Curriculum Guide & Course Catalog

2024-2025

Dear Sentinel Community,

We are thrilled to share our 2024-2025 Curriculum Guide & Course Catalog, highlighting an innovative curriculum designed in concert with academic leaders, college/university input, and feedback from industry professionals.

With Sentinels hailing from across the State of Alabama, our approach to education is deeply rooted in best practices that redefine the metrics of achievement, centering our efforts on learning. At our very core, we believe that all students can achieve at high levels, and our educators are responsible to ensure that happens.

As you read through our curriculum and academic policies, we invite you to take a careful glimpse into the Sentinel-Standard and how we distinguish ourselves through a curriculum that takes into account the diverse needs of our students, the growing needs of industry, and the expectations post-secondary institutions have of incoming students.

For any questions regarding this guide, please contact Dr. Rosemary Hodges, Dean of Teacher & Student Learning by email at rosemary.hodges@ascte.org

Regards,

Matt Massey,

President

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2024-25 Term Schedule

Fall Term	Winter Term	Spring Term
Aug 11 - Nov 7	Nov 12 - Feb 21	Feb 24 - May 23
Fall Midterm Progress Report Oct 9	Winter Midterm Progress Report Jan 15	Spring Midterm Progress Report April 16
Fall Report Card Nov 13	Winter Report Card Feb 26	Spring Report Card May 30

ASCTE Sample Daily Schedule

Period	Time	Monday/Tuesday	Wednesday/Thursday
1	8:15 - 9:15	Math	Cyber
2	9:20 - 10:20	Engineering	
3	10:25 - 11:25	Language	Social Science
4	11:30 - 12:50	Lunch & Enrichment	
5	12:55 - 1:55	Wellness/Ethics	Field Exp/WIN
6	2:00 - 3:00	Science	
Club	3:00 - 4:00	Clubs	

Period	Time	Friday
1	8:15 - 9:10	Math
2	9:15 - 10:10	Social Science
3	10:15 - 11:10	Language
4	11:15 - 12:10	Cyber
5	12:15 - 1:00	Lunch & Learn

Four Year Plan

		FRESHMAN YEAR			SOPHOMORE YEAR			JUNIOR YEAR			SENIOR YEAR	
		Fall Term Aug - Oct	Winter Term Nov - Feb	Spring Term Mar - May	Fall Term Aug - Oct	Winter Term Nov - Feb	Spring Term Mar - May	Fall Term Aug - Oct	Winter Term Nov - Feb	Spring Term Mar - May	Semester 1 Aug - Dec	Semester 2 Jan - May
Core	Math	MA 101- Mathematics for Engineers or AP Statistics		MA 201- Pre-Calculus		MA 301 - Advanced Math Trigonometry		MA 402 - Calculus			Internship	Internship
	Science	SCI 101- Physics		SCI 201- Chemistry		SCI 301- Biotechnology		SCI 402 - Physics with Calculus				
	Social Science	SS 101- History of Engineering		SS 201- History of Cryptology		SS 301- Cyber Economics & Government		SS 402 - Evolution of Social Engineering				
	Language	LANG 101- Foundations of English		LANG 201- Technical & Analytical Writing		LANG 301- AP Language & Composition		LANG 402 - Seminar				
	Cyber	CYB 101- Intro to Cyber & AP CS Principles		CYB 201 - CyberSecurity Technical Principles		CYB 301 - Computer Network Security		CYB 402 - Special Topics				
	Engineering	ENGR 101- Foundations		ENGR 201- Applications		ENGR 301- Systems		ENGR 402 - Special Topics				
Other	Ethics	Ethics 101		Ethics 201		Electives					Capstone	Elective
	Wellness	Wellness 101		Wellness 201								
	Field Exper	Field Experience 1 - In-House Visits			Field Experience 2 - On Site Industry Visits			Field Experience 3 - Mentorship				
	WIN	WIN "Whatever I Need"			WIN "Whatever I Need"			WIN "Whatever I Need"			Elective	
	Enrichment	Enrichment			Enrichment			Enrichment				

Incoming Sophomore Three Year Plan

		SOPHOMORE YEAR			JUNIOR YEAR			SENIOR YEAR	
		Fall Term Aug - Oct	Winter Term Nov - Feb	Spring Term Mar - May	Fall Term Aug - Oct	Winter Term Nov - Feb	Spring Term Mar - May	Semester 1 Aug - Dec	Semester 2 Jan - May
Core	Math	MA 101- Mathematics for Engineers or AP Statistics		MA 201- Pre-Calculus		MA 301 Advanced Math Trig		MA 401- Calculus	Internship
	Science	SCI 101- Physics		SCI 201- Chemistry		SCI 301- Biotechnology		SCI 401- Physics with Calculus	
	Social Science	SS 101- History of Engineering		SS 201- History of Cryptology		SS 301- Cyber Econ & Gov		SS 401- Evolution of Social Engineering	
	Language	LANG 201- Technical & Analytical Writing		LANG 301- AP Language & Comp		LANG 401- Seminar		CAPSTONE	
	Cyber	CYB 101- Intro to Cyber & AP CS Principles		CYB 201 - CyberSecurity Technical Principles		CYB 301 - Computer Network Security		CYB 401- Special Topics	
	Engineering	ENGR 101- Foundations		ENGR 201- Applications		ENGR 301- Systems		ENGR 401- Special Topics	
Other	Ethics	Ethics 101		Ethics 201		Electives			Elective
	Wellness	Wellness 101		Wellness 201					
	Field Exper	Field Experience 1 - In house visitors			Field Experience 2 - On-Site Industry Visits			Field Experience 3 - Mentorship	
	WIN	WIN "Whatever I Need"			WIN "Whatever I Need"			WIN "Whatever I Need"	
	Enrichment	Enrichment			Enrichment			Enrichment	

ASCTE EVALUATION & GRADING CATEGORIES

Grade		Points	Grading Descriptions
Mastery	M	4.5	The student demonstrates exemplary performance of the identified learning target within the specified timeframe.
Proficient	P	3.5	The student demonstrates sufficient performance of the identified learning target with minimal guidance.
Emerging	E	2.5	The student demonstrates a limited understanding of the identified learning target and requires steady guidance to perform the skill successfully.
Beginning	B	1.0	The student demonstrates little understanding of the identified learning target and is unable to perform the skill successfully.
Insufficient Evidence	I	0	The student provides no evidence of understanding the identified learning target.

- **Individual Assignments:** Each assignment/assessment will be assessed using these categories.
- **Essential Learning Targets (ELT):** Students will be evaluated on each ELT using these categories.
- **Course Averages:** The course grade will be calculated as the mean of Grade Points associated with each ELT.
- **Term GPA:** The term GPA will be calculated as the mean of all Course Averages.

In order to be properly prepared for post-secondary education and employment, ASCTE students will be exposed to and encouraged to adhere to ASCTE's five professional dispositions listed below.

- *Commitment to Learning*
- *Effective Communication*
- *Respect*
- *Diversity*
- *Willingness*

To reinforce the importance of these dispositions, students will receive marks based on the evidence of these behaviors as displayed in their classroom habits.

Work Ethic Rubric

Work ethic scores represent student actions and inactions demonstrated in the learning process.

Score	Explanation
3	The student **consistently** • completes and submits work on time • demonstrates determination in overcoming obstacles • uses communication tools in a timely and consistent manner • demonstrates leadership abilities and successfully works independently and with peers
2	The student **mostly** • completes and submits work on time • demonstrates determination in overcoming obstacles • uses communication tools in a timely and consistent manner • demonstrates leadership abilities and successfully works independently and with peers
1	The student **occasionally** • completes and submits work on time • demonstrates determination in overcoming obstacles • uses communication tools in a timely and consistent manner • demonstrates leadership abilities and successfully works independently and with peers

The following are general examples as to how a teacher may assign a score. Teacher discretion will be applied and teachers will communicate specific expectations to their students.

Examples of how to score a 3	Examples of how to score a 2	Examples of how to score a 1
- Student leads the engagement in the classroom - Student is rarely driven to distraction by electronics (phone/AirPods/computer games, etc.) - Assignments are consistently submitted on time	- Students is engaged in the classroom - Student is occasionally driven to distraction by electronics (phone/AirPods/computer games, etc.) - Assignments are mostly submitted on time	- Student is rarely engaged in the classroom and has to frequently be redirected - Student is repeatedly driven to distraction by electronics (phone/AirPods/computer games, etc.) - Assignments are rarely submitted on time

Attitude Rubric

Attitude scores represent student demeanor demonstrated in the learning process.

Score	Explanation
3	The student **consistently** • Respectfully communicates thoughts, ideas, and actions • Supports diversity through applying awareness of cultural differences to support positive interactions with others • Upholds an attitude of willingness in all aspects of the classroom
2	The student **mostly** • Respectfully communicates thoughts, ideas, and actions • Supports diversity through applying awareness of cultural differences to support positive interactions with others • Upholds an attitude of willingness in all aspects of the classroom
1	The student **occasionally** • Respectfully communicates thoughts, ideas, and actions • Supports diversity through applying awareness of cultural differences to support positive interactions with others • Upholds an attitude of willingness in all aspects of the classroom

The following are general examples as to how a teacher may assign a score. Teacher discretion will be applied and teachers will communicate specific expectations to their students.

