source of energy and the two primary sources of internal energy are the decay of radioactive isotopes and the gravitational energy from Earth's original formation.

- Understand the importance of conservation of natural resources through crop rotation, reforestation, erosion control, and soil reclamation.

Laboratory Exercises:

- Construction of a sealed biosphere in a bottle.
- Plant a garden in a planter on campus.
- Develop a presentation that covers the difficulties and costs involved with reducing carbon dioxide emissions.
- Create a respiration/photosynthesis system using plants and small animals.
- Create a precipitation machine in a refrigerator.
- Students will observe several models of convection to connect the idea of mantle convection to plate tectonics.
- Using ecosystem posters students create a flow chart that traces a possible path (or paths) of a specific atom (e.g., carbon, nitrogen) in an ecosystem and possible links between ecosystems.

Unit 6: Structure and Composition of The Atmosphere ***(Text Units: Atmospheric Forces and Space)***

CA: Content Standards, 2003, Grades 9-12, Items #8a-c

1. Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life. As a basis for understanding this concept:

- Students know the thermal structure and chemical composition of the atmosphere.
- Students know how the composition of Earth's atmosphere has evolved over geologic time and know the effect of out gassing, the variations of carbon dioxide concentration, and the origin of atmospheric oxygen.
- Students know the location of the ozone layer in the upper atmosphere, its role in absorbing ultraviolet radiation, and the way in which this layer varies both naturally and in response to human activities.

Essential Concepts Found in Major Assignments:

- Understand why the amount of solar radiation varies for different latitudes.
- Understand Earth's early atmosphere and the geologic reasons for its change.
- Be aware of the effect of photosynthesis on Earth's early atmosphere.
- Understand the role of volcanic gases in the formation and cycling of Earth's atmosphere.
- Understand how the atmosphere affects incoming solar radiation.
- Understand how atmospheric temperature varies with altitude.
- Be aware of how pollutants are placed in the atmosphere and their impact.
- Understand how acid rain is formed and its impact on health, corrosion of metal and rock and vegetation.
- Develop an understanding of how the ozone layer was formed and its function.
- Be aware of the layers of the Earth's atmosphere and their temperature and composition.

Laboratory Exercises:

- Use data from tables to draw graphs, interpret and understand how CFC's damage the ozone.
- Solar Radiation and Latitude lab - the affect of Atmospheric heating.

- Understand how a barometer works.
- How do soil and water compare in their abilities to absorb and release heat – affect on air movement.
- How do the processes change when water changes its state.
- Use data from tables to draw a chart of the atmosphere's temperature change as elevation increases.

Unit Seven: California Geology ***(Text Units: Composition of the Earth, The Dynamic Earth and Reshaping the Crust)***

CA: Content Standards, 2003, Grades 9-12, Items #9a-d

1. The geology of California underlies the state's wealth of natural resources as well as its natural hazards. As a basis for understanding this concept:

- Students know the resources of major economic importance in California and their relation to California's geology.
- Students know the principal natural hazards in different California regions and the geologic basis of those hazards.
- Students know the importance of water to society, the origins of California's fresh water, and the relationship between supply and need.
- Students know how to analyze published geologic hazard maps of California and know how to use the map's information to identify evidence of geologic events of the past and predict geologic changes in the future.

Essential Concepts Found in Major Assignments:

- Understand mineral abundance and distribution.
- Understand how the California Department of Conservation's mission of providing information and advice to protect life and property from natural hazards and to promote a better understanding of California's diverse geologic environment is important.
- Understand how California's remarkable geology is the result of volcanic and tectonic activity.
- Understand the problems of mining and its environmental impact.
- Be aware of California's diverse non-fuel mineral resources.
- Study the role of aqueducts, hydroelectric power and water supply .
- Be aware of naturally occurring mineral hazards (asbestos and mercury) in California.
- Be aware of the California water project and the influence of aqueducts on the total environment and lifestyle in California.
- Understand the issues of civil defense and preparedness for natural disasters and seismic activity in California.
- Understand the foundation requirements of buildings (coding and testing, compaction, water table, liquefaction, erosion and examples in Southern California).
- Understand landslides, erosion, sedimentation, and other geologic hazards and how they relate to development.