Examples of how to score a 3	Examples of how to score a 2	Examples of how to score a 1
- Student always uses comments and body language that illustrate an attitude of respect and encouragement even with those of differing views - Student rarely disrupts/interrupts classroom instruction - Student rarely whines, complains or uses inappropriate body language	- Student mostly uses comments and body language that illustrate an attitude of respect and consideration even with those of differing views - On occasion, student disrupts/interrupts classroom instruction - Student occasionally whines, complains or uses inappropriate body language	- Student rarely uses comments and body language that illustrate an attitude of respect and consideration especially with those of differing views - Student repeatedly disrupts/interrupts classroom instruction - Student frequently whines, complains or uses inappropriate body language

CREDITS EARNED AND ATTAINMENT

REQUIRED CREDITS for Advanced Diploma

Core Subjects	Credits	Specialty Subjects	Credits	Workforce Subjects	Credits
English Language Arts	4.0	Ethics	2.0	Internships	1.0
Mathematics	4.0	Wellness	2.0	Capstone	1.0
Science	4.0				
Social Studies	4.0				
Cyber/Computer Science	4.0				
Engineering	4.0				
Grand Total: 30 Credits	**24**		**4**		**2**

CREDIT ATTAINMENT

Grade 3.0 or higher	Grade 2.5 or higher and less than 3.0	Grade less than 2.5
Pass and Clear	**Reinforcement Required**	**Credit Recovery Required**
Credit is earned and the student proceeds unrestricted to the subsequent course.	Credit is earned and the student will be placed in a **Reinforcement** course during the enrichment period in the subsequent term. In this period, the student will work on Essential Learning Targets in which the student did not earn a "Proficient" score. The overall grade in the course **will not change**.	Credit is not earned and the student will be placed in a **Credit Recovery** course. The highest attainable recovery grade can only be a 2.5.

Reinforcement:

The "Reinforcement" program offers targeted lessons to help students achieve proficiency in Essential Learning Targets (ELTs) that were not met during the standard course. ***Reinforcement is not offered for 400 level courses.***

- Teachers create reinforcement lessons for students to obtain "Proficiency" in Essential Learning Target (ELT's) not met in the standard course.
- Students who have not demonstrated proficiency in at least half of the ELTs will repeat the course in Reinforcement during the subsequent term.

- Assigned ELTs and progress must be documented on the Credit Attainment Form.
- All non-required, credit-based Pass/Fail courses (ie. foreign languages or electives), do not require the reinforcement process.

Credit Recovery:

The Credit Recovery Program is designed to assist students in regaining credit for courses where their grades are below 2.50 upon completion of the course. If a student's grade is below this threshold, they will be placed in a Credit Recovery course. It's important to note that the highest achievable grade in the Credit Recovery course is limited to 2.50. This program aims to allow students to earn credit and obtain a better understanding of the essential learning targets of the course.

- Students will be provided with reteaching sessions and new assignments/activities addressing all courses.
- ELTs and progress must be documented on the Credit Attainment form.
- The Credit Attainment information will be reviewed during the student's "Good Standing" meeting with the Dean of Students.
- Students must obtain Proficiency in at least half of the ELTs to obtain credit for the course.
- Any course not passed may be repeated only once.
- Courses passed may not be repeated for a higher grade.

Tutoring and Navigation

Provided to students struggling in one or more good-standing categories.

GRADES

Grading Philosophy:

Grades at ASCTE are a reflection of what students know or skills they have obtained. It is the goal that students are Proficient in every ELT in every core course.

DEANS' & PRESIDENT'S LIST

At the completion of each series of courses, students will be recognized for high academic achievement meeting the following benchmarks:

- DEAN'S LIST: A final grade of 3.50 or higher in every course.
- PRESIDENT'S LIST: Students earn a Proficient or Mastery in every ELT for all graded courses.

  Note: Students can be recognized on both lists.

Conversion to the 4-point scale for Colleges/Universities:

Institutions that need to convert to an unweighted 4-point scale should use the following conversion:

3.50 - 4.50 = A --> 4 Quality Points

3.00 - 3.49 = B --> 3 Quality Points
2.50 - 2.99 = C --> 2 Quality Points
0.00 - 2.49 = F --> 0 Quality Points

EXAMPLES:

3.72 --> A: 4 Quality Points
3.41 --> B: 3 Quality Points
2.75 --> C: 2 Quality Points
2.40 --> F: 0 Quality Points

Coursework Beyond ASCTE

College Courses completed while attending ASCTE

ASCTE will support students that enroll in college classes prior to their high school graduation. The three pathways are ACCESS, Dual Enrollment or Early College, in which higher education institutions recognize the enrollee as a college student.

College classes ***will not*** substitute for any required ASCTE course. Consequently, any courses taken outside ASCTE will not be calculated into the school's GPA.

What is the difference between Dual Enrollment, Early College, and ACCESS?

- ***Dual Enrollment*** courses are taken by high school students at the college, and the course credit counts for both high school and college credit. ASCTE students may take Dual Enrollment courses for electives such as foreign language, computer science, welding, etc. Approved elective courses are included on the student's transcript, but are not calculated into the ASCTE GPA.
  All students with a 3.5 or above are permitted to take dual enrollment. No more than 2 courses are permitted per term. If a student wants to take more than two, they would have to have special permission from the Dean of Students Office.
- ***Early College*** courses are taken by high school students at the college, and the course credit remains with the college. Students can take any courses the college approves, but course selection will be limited by prerequisites. For example, students could not take Calculus 3 through Early College if they have not taken the prerequisite courses. Some colleges may have different titles for their program, such as "Accelerated High School" at Calhoun. These courses are not calculated into the ASCTE GPA or notated on their transcript.
- ***ACCESS*** is a distance learning program for high school students in the state of Alabama. Courses are virtual and are taught by high school teachers across the state. These courses are only reflected on the high school transcript and do not offer college credit. Only foreign languages will be offered through ACCESS. These courses are included on the student's transcript, but are not calculated into the ASCTE GPA.
  High school courses taken outside ASCTE during the academic year will not be approved. Only approved (offered) ACCESS courses will be recorded on the ASCTE transcript.

  ***(Leading college admissions experts indicate;** Dual enrollment credits are more likely to be translated to in-state public colleges and universities. If a student wants to apply to more selective colleges, they should consider enrolling in Advanced Placement courses.)*

Grade Change Policy

A Grade Change form must be submitted when a teacher needs to correct a grade based on one of the following situations:

1. The student was absent during the last few days of the term and completed makeup work upon return.
2. The teacher made an error in calculating the original grade.
3. The student completed a credit recovery course and recovered the grade (up to a 2.5).

PROCEDURE

Teachers will submit a completed Grade Change form, and the documented meetings from the Instruction Reinforcement form to the Dean of Students and copy the Dean of Teachers and Student Learning.

COURSE DESCRIPTIONS

CYBER

Cyber 101(Honors):Cybersecurity and Computer Science Fundamentals (520101)

Brief Description

Honors Cyber 101 is the beginning of a solution to a national skill gap. Not only will students develop their own program by the end of the class, but they will also consider cybersecurity every step along the way. The course doubles as an opportunity for the students to take the AP Computer Science Principles exam. All students will be expected to take the exam at the end of their first academic year.

Essential Learning Targets:

- ELT 1: Explain the fundamental principles of cybersecurity.
- ELT 2: Identify the purpose, function, and impact of computing devices.
- ELT 3: Use operators to manipulate variables of different data types.
- ELT 4: Define and call functions.
- ELT 5: Use conditional statements and boolean logic to alter the flow of a program.
- ELT 6: Perform iteration.
- ELT 7: Create and manipulate data structures including lists and dictionaries.
- ELT 8: Design and develop a program to solve a real-world challenge.

Cyber 201(Honors): CyberSecurity Technical Principles (520102)

Brief Description

In Honors Cyber 201, students will begin to technically implement cybersecurity knowledge. They will get experience with operating systems, terminal commands, encryption, and strengthen their use of computer programming – all of which will prove necessary for their future Cyber coursework.

Essential Learning Targets:

- ELT 1: Explain the purpose of and relationship between core components of computer hardware.
- ELT 2: Install and configure operating systems on physical computers and virtual machines.
- ELT 3: Create and configure a computer network.
- ELT 4: Utilize terminal commands.
- ELT 5: Write and successfully execute programs in a Linux environment.
- ELT 6: Use original code and established libraries to encrypt data.
- ELT 7: Create scripts capable of interacting with a computer's operating system.
- ELT 8: Use basic security tools in Linux to assess system vulnerabilities.

Cyber 301(Honors): Computer Network Security (520103)

Brief Description

Knowledge of computer networking is fundamental to the discipline of Cyber-informed Engineering. Honors Cyber 301 has been designed to teach students the basics on computer networking and then turn around and apply what they have learned by analyzing vulnerabilities across a network.

Essential Learning Targets:

- ELT 1: OSI Layers 1 & 2: Connect & configure network devices to enable secure data transfer.
- ELT 2: OSI Layer 3: Configure secure communication between networks.
- ELT 3: OSI Layer 4: Securely transmit data between network endpoints.
- ELT 4: OSI Layers 5, 6, & 7: Develop and test a secure network application.
- ELT 5: Design infrastructure as code to deploy a secure computer network.
- ELT 6: Assess a web application for security vulnerabilities and apply appropriate cyber protections.
- ELT 7: Configure a security information event manager (SIEM) to detect threats to a network application.

Cyber 401(Honors) - Special Topics - semester (520104)

Brief Description

Honors Cyber 401 is designed to teach students to perform the basic duties of a vulnerability assessment analyst. They will learn how to evaluate and reduce a system’s attack surface to reduce the likelihood and severity of cyber risks against that system. Honors Cyber 401 is only available to students who entered ASCTE as sophomores.

Essential Learning Targets:

- ELT 1: Design infrastructure as code to deploy a secure computer network.
- ELT 2: Configure & assess computer security policy.
- ELT 3: Evaluate the security of a system using a vulnerability scanner.
- ELT 4: Employ adversarial thinking using the Metasploit Framework.
- ELT 5: Given a system, perform a cyber risk assessment.

Cyber 402(Honors) - Special Topics - year (520104a)

Brief Description
Honors Cyber 402 is designed to teach students to perform the basic duties of a vulnerability assessment analyst. They will learn how to evaluate and reduce a system's attack surface to reduce the likelihood and severity of cyber risks against that system. Honors Cyber 402 is only available to students who entered ASCTE as freshmen.

Essential Learning Targets:

- ELT 1: Design infrastructure as code to deploy a secure computer network.
- ELT 2: Configure a security information event manager (SIEM) to detect threats.
- ELT 3: Configure & assess computer security policy.
- ELT 4: Implement software hardening techniques.
- ELT 5: Evaluate the security of a system using a vulnerability scanner.
- ELT 6: Employ adversarial thinking using the Metasploit Framework.
- ELT 7: Given a system, perform a cyber risk assessment.
- ELT 8: Assess encryption security of a wireless network.
- ELT 9: Create a vulnerability assessment report on a given network.

Optional/Elective AP Cyber/Computer Science Courses

Advanced Placement (AP) Computer Science A (10157E1000)

Brief Description
Introduction of the concepts and tools of computer science. Students learn a subset of the Java programming language. Students will also do hands-on work to design, write, and test computer programs that solve problems or accomplish tasks.

Essential Learning Targets:

- ELT 1: Primitive Types: Implement classes in the Java programming language.
- ELT 2: Using Objects: Use objects (reference data) to solve a problem.
- ELT 3: Boolean Expressions and if Statements: Correctly apply selection in a java program.
- ELT 4: Iteration: Implement 'for' and 'while' loops effectively while programming.
- ELT 5: Writing Classes: Pull together all previous information and create new user-defined 'classes'.
- ELT 6: Array: Use data structures to represent collections of data.
- ELT 7: ArrayList: Extend the concept of an array to the dynamic storage of an 'arraylist'.
- ELT 8: 2D Array: Represent data stored in a table in a program.
- ELT 9: Inheritance: Learn how to recognize common attributes and create hierarchies of classes.
- ELT 10: Recursion: Solve problems by solving smaller but similar problems in a program.

ENGINEERING

Engineering 101(Honors): Foundations (960101)

Brief Description
This course will introduce students to what engineering is all about and what engineers do. The engineering life cycle process will be introduced and serve as the overall process foundation for the subsequent engineering classes. An overview of the different engineering disciplines will be featured. At least half of class time will involve hands-on projects in which students work in small teams to plan/formulate/implement/test solutions to problems in different fields of engineering, utilizing theory being discussed in Honors Physics I and in alignment with the engineering life cycle. Students will be introduced to engineering tools such as CAD software, Excel, 3D printers, and computer programming as part of working through these projects.

Essential Learning Targets:
- ELT 1: Define what an engineer is and how they use the engineering lifecycle.
- ELT 2: Use Excel software to perform engineering calculations.
- ELT 3: Use CAD and additive manufacturing techniques to create models.
- ELT 4: Energy and Mechanics: Identify basic forms of energy, units of measure and conversions, and basic mechanics including simple machines.
- ELT 5: Electrical Engineering: Analyze a circuit's power, current, voltage, and resistance using Ohm's Law.
- ELT 6: Electrical Engineering: Apply Ohm's Law to simulate and build circuits.
- ELT 7: Software Engineering: Apply learned CYB 101 coding skills to solve engineering problems.
- ELT 8: Understand and utilize the engineering process of rapid prototyping and 3D printing.

Engineering 201(Honors): Applications (960102)

Brief Description
Honors Engineering 201 will begin with a continuation of the electronics learning from Honors Engineering 101 by introducing software monitor and control of electronic circuitry. The course will again reflect applications of knowledge gained in science class by introducing chemical and materials engineering. This course will also include an in-depth unit introducing civil and construction engineering, and complete the introduction to CAD with an emphasis on creating assemblies and drawings within the CAD application. In-class, hands-on group projects will again be the primary vehicle for student learning.

Essential Learning Targets:
- ELT 1: Peer Review: Understand how personal work ethic and attitude affects a team.
- ELT 2: Project Management: Apply project management skills through the development of cost estimation and scheduling.
- ELT 3: Electrical Engineering: Write scripts to control electronic circuits.
- ELT 4: Software Engineering: Build a website interface with HTML.
- ELT 5: Software Engineering: Style a website with CSS.
- ELT 6: Software Engineering: Create an interactive website using JavaScript.

- ELT 7: Environmental Engineering: Understand water and air environmental regulation and how filter mechanisms are used to meet the requirements of regulations.
- ELT 8: Chemical Engineering: Analyze and describe characteristics (such as strength, elasticity) for different materials.

Engineering 301(Honors): Systems (960103)

Brief Description
Honors Engineering 301 will focus on designing technical solutions to engineering problems by applying individual competencies into a systems approach to engineering design. Students will demonstrate the application of spatial reasoning, mathematical skills, teamwork, and communication. Students will expand upon prior engineering knowledge by learning advanced techniques within engineering tools such as CAD software, Excel, and 3D printers. This course will culminate with a multi-week project designing, building, and testing a wooden crane boom arm.

Essential Learning Targets:
- ELT 1: Develop an advanced understanding of 2D sketching and 3D extruding of objects using the Fusion 360 CAD tool.
- ELT 2: Develop an understanding of advanced 3D printing techniques including terminology, best modeling practices, and slicing software.
- ELT 3: Demonstrate an understanding of voltage, current and resistance and how it impacts the design and construction of series and parallel circuits.
- ELT 4: Develop an understanding of using more advanced features in Excel, focusing on creating computation tools.
- ELT 5: Develop an understanding of using more advanced features in Excel, focusing on data analysis and modeling.
- ELT 6: Develop an understanding of engineering statics and equilibrium, focusing on beam loading.
- ELT 7: Develop an understanding of strength of materials, with emphasis on beams, stress, and strain.
- ELT 8: Apply systems of measurements, significant figures, and unit conversion to engineering.
- ELT 9: Apply engineering skills through a multi-week project designing, building, and testing a wooden crane boom arm.

Engineering 401(Honors): Special Topics - semester (960104)

Brief Description
This final class in the engineering sequence will be structured differently. It will consist of topic which students experience a deeper dive into these areas of engineering:
- Electronics & Robotics
- Mechanical & Aerospace Engineering

Each of these topics will involve a mixture of instruction on the math/science involved in the specific area, as well as presenting students with some practical problem-solving challenges which cover different aspects (design, analysis, fabrication, testing) of the engineered product development process.

Essential Learning Targets:

- ELT 1:Develop an understanding of a variety of electronic sensors used in robotic systems using hands-on experiences.
- ELT 2: Electronics & Robotics: Deep Dive analysis of system models that incorporate sensors and utilize advanced mathematics.
- ELT 3: Electronics & Robotics: Design, fabricate, and integrate sensors into a functional system using a programmable controller.
- ELT 4: Modeling and Simulation: Develop an understanding of engineering modeling with emphasis on MATLAB and Simulink.
- ELT 5: Modeling and Simulation: Develop an understanding of simulation environments and techniques including FEA and CFD.
- ELT 6: Mechanical Engineering: Develop an understanding of mechanics and manufacturing techniques through design and construction of a mechanical system.
- ELT 7: Aerospace Engineering: Develop an understanding of aerospace systems and data collection through completion of system testing and analysis.
- ELT 8: Systems Engineering: Develop an understanding of the systems process by creating requirements, performing analysis, and completing testing of mechanical and aerospace systems.

Engineering 402(Honors): Special Topics - year (960104a)

Brief Description
This final class in the engineering sequence will be structured differently. It will consist of topic which students experience a deeper dive into these areas of engineering:

- Electronics & Robotics
- Engineering Project Management
- Mechanical & Aerospace Engineering

Each of these topics will involve a mixture of instruction on the math/science involved in the specific area, as well as presenting students with some practical problem-solving challenges which cover different aspects (design, analysis, fabrication, testing) of the engineered product development process. This course is only available for students who entered ASCTE as freshmen.

Essential Learning Targets:

- ELT 1: Electronics & Robotics: Develop an understanding of how to analyze basic series and parallel circuits, involving linear and non-linear components.
- ELT 2:Develop an understanding of a variety of electronic sensors used in robotic systems using hands-on experiences.
- ELT 3: Electronics & Robotics: Deep Dive analysis of system models that incorporate sensors and utilize advanced mathematics.
- ELT 4: Electronics & Robotics: Design, fabricate, and integrate sensors into a functional system using a programmable controller.

- ELT 5: Modeling and Simulation: Develop an understanding of simulation environments and techniques including FEA and CFD.
- ELT 6: Mechanical Engineering: Develop an understanding of mechanics and manufacturing techniques through design and construction of a mechanical system.
- ELT 7: Aerospace Engineering: Develop an understanding of aerospace systems and data collection through completion of system testing and analysis.
- ELT8: Systems Engineering: Develop an understanding of the systems process by creating requirements, performing analysis, and completing testing of mechanical and aerospace systems.
- ELT 9: Demonstrate an understanding of Project Management functions, including Work Breakdown Structures, scheduling, budgeting, and monitoring project progress.
- ELT 10: Demonstrate an understanding of Systems Engineering functions, including requirements definition, analysis of alternatives, testing, and verification.
- ELT 11: Complete a multi-disciplinary project engaging Project Management and Systems Engineering functions.
- ELT 12: Develop a viable topic for Capstone Project.

ENGLISH/LANGUAGE ARTS

Language 101(Honors): Foundations of English (200101)

Brief Description
The Honors Foundations of English 101 course is designed to cultivate students' necessary skills as mature readers and writers through critical analysis and intensive practice of both informational and literary genres. Additionally, students will expand their skill sets in technical research and writing, as well as and speaking/listening, by examining mentor texts, assessing the credibility of sources, and recognizing and employing rhetorical strategies. Students will read extensively from various sources and partake in multiple opportunities to draft, edit, and revise their writing.