Laboratory Exercises:

- Field Trip to Los Angeles Department of Water and Power.
- Field Trip to Aqueduct.
- Field Trip to Cal Tech Seismic Laboratory.

- Create geological hazard map of California.
- Using data from USGS develop a plan for conserving California's natural resources.
- Collect and identify locally occurring minerals.

C. INSTRUCTIONAL METHODS AND/OR STRATEGIES

Class instruction will include but not be limited to the following techniques: lecture, lab, discussion, cooperative learning groups, projects, field trips, graphic materials, AV materials, computer mediated material, library research, internet research, oral reports, lab reports and presentations, seminar groups, term papers, biographies, written reports, Socratic questioning, drill, review questions, study guides, concept maps, graphic organizers, debate, guest speakers, internet chat rooms, use of scientific instrumentation.

D. ASSESSMENTS AND/OR TOOLS

Assessment for this course will include but not be limited to:

- Unit and final exams
- Quizzes
- Teacher evaluations of work
- Projects
- Participation
- Standardized tests
- Presentations
- Lab techniques
- Self and peer evaluation
- Lab write-ups
- Research papers and biographies

Each student will also develop a portfolio and a notebook of general principles and abstracts of reading done.

Assessment criteria:

Exams and quizzes will be evaluated according to a conventional department approved percentage scale. Students must maintain at least an average of a C grade (at least 70%) to be considered proficient in the subject. Proficient students must be conversant in the subject. Proficient students must thoroughly complete lab procedures and corresponding lab reports; they must complete a notebook, and a research paper all of which will be evaluated according to a rubric. Completion of homework and reading assignments shall be evaluated on a numerical scale basis. All other work will be evaluated on an objective basis based on articulated and communicated criteria.

GLENDALE HIGH SCHOOL
EARTH SCIENCE A-G COURSE SUBMISSION

1. SCHOOL INFORMATION

School: Glendale High School
District: Glendale Unified School District
City: Glendale

School / District Web Site: www.glendalehigh.com/www.gusd.net

School Course List Contact:

Name: Monica Makiewicz
Title/Position: Associate Principal
Phone: (818) 242-3161 Ext.: 1602
E-mail: mmakiewicz@gusd.net

Teacher Contact:

Name: Don Shoemaker
Title/Position: Science Department Chair
Phone: (818) 242-3161 Ext.: 1493
E-mail: dshoemaker@gusd.net

2. PREVIOUSLY APPROVED COURSES

Complete outlines are not needed for courses that were previously approved by UC. Was this course previously approved? ___Yes X No

If yes, indicate category that applies:

A course reinstated after removal within 3 years.
Year removed from list? _____
Same course title? ___Yes ___No
If no, previous course title? _____

___An identical course approved at another school in same district.
Which school? _____
Same course title? ___Yes ___No
If no, course title at other school? _____

___Approved International Baccalaureate (IB) course

___Approved CDE Agricultural Education course

___Approved P.A.S.S./Cyber High course

___Approved ROP/C course. Name of ROP/C? _____

___Approved A.V.I.D. course

___Approved C.A.R.T. course

___Approved Project Lead the Way course

___CSU Expository Reading and Writing course

___Other. Explain: _____

___Advanced Placement Course
If Advanced Placement, has it been authorized by the College Board through the AP Audit process?
___Yes ___No If not, please explain why._____

Is this course a resubmission?
___Yes X No
If yes, date(s) of previous submission? _____
Title of previous submission? _____

Is this an Internet-based course?
___Yes X No
If "Yes", who is the provider?
___PASS/Cyber High ___Other_____