Essential Learning Targets:
- ELT 1: Determine a theme or central idea and analyze its development over the course of the text.
- ELT 2: Determine the meaning of words and phrases as they are used in a text (including figurative and connotative meanings).
- ELT 3: Analyze how complex characters develop through the text, interact with other characters, advance the plot, or develop the theme.
- ELT 4: Read and comprehend fiction and literary nonfiction in the grades 9-10 text complexity band proficiently, with scaffolding as needed at the high end of the range.
- ELT 5: Write to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- ELT 6: Write narratives to develop real experiences or events using effective technique, well-chosen details, and well-structured event sequences.
- ELT 7: Conduct research projects to answer questions or solve problems; synthesize multiple sources

on the subjects in order to demonstrate understanding of the subject under investigation.
- ELT 8: Initiate and participate effectively in a range of collaborative discussions with diverse partners on grade 9 topics, texts, and issues, building on one another's ideas and expressing their own clearly and persuasively.
- ELT 9: Present information, findings, and supporting evidence clearly, concisely, and logically, while making strategic use of digital media.
- ELT 10: Demonstrate a command of the conventions of standard English grammar and usage when writing or speaking (commas, sentence structure variety, commonly confused words, phrases and clauses, possessives).

Language 201(Honors): Technical & Analytical Writing (200102)

Brief Description
In addition to expanding upon the academic writing and reading skills taught in Honors Language 101, Honors Language 201 also provides students with a background in practical, technical writing skills that are essential to future careers. Students will learn and practice both written and verbal communication skills for use in academic and workplace environments. Additionally, students will improve clarity and coherence in writing, learn how to use visuals in presentations effectively, and manipulate their communication for different audiences. Students will continue to analyze the purpose behind various writing types.

Essential Learning Targets:
- ELT 1: Produce clear, coherent technical writing in which the development, organization, and style are appropriate for the purpose and audience.
- ELT 2: Research, analyze, synthesize, and apply information to answer questions and/or solve problems.
- ELT 3: Embed evidence in writing using APA guidelines in order to support claims or proposals.
- ELT 4: Analyze how an author uses rhetoric to advance his point of view or purpose.
- ELT 5: Use rhetorical strategies to achieve an intended purpose.
- ELT 6: Analyze the development of multiple themes/central ideas throughout a text, including how they are shaped by specific details/events.
- ELT 7: Analyze a case in which grasping a point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).
- ELT 8: Demonstrate a command of the conventions of standard English grammar and usage when writing or speaking (parallel structure, pronoun/antecedent agreement, subject/verb agreement).
- ELT 9: Present information where the organization, development, substance, and style are appropriate to my purpose.
- ELT 10: Read informational texts to analyze key ideas and details (make inferences, determine the central idea, and identify the organization and development of ideas).

Language 301: Advanced Placement (AP) English Language & Composition (01005E1000)

Brief Description
As stated by the College Board, the purpose of Honors AP English Language and Composition is to "enable students to read complex texts with understanding and to write prose…to communicate effectively with mature readers." While preparing students to take the Advanced Placement Test, this course is designed to

help students improve as critical readers, thinkers, and writers. The emphasis is two-fold: reading strategies for the “expository, analytical, and argumentative writing that forms the basis of academic and professional communication" and writing from argumentative and analytical platforms.

Essential Learning Targets:

- ELT 1: Identify and explain rhetorical choices.
- ELT 2: Create and sustain arguments based on readings, research, and/or personal experience.
- ELT 3: Write to identify, describe, and explain the purpose and context of the rhetorical situation.
- ELT 4: Synthesize multiple sources in order to compose an argument, using evidence from the sources to craft a line of reasoning.
- ELT 5: Read and analyze nonfiction in order to identify and explain an author’s use of rhetorical strategies and techniques.
- ELT 6: Read and analyze fiction and poetry specifically chosen to understand how various effects are achieved by writers’ linguistic and rhetorical choices.
- ELT 7: Demonstrate understanding and mastery of standard written English as well as stylistic maturity in writing.
- ELT 8: Write a thesis statement that requires proof or defense and that may preview the structure of the argument.
- ELT 9: Explain and evaluate the relevance and credibility of evidence.
- ELT 10: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Language 401(Honors): Sentinel Seminar - semester (200104)

Brief Description

In this course, students will approach learning through inquiry. They will apply language arts skills to investigate, evaluate, and communicate about the topics and challenges that shape our world. Honors Language 401–Sentinel Seminar covers themes of knowledge & education, progress & technology, freedom & control, and selected issues in engineering and cybersecurity. By seeking to understand diverse perspectives on these issues, Sentinels become critical and creative thinkers who will continue to learn and lead in the future. This course is only available for students who entered ASCTE as a sophomore.

Essential Learning Targets:

- ELT 1: Read and analyze texts, drawing conclusions and connecting context to personal, social, and universal experiences.
- ELT 2: Craft well-structured personal essays in which a conclusion follows from and reflects on experiences, observations, or resolutions.
- ELT 3: Identify and compare multiple perspectives on an issue, drawing evidence to support analysis, reflection, and research.
- ELT 4: Read and comprehend literature, identifying and applying knowledge of literary elements.
- ELT 5: Plan and write to analyze the impact of the author’s choices in crafting a story to its overall meaning or purpose.
- ELT 6: Explore and define a problem as a future topic for the Capstone project.
- ELT 7: Apply the conventions of standard English grammar, usage, and mechanics appropriate for academic writing.
- ELT 8: Organize and present information to engage an audience, using effective techniques of delivery and incorporating digital media.

Language 402(Honors): Sentinel Seminar - year (200104a)

Brief Description

In this course, students will approach learning through inquiry. They will apply language arts skills to investigate, evaluate, and communicate about the topics and challenges that shape our world. Honors Language 402–Sentinel Seminar covers themes of knowledge & education, progress & technology, freedom & control, social engineering, the power of language, and selected issues in engineering and cybersecurity. By seeking to understand diverse perspectives on these issues, Sentinels become critical and creative thinkers who will continue to learn and lead in the future. This course is only available for students who entered ASCTE as a freshman.

Essential Learning Targets:

- ELT 1: Read and analyze texts, drawing conclusions and connecting context to personal, social, and universal experiences.
- ELT 2: Craft well-structured personal essays in which a conclusion follows from and reflects on experiences, observations, or resolutions.
- ELT 3: Identify and compare multiple perspectives on an issue, drawing evidence to support analysis, reflection, and research.
- ELT 4: Read and comprehend literature, identifying and applying knowledge of literary elements.
- ELT 5: Plan and write to analyze the impact of the author's choices in crafting a story to its overall meaning or purpose.
- ELT 6: Explore connections between literature and historical context, current events, and other related texts.
- ELT 7: Expand vocabulary through the study of challenging texts and word analysis strategies.
- ELT 8: Explore and define a problem as a future topic for the Capstone project.
- ELT 9: Apply the conventions of standard English grammar, usage, and mechanics appropriate for academic writing.
- ELT 10: Organize and present information to engage an audience, using effective techniques of delivery and incorporating digital media.

Capstone (Honors)(200105)

Brief Description

The Honors Capstone course allows students to integrate the skills and knowledge acquired in previous ASCTE courses into a culminating collaborative project, paper, and presentation.

- **Benchmark 1**–Students will complete a project in which they design, create, and evaluate a solution to a real-world problem considering cybersecurity implications throughout the engineering lifecycle.
- **Benchmark 2**–Students will produce an academic paper synthesizing information from various sources, describing their project's procedures and results, and discussing conclusions about the process.
- **Benchmark 3**–Students will participate in a presentation and defense of their project.
- **Benchmark 4**-Students will work in collaboration with their group by effectively communicating, taking responsibility for individual contributions, meeting deadlines, and joining forces to solve problems.

Optional/Elective Advanced Placement AP Language Courses

English, Literature and Composition, Advanced Placement (AP) (01006E1000)

Brief Description

This is a college-level advanced course following the curriculum established by the College Board Advanced Placement (AP) Program for English; engages students in the careful reading and critical analysis of imaginative literature from several genres and periods from the sixteenth to the twenty-first century; extensive writing of compositions.

Essential Learning Targets:

- ELT1: Identify and explain the function of figurative language, word choice, imagery, and symbolism in poetry and prose.
- ELT 2: Explain the function of contrasts, significant events, or conflicts in a text.
- ELT 3: Write textually substantiated arguments about interpretations of a part or all of a piece of poetry.
- ELT 4: Write textually substantiated arguments about interpretations of a portion or all of short fiction or long fiction.
- ELT 5: Identify and describe how a character's own choices, actions, and speech reveal complexities in that character and explain the function of those complexities.
- ELT 6: Read and analyze fiction and poetry specifically chosen to understand how various effects are achieved by writers' narrative, setting, or structure choices.
- ELT 7: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

MATHEMATICS

Math Placement
All new students will complete a math diagnostic exam which will assist ASCTE to determine the appropriate course placement. Students that demonstrate an aptitude beyond Honors Math 101 on the diagnostic exam and have successfully completed Algebra 1 and/or Geometry will be recommended for AP Statistics. Students who require additional support will be placed in Math 100 in addition to Honors Math 101.

Math 100: Fundamentals of Mathematics (210100)

Brief Description

This mathematics elective is designed to provide course support and a review of the ASCTE math program. Course content is based on students' individual skill levels. It proceeds at a pace to aid and accommodate students with current math placement as well as preparation for future mathematics coursework. No Essential Learning Targets (ELTs) are attached to this course.

Math 101(Honors): Mathematics for Engineers (210101)

Brief Description
Honors Math 101 provides a comprehensive exploration of algebraic concepts (emphasis on functions) and geometric principles (triangles, polygons, circles, etc). The content covered will be similar to a typical Algebra 1 and Geometry course but in a condensed manner. Students will be equipped with a solid mathematical foundation in preparation for future math, cyber, science, and engineering courses.
Honors Math 101 satisfies the ALSDE Geometry with Data Analysis requirement.

Essential Learning Targets:
- ELT 1: Simplify and Solve algebraic expressions, equations, and inequalities
- ELT 2: Rearrange and solve a multi-variable equation for any variable (ex D=rt solve for t)
- ELT 3: Identify and investigate polygons and solids, area, volume
- ELT 4: Graph linear equations and inequalities
- ELT 5: Solve systems of linear equations and inequalities
- ELT 6: Understand the basic operations of matrices and how to use them to solve a system of equations.
- ELT 7: Simplify and factor polynomials
- ELT 8: Simplify and solve radical expressions and equations
- ELT 9: Solve and graph quadratic equations.
- ELT 10: Recognize and apply the properties of triangles (right, isosceles, equilateral, scalene).

Math 201(Honors): Pre-Calculus (210102)

Brief Description
Honors Math 201 is the study of pre-calculus algebra necessary for success in calculus, physics, and higher-level mathematics. Interactive projects and technology will support students' learning of linear, polynomial, exponential, logarithmic, and functions.

Essential Learning Targets:

- ELT 1: Solve and graph linear functions
- ELT 2: Interpret and model linear functions
- ELT 3: Solve quadratics and polynomial functions
- ELT 4: Graph, interpret, and model quadratics and polynomial functions
- ELT 5: Graph, interpret, and model using rational functions
- ELT 6: Solve exponential and logarithmic equations.
- ELT 7: Graph, interpret, and model using exponential functions
- ELT 8: Graph, interpret, and model using logarithmic functions

Math 301(Honors): Advanced Math with Trigonometry (210103)

Brief Description

Honors Math 301 is the study of pre-calculus trigonometry and the continuation of the study of functions necessary for success in calculus, physics, and higher-level mathematics. Interactive projects and technology will support students' learning of trigonometric functions, vectors, and parametric equations. The course also introduces the polar coordinate system and connects calculus concepts, including limits and rates of change(derivatives).

Essential Learning Targets:

- ELT 1: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles.
- ELT 2: Determine the coordinates and trigonometric ratios from angles on the unit circle.
- ELT 3: Graph, interpret, and model sine, cosine, and tangent functions.
- ELT 4: Verify trigonometric identities and solve trigonometric equations.
- ELT 5: Represent functions with rectangular and polar coordinates.
- ELT 6: Use vectors and parametric equations to find the magnitude, directions, and graphs in real world situations.
- ELT 7: Evaluate limits of functions numerically, analytically, and graphically
- ELT 8: Calculate the derivative of linear and polynomial functions.

Math 401(Honors): Calculus - semester (210105)

Brief Description

Honors Math 401 is a semester study of calculus and applications of calculus. Students that entered ASCTE as a sophomore will understand how calculus is essential to the engineering and mathematical fields of work. Students will use technology and hands-on experiences to learn about various applications with data and graphs, equations, and calculus computations. Students will study all of the concepts traditionally taught in a normal college-level Calculus 1 level course. This course is only available for students who entered ASCTE as a sophomore.

Essential Learning Targets:

- ELT 1: Evaluate limits and apply limits
- ELT 2: Evaluate and interpret the derivatives of functions.
- ELT 3: Apply the chain rule when necessary. Compute derivatives of composite, implicit and inverse functions.
- ELT 4: Apply the concept of differentiation to solve contextual problems
- ELT 5: Use analytical applications of differentiation.
- ELT 6: Explore accumulations of areas and the Fundamental Theorem of Calculus

Math 402(Honors): Calculus - year (02124E1000)

Brief Description

Honors Math 402 is a yearlong study of calculus with applications of calculus. Students that entered ASCTE as freshman will understand how calculus is essential to the engineering and mathematical fields of work. Students will use technology and hands-on experiences to learn about various applications with data and graphs, equations, and calculus computations. This course is only available for students who entered ASCTE on the freshmen level.

Essential Learning Targets:

- ELT 1: Evaluate limits and apply limits
- ELT 2: Evaluate and interpret the derivatives of functions.
- ELT 3: Apply the chain rule when necessary. Compute derivatives of composite, implicit and inverse functions.
- ELT 4: Apply the concept of differentiation to solve contextual problems
- ELT 5: Use analytical applications of differentiation.
- ELT 6: Explore accumulations of areas and the Fundamental Theorem of Calculus
- ELT 7: Use the concept of an antiderivative to integrate, solve differential equations, construct slope fields, and model real-world situations.
- ELT 8: Apply integration to real-world problems involving area and volume.

Math 403: Advanced Placement (AP) Calculus (02124E1000a) Elective

Brief Description

Honors Math 403 is the study of calculus and applications of calculus. Students will understand how calculus is essential to the engineering and mathematical fields of work. Students will use technology and hands-on experiences to learn about various applications with data and graphs, equations, and calculus computations. Students will study all of the College Board's AP Calculus AB topics and take the AP Calculus AB exam. Students may extend to AP Calculus BC topics and take that exam.

This course is only available for students with a math GPA above a 3.5 and entered ASCTE as freshman.

Essential Learning Targets:

- ELT 1: Evaluate limits and apply limits
- ELT 2: Evaluate and interpret the derivatives of functions.
- ELT 3: Apply the chain rule when necessary. Compute derivatives of composite, implicit and inverse functions.
- ELT 4: Apply the concept of differentiation to solve contextual problems
- ELT 5: Use analytical applications of differentiation.
- ELT 6: Explore accumulations of areas and the Fundamental Theorem of Calculus
- ELT 7: Use the concept of an antiderivative to integrate, solve differential equations, construct slope fields, and model real-world situations.
- ELT 8: Apply integration to real-world problems involving area and volume.

Advanced Placement (AP) Statistics (02203E1000)

Brief Description

College-level advanced course approved by the College Board Advanced Placement (AP) Program for statistics; introductory, non-calculus based course to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students must be recommended to this course.

Essential Learning Targets:

- ELT 1 a: Analyze, display, describe and draw conclusions about quantitative and categorical data. (3 weeks)
  b: Describe Normal distribution (using Empirical Rule) and use it to find areas above, below, and between given values. And, find data values in context given percentiles. (3 weeks)
- ELT 2: Represent two-variable data to compare and describe relationships between variables and make predictions. (3 weeks)
- ELT 3: Design and interpret results of well-designed studies to draw appropriate conclusions and generalizations. (3 weeks)
- ELT 4 a: Model the probability of an event (using Venn diagrams, tree diagrams, and two-way tables) and calculate the probability of events using probability rules. (3 weeks)
  b: Calculate and interpret probabilities involving discrete and continuous random variables (including normal, binomial, and geometric random variables). (3 weeks)
- ELT 5: Identify and describe sampling distributions of population parameters (means and proportions). (3 weeks)
- ELT 6: Use inference procedures for Categorical Data: Proportions (4 weeks)
- ELT 7: Use inference procedures for Quantitative Data: Means (3 weeks)
- ELT 8: Use inference procedures for Categorical Data: Chi-Square (3 weeks)

SCIENCE

Science 101(Honors): Physics (220101)

Brief Description
Honors Science 101 is an activity-based course that utilizes a modeling strategy to master the concepts of Physics, starting with mechanics, a mathematical interpretation of how the world works developed by Isaac Newton. Explorations will include the topics of waves, optics, and electromagnetism while also incorporating a survey of more modern physics work to include an introduction to quantum mechanics.

Essential Learning Targets:

- ELT 1: Analyze models to predict the motion of objects.
- ELT 2: Identify forces and evaluate bodies in motion and equilibrium.
- ELT 3: Demonstrate an understanding of the factors that affect bodies in a circular motion.
- ELT 4: Analyze energy, work, and power in systems.
- ELT 5: Demonstrate an understanding of the conservation of momentum and impulse.
- ELT 6: Analyze bodies in simple harmonic motion.
- ELT 7: Evaluate and describe objects in rotational motion.
- ELT 8: Demonstrate an understanding of fluid properties and conservation laws..
- ELT 9: Evaluate circuits and their relationship with Ohm's law and Kirchohoff's rules.
- ELT 10: Evaluate the properties of waves including the concepts of interference and superposition.

Science 201(Honors): Chemistry (220102)

Brief Description
Honors Chemistry 201 is a semester-long course and fulfills the chemistry class requirement for ASCTE graduation. This course builds upon the Honors Physics 101 course. It is a study of the fundamental laws of chemistry, covering the common elements of the periodic system, their structure, interactions, and energy relationships.This course is accompanied by work in the mathematical solution of chemical problems and laboratory use of experimental data. This course is a prerequisite for Honors Science 301, Honors Biotechnology. Required texts and other materials:
Edward J. Neth (University of Connecticut), Paul Flowers (University of North Carolina at Pembroke), Klaus Theopold (University of Delaware), Richard Langley (Stephen F. Austin State University), & Robinson, W. R. (2019). Chemistry: Atoms First by OpenStax (hardcover version, full color) (2nd ed.). XanEdu Publishing Inc.

Essential Learning Targets:

- ELT1: Distinguish between physical and chemical properties, physical and chemical changes, and intensive and extensive properties of matter.
- ELT 2:Model the modern atom and use appropriate symbols to represent molecules and ions; recognize chemical formulas; perform calculations to demonstrate average atomic mass.
- ELT3. Explain the quantum nature of the modern atom using electromagnetic energy concepts. Write electron configurations for atoms and ions using Aufbau and Pauli Exclusion Principles and Hund's Rule. Designate the valence electrons in the main group elements.
- ELT4: Explain periodic variations of properties of elements, including ionization energy, atomic radius, and electronegativity.
- ELT5: Explain attractive forces between particles for ionic, covalent, and metallic bonding.
- ELT6: Assign electronic geometry and molecular geometry to molecules; assign hybridization to

specific atoms. Demonstrate that intermolecular forces are responsible for the behavior of matter at the particle level.

- ELT7: Understand the relationship between mass, moles and particles. Calculate the concentrations of chemical solutions using molarity and dilution.
- ELT8: Distinguish between three common reaction types and calculate masses of products and reactants using stoichiometric relationships.
- ELT9: Relate kinetic molecular theory to the states of matter and phase changes. Relate pressure, volume, temperature, and amount of matter to the behavior of gasses under ideal conditions.
- ELT10: Describe acid/base behavior using Arrhenius and Bronsted Lowry theories; perform titrations; calculate pH and pOH
- ELT11: Calculate the transfer of thermal energy during physical changes and chemical changes.
- ELT12: Using hydrocarbons as a basis for complex molecules, differentiate among alkenes, alcohols, carboxylic acids, esters, and amines. Explain how these molecules form proteins, carbohydrates, and lipids.