Is this course modeled after an UC-approved course from another school outside your district?
X Yes ___No
If yes, which school(s)? Malibu High School, Sun Valley Charter High School, Long Beach High School

Course title at other school: Earth Science

Is this course classified as a Career Technical Education? Yes ____ No X
If Yes:
Name of Industry Sector _____
Name of Career Pathway_____

3. COURSE DESCRIPTION

Course Title: Earth Science

Transcript Title(s) / Abbreviation(s): Earth Science 1A, Earth Science 1B

Transcript Course Code(s) / Number(s): _____

Grade Level(s) for which this course is designed:
X 9 X 10 X 11 X 12

Unit Value:
__0.5 (half year or semester equivalent)
X 1.0 (one year equivalent)
__Other: _____

4. CATALOG DESCRIPTION

Brief Course Description:

Earth Science is a college preparatory elective science course designed to meet the following criteria:

1. Provide the student with a broad-based background and appreciation of their ever-changing planet and its place in the universe;
2. Provide quantitative analysis and experimental tools to develop the student's scientific and critical thinking skills;
3. Provide extensive preparation and comprehensive coordination between energy, mineralogy, meteorology, astronomy, physics and earth sciences; and
4. Prepare the student for college courses and careers in the geosciences and astronomy.

The topics covered in this course are organized around the following general headings: Investigation and Experimentation, Earth's Place in the Universe, The Dynamic Earth Process, Energy in The Earth System, Biogeochemical Cycles, Structure and Composition of the Atmosphere, and California Geology.

Pre-Requisites

None	___ Required ___ Recommended

Co-Requisites

Algebra 1	X__ Required ___ Recommended

5. OPTIONAL BACKGROUND INFORMATION

Context for Course (optional):

Our school provides Biology, AP Biology, Chemistry, AP Chemistry, Physics, AP Physics, and Physiology. We would like to add an additional science course addressing the Earth and Astronomical Sciences, which allows students to study a rigorous science

curriculum that academically prepares them for further studies in the field of science.

History of Course Development (optional):

The Science Department, administration, and the district science committee have been extensively involved in the development of this course. This course has been aligned to the current California standards for Earth Science and provides students with an additional science elective that incorporates laboratory-based opportunities. This course will allow us to fulfill a new need in our curriculum where all areas of science are available to all students.

6. TEXTS AND SUPPLEMENTAL INSTRUCTIONAL MATERIALS:

Textbook(s):

Adopted: Allison, DeGaetano, Pasachoff. (2007). *Earth Science*. Austin, TX: Holt, Rinehart, and Winston.

Usage:

X Primary Text __Supplementary or Secondary Text

X Read in entirety or near entirety __Excerpts (approximate number of pages_____)

Supplemental Instructional Materials (please describe):

- Allison, DeGaetano, Pasachoff. *Earth Science* Supplemental Materials: *Study Guide, Directed Reading Workbook, Long Term Projects, Skills Workshop*, and *Laboratory Manage.* Austin, TX: Holt, Rinehart, and Winston.
- Website, tutorials, and internet resources.
- Scientific journals and periodicals
- Library resources.

7. Please indicate the subject and discipline proposed for this course.

Seeking "Honors" Distinction?
___Yes X No

8. If Not Seeking Honors Distinction:

__ a-History/Social Science
__ b-English
__ c-Mathematics
__ d-Laboratory Science
__ e-Language Other Than English
__ f-Visual and Performing Arts
__ g-College Prep Elective – History/Social Science
__ g-College Prep Elective – English
__ g-College Prep Elective – Mathematics
X g-College Prep Elective – Science – *Physical Science*
__ g-College Prep Elective – Visual and Performing Arts
__ g-College Prep Elective – Interdisciplinary
__ g-College Prep Elective – Other

9. If Seeking Honors Distinction:
__ a-History/Social Science Honors
__ b-English Honors
__ c-Mathematics Honors
__ d-Laboratory Science Honors
__ e-Language Other Than English Honors
__ f-Visual and Performing Arts Honors