Science 301(Honors): Biotechnology (220103)

Brief Description
The Honors Science 301: Biotechnology course provides instruction for general biology topics and applications to include chemistry of life; cellular structure and function; cellular processes and metabolism; cellular communications and life cycle; genetics; reproduction and development; and classification. Current biotechnological applications will direct student discovery and understanding of concepts through lab exercises, research, investigations, and presentations.

Essential Learning Targets:

- ELT 1: Explore biotechnology and discover “How does cell biology help biotechnology?”, by investigating the structure and function of biotechnology’s workhorses: Plant, animal and bacterial cells.
- ELT 2: Compare and contrast the processes of replication and PCR. Investigate real world applications and techniques inspired by PCR.
- ELT 3: Describe the Genetic Flow of Information, developing an understanding of the processes, regulation and products. Explore the importance of proteins in biotechnology.
- ELT 4: Explain the cell cycle and the processes of mitosis and meiosis. Explain potential errors in these processes and their impacts. Explore applications to human health.
- ELT 5: Describe how signals from the environment result in the regulation of cellular processes and gene expression. Explore a variety of mechanisms and their applications.
- ELT 6: Apply an understanding of meiosis, Mendel’s laws and their exceptions to predict outcomes. Use the Hardy- Weinberg Equation to predict allele frequencies.
- ELT 7: Examine how advanced genomic technologies are being utilized within a variety of industries and scientific disciplines.
- ELT 8: Research, design and present a possible biotechnology solution to a problem you identify. Demonstrate proficiency with tools and techniques of biotechnology.

Science 401(Honors): Physics C: Mechanics - semester (220104)

Brief Description

Honors Physics C: Mechanics is a calculus-based physics course taught at the honors level, especially appropriate for students planning to specialize or major in one of the physical sciences or engineering. Students cultivate their understanding of physics through classroom study and activities as well as hands-on laboratory work as they explore concepts like change, force interactions, fields, and conservation. This course is only available for students who entered ASCTE as a sophomore.

Essential Learning Targets:

- ELT 1: Qualitatively explain Kirchoff's Laws and use them along with Ohm's law to calculate key characteristics of both series and parallel circuits.
- ELT 2: Use Newton's laws and calculus based kinematics to describe 1-D motion.
- ELT 3:Use Kinematics, Newton's Laws, and calculus to describe and predict 2-D motion, including projectile and circular motion.
- ELT 4: Apply all concepts from linear motion (including kinematics and Newton;s laws to objects in rotational motion).
- ELT 5: Understand the behavior and properties of fluids such as viscosity, density, pressure, buoyancy, and fluid dynamics.
- ELT 6: Understand how materials respond to applied forces and loads, including the concepts of stress, strain, deformation, and material properties.
- ELT 7: Use integral calculus, the work-energy theorem, and conversation of mechanical energy to predict the motion of an object.

Science 402(Honors): Physics C: Mechanics - year (220104a)

Brief Description
Honors Physics C: Mechanics is a calculus-based physics course taught at the honors level, especially appropriate for students planning to specialize or major in one of the physical sciences or engineering. Students cultivate their understanding of physics through classroom study and activities as well as hands-on laboratory work as they explore concepts like change, force interactions, fields, and conservation. This course is only available for students who entered ASCTE as a freshman.

Essential Learning Targets:

- ELT 1: Qualitatively explain Kirchoff's Laws and use them along with Ohm's law to calculate key characteristics of both series and parallel circuits.
- ELT 2: Use Newton's laws and calculus based kinematics to describe 1-D motion.
- ELT 3: Use Kinematics, Newton's Laws, and calculus to describe and predict 2-D motion, including projectile and circular motion.
- ELT 4: Apply all concepts from linear motion (including kinematics and Newton;s laws to objects in rotational motion)
- ELT 5: Understand the behavior and properties of fluids such as viscosity, density, pressure, buoyancy, and fluid dynamics.
- ELT 6: Understand how materials respond to applied forces and loads, including the concepts of stress, strain, deformation, and material properties.
- ELT 7: Use integral calculus, the work-energy theorem, and conservation of mechanical energy to predict the motion of an object.
- ELT 8: Apply the Impulse-Momentum Theorem and the Conservation of linear momentum to predict the motion of a system.
- ELT 9: Qualitatively and quantitatively describe simple harmonic motion.

- ELT 10: Apply Newton's Law of Universal Gravitation to describe motion of satellites.
- ELT 11:(Group Project) Demonstrate and teach a lab that correlates to a previous ELT.

Science 403: Advanced Placement (AP) Physics C: Mechanics (03164E1000) Elective

Brief Description
According to the College Board, AP Physics C: Mechanics is a calculus-based, college-level physics course, appropriate for students planning to specialize or major in one of the physical sciences or engineering. Students cultivate their understanding of physics through classroom study and activities as well as hands-on laboratory work as they explore concepts like change, force interactions, fields, and conservation. Students will be provided with review opportunities to prepare for AP Exam.

Essential Learning Targets:
- ELT 1: Use graphical analysis techniques including linearization to determine the relationship between variables.
- ELT 2: Use Kinematics, Newton's Laws, and calculus to describe and predict 1-D motion, including constant velocity and uniformly accelerated motion.
- ELT 3: Use Kinematics, Newton's Laws, and calculus to describe and predict 2-D motion, including projectile and circular motion.
- ELT 4: Use integral calculus, the work-energy theorem and conservation of mechanical energy to predict the motion of an object.
- ELT 5: Apply the Impulse- Momentum Theorem and Conservation of Linear Momentum to predict the motion of a system
- ELT 6: Apply all concepts from linear motion, including kinematics, Newton's Laws, Energy, and Momentum, to objects in rotational motion.
- ELT 7: Qualitatively and quantitatively describe simple harmonic motion.
- ELT 8: Apply Newton's Law of Universal Gravitation to describe motion of satellites, both launched straight up and in circular or elliptical orbits
- ELT 9: Demonstrate understanding and synthesis of all physics concepts in preparation for the AP Exam

Human Anatomy (Elective) - (03999C1010)

Brief Description
The course will begin with an overview of basic anatomical terms, the chemistry of life, and aspects of the cell, followed by a study of body systems. Each system covered will be broken down into sections that include vocabulary, diagramming, practice quizzes, labs, health applications, and assessments.

Essential Learning Targets:
- ELT 1: Identify and describe the five aspects of health to the human body.
- ELT 2: Explore cell makeup and differentiation to the applied form and function of cells working together as tissues to form organs and organ systems.
- ELT 3: Review the structures and functions of body systems.
- ELT 4: Establish a model that illustrates how the nervous system interacts and directs all other body systems for homeostasis.

- ELT 5: Trace the food pathway through the body to obtain nutrients via digestion.
- ELT 6: Identify the structure and function of the cardiovascular, immune, and lymphatic systems to the circulation of nutrients, oxygen, and wastes.
- ELT 7: Follow the steps of meiosis to produce gametes for genetic variation through sexual reproduction.
- ELT 8: Summarize healthy habits for wellness, growth, and positive development.

Optional/Elective Advanced Placement Science Courses

Advanced Placement (AP) Biology (03056E1000)

Brief Description

AP Biology is an introductory college-level biology course. This accelerated program is designed to run parallel to ASCTE's Biotechnology course (Science 300) serving as further investigation for concept mastery as outlined by College Board's course framework. Students must commit to strenuous outside readings, independent studies, and inquiry-based laboratory exercises as preparation for the AP Biology Exam.
https://apcentral.collegeboard.org/courses/ap-biology

- ELT 1: Introduction to statistics and building a foundation in the chemistry of life.
- ELT 2: Explore cell structures and relate them to cell function.
- ELT 3: Explain how energy is captured and then used by living systems. Describe how organisms use or conserve energy to respond to environmental stimuli
- ELT 4 a: Explain how cells communicate with each other.
  b: Discuss the role of the cell cycle in the conservation of genetic information.
- ELT 5: Explain the process of meiosis and use probability and statistics to explain the variation of expressed traits within a population.
- ELT 6 a: Describe the structures and mechanisms responsible for passing hereditary material.
  b:Explain the regulation and control of gene expression
- ELT 7 a: Explore and explain the process of natural and artificial selection. Discuss population genetics and use the Hardy-Weinberg Equation to predict allele frequencies.
  b: Analyze and interpret data to support hypotheses of common ancestry and biological evolution. Explain how populations respond to changes in the environment that can lead to speciation or extinction.
- ELT 8: Explore and explain ecological interactions.
- ELT9:Choose 1 unit and design a review session for the class (optional).

Advanced Placement (AP) Chemistry (03106E1000)

Brief Description

This is a college-level course. This course builds upon the Chem 201 course. It continues the study of the fundamental laws of chemistry, covering the common elements of the periodic system, their structure,

interactions, and energy relationships. This course is accompanied by work in the mathematical solution of chemical problems, and laboratory use of experimental data.

Essential Learning Targets:

- ELT 1. Chemical reactions; Represent change in matter with balanced chemical or net ionic reactions.
- ELT 2: Identify reactions as acid/base,redox, or precipitation and balance redox reaction using half-reactions.
- ELT 3: Thermodynamics/thermochemistry; Explain transfer of thermal energy.
- ELT 4: Calculate heat q absorbed or released by a system undergoing heating/cooling, phase change, or chemical reaction and the change in enthalpy and Gibbs free energy.
- ELT 5: Explain the physical components of an electrochemical cell and the energy generated by chemical reactions under standard and nonstandard conditions.
- ELT 6: Calculate charge flow based on changes in the amounts of reactants and products.
- ELT 7. Kinetics; Represent data with a consistent rate law expression and explain the collision model; identify
- components of a mechanism.
- ELT 8: Represent the energy of activation using reaction energy profile and explain the relationship between
- the effect of a catalyst and changes in the reaction profile.
- ELT 9. Equilibrium; Represent equilibrium expressions and reaction quotients.
- ELT 10: Calculate equilibrium constants and concentrations.
- ELT 11. Advanced Acid-Base Theory: Explain the relationship among concentrations of major species in a mixture of weak and strong acids and bases and the ability of a buffer to stabilize pH.
- ELT 12: Identify a buffer based on the identity and concentration of a conjugate acid/base pair.

Advanced Placement (AP) Environmental Science (03207E1000)

Brief Description

This course is designed to engage students with the scientific principles, concepts, and methodologies required to understand the interrelationships within the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography.

Source:

https://apcentral.collegeboard.org/media/pdf/ap-environmental-science-course-and-exam-description.pdf

Essential Learning Targets:

- ELT 1: Explain environmental concepts, processes, and models presented in written format.
- ELT 2: Analyze visual representations of environmental concepts and processes.
- ELT 3: Analyze sources of information about environmental issues.
- ELT 4: Analyze research studies that test environmental principles.

- ELT 5: Analyze and interpret quantitative data represented in tables, charts, and graphs.
- ELT 6: Apply quantitative methods to address environmental concepts.
- ELT 7: Propose and justify solutions to environmental problems.

Advanced Placement (AP) Physics C: Electricity & Magnetism (Elective) (03163E1000)

Brief Description

According to College Board, AP Physics C: Electricity and Magnetism is a calculus-based, college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as electrostatics; conductors, capacitors, and dielectrics; electric circuits; magnetic fields; and electromagnetism. Introductory differential and integral calculus is used throughout the course. The course includes a hands-on laboratory component comparable to a semester-long introductory college-level physics laboratory. Students ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting.

Essential Learning Targets:

- ELT 1: Use calculus to calculate and relate the magnitude of electric fields, electric potential, electric potential energy, and kinetic energy for point charges and continuous distributions of charges
- ELT 2: Demonstrate an understanding of behaviors of excess charges on conductors to calculate electric fields, electric potential, and electric potential energy. Apply this understanding to the storage of electrostatic potential energy in capacitors.
- ELT 3: Use Kirchoff's Rules and Ohm's Laws to calculate key characteristics of series and parallel circuits containing resistors and capacitors.
- ELT 4: Use calculus to calculate magnetic forces on moving charges; use Ampere's Law and the Biot Savart Law to calculate magnetic field strength resulting from moving charges
- ELT 5: Apply Lenz's Law and Faraday's law to calculate magnetically induced currents; use calculus to analyze LR circuits; demonstrate a comprehensive understanding of electricity and magnetism using Maxwell's equations.
- ELT 6: Demonstrate understanding and synthesis of EM concepts in preparation for the AP Exam.

SOCIAL SCIENCE

Social Science 101(Honors): Engineering History (230101)

Brief Description

This course tracks the evolution of technology and engineering through a chronological survey of significant events and issues, beginning with ancient civilizations to the present information age. Students will investigate each engineering field based on the formation of a professional society. Students will research, design models, and complete team projects based on engineering accomplishments that recognize pivotal changes to human conditions of historical significance.

Essential Learning Targets:

- ELT 1: Define engineering and describe the main engineering disciplines and relevant branches of each.
- ELT 2: Examine and present an engineering accomplishment for each era (Prehistory, Ancient, Middle Ages, Age of Exploration, Renaissance, and Industrial Revolution).
- ELT 3: Assess the significance of key designs in engineering as they pertain to the cultures, religions, safety, survival, and success of humankind and establishment of early civilizations.

- ELT 4: Analyze cause and effect relationships with reference to engineering directives.
- ELT 5: Identify key scientists and engineers and their contributions to the advancement of science and technology.
- ELT 6: Identify challenges that humans have faced, and will face, from a growing population, urbanization, and industrialization with the corresponding design solutions from engineers. ELT 7: Distinguish between primary and secondary resources for historical data with regard to credibility.
- ELT 8: Construct historical arguments using resources that both support and contradict a claim. ELT 9: Analyze the complex and complicated nature of historical records by distinguishing between historical facts and historical interpretations.
- ELT 10: Investigate positive and negative technological influences through recorded time that have influenced the overall health of planet Earth.

Social Science 201(Honors): History of Cryptology (230102)

Brief Description
This course will introduce students to cryptology, cryptography, and cryptanalysis which is respectively the study of code, the practice of writing code, and deciphering code through chronological history with primary focus from the American Revolution, the American Civil War, World War I, World War II, and the Cold War to present cyber warfare. The course will track how codes were used and evolved from the ancient to the modern era.

Essential Learning Targets:
- ELT 1: Define vocabulary terms related to cryptology and offer examples for each:
- ELT 2: Encrypt and decrypt messages using monoalphabetic, polyalphabetic, homophonic, and transposition cipher techniques;
- ELT 3: Correlate the use of spy rings and secret communications to the success of the Continental Army during the American Revolution;
- ELT 4: In reference to the addition of new industrialized technology, contrast Union and Confederate codes and ciphers during the American Civil War;
- ELT 5: Defend the ethics of surveillance and use of codes and ciphers between Allied and Central Powers during World War I;
- ELT 6: Construct a timeline of World War II as it relates to the use of codes and ciphers by Allied and Axis powers;
- ELT 7: Connect post World War II and Cold War to the advancement of computers and establishment of the CIA and NSA;
- ELT 8: Define symmetric and asymmetric encryption and relate them to modern encryption algorithms and standards.

Social Science 301(Honors): Cyber Economics and Government (230103)

Brief Description
This course comprises two sections that include government/civics and economics. Basic principles of economics will include cybersecurity applications extending to cyber conditions that impact economics-driven decision making. Students will understand how economics governs policy and risk mitigation. Students will explore the origins and framework of the American government and politics at national, state, and local levels. Students will also explore the evolution of civil rights and the roles and responsibilities of American citizens.

Essential Learning Targets:
CyberEconomics

- ELT 1: Compare and contrast macro and microeconomics; supply and demand; risk and impact; cost and benefit.
- ELT 2: Demonstrate understanding of general economics as related to cybersecurity.
- ELT 3: Survey and explain cyber government policies, market elasticities, and economic breakeven
- ELT 4: Outline the history of currency, including cryptocurrencies, platforms of exchange, credit, and insurance including their applications to personal finance and investments.

Government / Civics

- ELT 5: Analyze the origins and establishment of the US Constitution and the Bill of Rights.
- ELT 6: Analyze the major features and provisions of the US Constitution and the Bill of Rights, to include evaluating the system of checks and balances within the US government.
- ELT 7: Evaluate the various functions, organizations, and purposes of local and state governments
- ELT 8: Describe the process of local, state, and national elections including the history of suffrage and the role of political parties, special interest groups, campaign contributions, and the media.
- ELT 9: Identify the role of citizens in American democracy including the meaning, rights, and responsibilities of citizenship.

Social Science 401(Honors): Evolution of Social Engineering - semester (230104)

Brief Description
This course will introduce students to the concepts and scenarios surrounding the topic of social engineering. Students will explore and analyze the impact of social engineering on societies as well as on matters of security with an emphasis on the human element of the security issues. Students will become familiar with social norms and social roles that are common to many cultures as well as those that are specific only to certain cultures. Students will be introduced to popular types of social engineering attacks and learn how and why they are successful as well as how to reduce their vulnerability to these ploys and exploits. The development and evolution of media, including social media, will be discussed and students will learn how to recognize common social engineering techniques in media and advertising.
Students will explore various historical situations where social engineering has influenced societies and they will learn how to identify the techniques and tactics that were employed to gain leverage of individuals and societies. ***This course is only available for students who entered ASCTE as a sophomore.***

Essential Learning Targets:

- ELT 1:Evaluate and describe culturally common and culture-specific social norms.
- ELT 2:Evaluate the various principles of persuasion and how they are employed to gain compliance from individuals through common social engineering attacks, marketing, advertising, and other areas.
- ELT 3:Analyze the impact of various forms of media on the ideals and decision-making process of individuals and societies.
- ELT 4:Identify social engineering in advertising and evaluate the tactics and techniques they use.
- ELT 5: Evaluate the framework of the professional social engineer including OSINT, pretext development, engagement planning, implementation, and reporting.
- ELT 6: Identify and explain the importance of both verbal and non-verbal forms of communication as well their impact on the effectiveness of social engineering engagements.
- ELT 7: Identify and describe social engineering tactics and techniques and how they are employed in generic social engineering attacks.
- ELT 8: Analyze social engineering in historical and institutional situations and identify the tactics and techniques they use.
- ELT 9: Apply course content and skills through various lab-based exercises and evaluate the outcomes, limitations, and potential methods of prevention.
- ELT 10: Demonstrate the ability to work effectively in cooperative groups to achieve common goals by ensuring knowledge of his/her role, listening and respecting the opinions of others, contributing valid thoughts when necessary, completing all portions of his/her assigned role, as well as meeting other necessary cooperative group expectations.
- ELT 11: Demonstrate the ability to present well-developed, research-based presentations that use evidence to support an argument.

Social Science 402(Honors): Evolution of Social Engineering - year (230104a)

Brief Description

This course will introduce students to the concepts and scenarios surrounding the topic of social engineering. Students will explore and analyze the impact of social engineering on societies as well as on matters of security with an emphasis on the human element of the security issues. Students will become familiar with social norms and social roles that are common to many cultures as well as those that are specific only to certain cultures. Students will be introduced to popular types of social engineering attacks and learn how and why they are successful. The development and evolution of media, including social media, will be discussed and students will learn how to recognize common social engineering techniques in media and advertising. Students will explore various historical situations where social engineering has influenced societies and they will learn how to identify the techniques and tactics that were employed to gain leverage of individuals and societies. The 402 course will include extension activities that build upon the skills and content gained during the fall and winter terms. ***This course is only available for students who entered ASCTE as a freshman***.

Essential Learning Targets:

- ELT 1: Evaluate and describe culturally-common and culture-specific social norms and roles.
- ELT 2: Evaluate the various principles of persuasion and how they are employed to gain compliance from individuals through common social engineering attacks, marketing, advertising, and other areas.

- ELT 3: Analyze the impact of various forms of media on the ideals and decision-making process of individuals and societies.
- ELT 4: Identify social engineering in advertising and evaluate the tactics and techniques they use.
- ELT 5: Evaluate the framework of the professional social engineer including OSINT, pretext development, engagement planning, implementation, and reporting.
- ELT 6: Identify and explain the importance of both verbal and non-verbal forms of communication as well their impact on the effectiveness of social engineering engagements.
- ELT 7: Identify and describe social engineering tactics and techniques and how they are employed in generic social engineering attacks.
- ELT 8: Analyze social engineering in historical and institutional situations and identify the tactics and techniques they use.
- ELT 9: Apply course content and skills through various lab-based exercises and evaluate the outcomes, limitations, and potential methods of prevention.
- ELT 10: Demonstrate the ability to work effectively in cooperative groups to achieve common goals by ensuring knowledge of his/her role, listening and respecting the opinions of others, contributing valid thoughts when necessary, completing all portions of his/her assigned role, as well as meeting other necessary cooperative group expectations.
- ELT 11: Demonstrate the ability to present well-developed, research-based presentations that use evidence to support an argument.
- ELT 12: Evaluate tangential works to identify and analyze historical and institutional social engineering.

Optional/Elective Advanced Placement Social Science Courses

Advanced Placement (AP) Psychology (04256E1000)

Brief Description

The AP Psychology course introduces students to the systematic and scientific study of human behavior and mental processes. While considering the psychologists and studies that have shaped the field, students explore and apply psychological theories, key concepts, and phenomena associated with such topics as the biological bases of behavior, sensation and perception, learning and cognition, motivation, developmental psychology, testing and individual differences, treatments of psychological disorders, and social psychology.

Essential Learning Targets:

- ELT 1: Recognize how philosophical and physiological perspectives shaped the development of psychological thought.
- ELT 2: Identify the research contributions of major historical figures in psychology.
- ELT 3: Describe and compare different theoretical approaches in explaining behavior.
- ELT 4: Differentiate types of research with regard to purpose, strengths, and weaknesses.
- ELT 5: Analyze and interpret quantitative data.
- ELT 6: Describe the development of the body and brain and the impact of outside influences (drugs, alcohol, trauma, and experiences) on our body systems.
- ELT 7: Understand how we learn and the process of learning and changing behavior.

- ELT 8: Describe the role that memory, thinking, and intelligence play in behavior.
- ELT 9: Describe how our human developmental stages impact how we perceive and understand others and the world around us.
- ELT 10: Identify theories that address what motivates us and why we act the way we do.
- ELT 11: Recognize and discuss the major diagnostic categories and psychological disorders.
- ELT 12: Describe terms and concepts in social psychology and how they relate to how humans interact with one another.

Advanced Placement (AP) US History (04104E1000)

Brief Description
AP US History is the study of the cultural, economic, political, and social developments that have shaped the United States from c. 1491 to the present. Students will analyze texts, visual sources, and other historical evidence and write essays expressing historical arguments.

Essential Learning Targets:
- ELT1: Evaluate Native American societies as well as how and why Europeans first explored, and then began to colonize, the Americas (1491-1607).
- ELT 2: Analyze the establishment of colonies in the New World by the Spanish, French, Dutch, and British (1607-1754).
- ELT 3: Analyze the events that led to the American Revolution and the formation of the United States and examine the early years of the republic (1754-1800).
- ELT 4: Evaluate how the United States developed politically, culturally, and economically during this period (1800-1848).
- ELT 5: Evaluate the expansion of the United States as well as the events that led to the secession of the Southern states and the Civil War (1844-1877).
- ELT 6: Analyze the nation's economic and demographic shifts in the mid-to-late 1800s and their links to cultural and political changes (1865-1898).
- ELT 7: Evaluate America's changing society and culture and the causes and effects of the global wars and economic meltdown of the period between 1890-1945.
- ELT 8: Evaluate the rivalry between the Soviet Union and the United States, the growth of various civil rights movements, and the economic, cultural, and political transformations (1945-1980).
- ELT 9: Evaluate the advance of political conservatism, developments in science and technology, and demographic shifts that had major cultural and political consequences from 1980 to the present.

SPECIALTY SUBJECTS

Ethics 101(Honors) (905601)

Brief Description
Honors Ethics 101 begins with 12 weeks (first term) of “student success” concepts to help new students at ASCTE feel more prepared to tackle the challenges in their academics, social interactions, and ability to manage stress and transition. We link these concepts into the values that are important to the student (ex. Honesty and trustworthiness, resilience, growth mindset, etc.)and how those can be realized through proper planning and execution of healthy coping and executive functioning skill building.

The second term introduces the student to the basic concepts of personal values and ethics. We first look at how ethics impacts our daily decision making and then move into how our society as a whole is impacted by ethical decision-making (or the lack thereof). The focus is on helping students begin to develop their set of personal values and ethics that guides them and to use critical thinking skills to work through more complex ethical dilemmas we face both personally and globally.

Current events will play a large part in the on-going discovery of ethics and concepts such as privacy, protection of personal data, social networking/media, and a professional code of ethics will be discussed. The impact of IT on society and the influence of IT Corporations on culture and ethics as well as general business and personal ethics will also be explored in preparation for the AP CSP exam.

Essential Learning Targets:

- ELT 1: Identify at least 3 supports that ASCTE offers to help you as a student and how to access those services.
- ELT2: Demonstrate effective use of at least one time management tool of the student's choice.
- ELT3: Describe your learning style(s) and how those impact how you learn and study.
- ELT4: Identify potential barriers to learning and a positive school experience and how those barriers impact a student's academic, physical, mental and emotional health.
- ELT5: Apply at least one healthy coping skill/individual plan to manage stress, test anxiety, relationships, social media, sleep or other potential barriers to learning/relationships.
- ELT6: Identify your own personal values and how those impact your decision-making.
- ELT 7: Analyze the difference between values, morals, ethics and laws.
- ELT 8: Identify some of the historical beliefs, codes, and laws that make up our current ethical decision making processes.
- ELT9: Identify the 5 main ethical principles used in both professional and personal decision making and be able to apply them to scenarios in which some of these principles may conflict.
- ELT 10: Demonstrate understanding of the theories of ethical decision-making and be able to discuss ways to apply them.
- ELT 11: Identify the ethical implications of how computing innovation, gathering of data, and intentions for use of data can affect not only the individual, but others that are different from them, and society as a whole.
- ELT 12: Identify how collaboration/perspective-taking is important in ensuring ethics is involved in the development of solutions.
- ELT 13: Explain how computing and technological innovations and the potential effects could be both harmful and helpful.

Ethics 201(Honors) (905602)

Brief Description

This course introduces the student to the basic legal, ethical, and societal issues and implications of information technology. Current events will play a large part in the on-going discovery of ethics regarding privacy, intellectual property, protection of personal data, social networking, software systems, and a professional code of ethics. The impact of IT on society and the influence of IT Corporations on culture and ethics as well as general business and personal ethics will also be explored.

Essential Learning Targets:

- ELT1: Examine freedom of speech, First Amendment Rights, internet censorship, and information access as it relates to ethical decision-making.
- ELT2: Define and be able to utilize Kohlberg's Theory of Moral Development in everyday situations.
- ELT3: Analyze the relationships and ethical obligations between stakeholders using reflexive principlism.
- ELT4: Be able to articulate a personal ethics statement that makes strong connections between life experiences and ethical stances and beliefs.
- ELT5: Investigate the distinct ethical responsibilities in government.
- ELT6: Demonstrate the ability to view and articulate both sides of an ethical argument regarding the use of artificial intelligence in business and social settings.
- ELT7: Demonstrate the ability to objectively scrutinize and apply ethically sound decision-making to ensure biotechnology is being used ethically.

Field Experience I (990101a)

Brief Description

This course allows students to interact with industry professionals in the fields of cyber technology and engineering. Students will be introduced to various career fields via in-house visits.

Field Experience II (990101b)

Brief Description

This course allows students to interact with industry professionals in the fields of cyber technology and engineering. Students will be introduced to various companies via on-site visits. ***Prerequisite Field I***

Field Experience III (990101c)

Brief Description

This course allows students to interact with industry professionals in the fields of cyber technology and engineering. Students will create and develop a professional portfolio. Students will critically evaluate areas of interest in Cyber Technology and Engineering. ***Prerequisite Field II***

INTERNSHIP

Internship (990101 and 90102)

Brief Description

This course allows students to interact with industry professionals in order to gain experiential learning via the company, non-profit, governmental, or community-based organization. This course represents an educational strategy that links academic learning and student interest with the cultivation of knowledge in an applied work setting. As students observe, reflect, and evaluate, they will understand the internship site's mission, audience, and work. Students will produce a critical reflection on their internship experience demonstrating how they have addressed specific learning goals. (***All 28 ASCTE course credits must be earned prior to internship placement.)***

Prerequisites: Field I, II, III - Successful completion is required for placement.

Wellness 101 (240101)

Brief Description
In this course, students will learn about the dimensions of wellness and how their daily choices affect their overall health. Students will also actively participate in health and wellness activities that culminate with a wellness project. These are national standards from www.shapeamerica.org.

Essential Learning Targets:
- ELT 1: Analyze the value of good health.
- ELT 2: Apply decision-making skills for health.
- ELT 3: Evaluate risk-taking and substance abuse.
- ELT 4: Understand the significance of media and health.
- ELT 5: Create a plan for managing stress, anger, and other emotions.
- ELT 6: Analyze family communications.
- ELT 7: Differentiate healthy relationships.

Wellness 201 (250101)

Brief Description
In this course students will learn about the dimensions of wellness and how their daily choices affect their overall health. Students will also actively participate in health and wellness activities that culminate with a wellness project. These are national Standards from Alabama Learning Exchange (ALEX).

Essential Learning Targets :
- ELT 1: Exhibit competency in activity-specific movement skills in two or more lifetime activity.
- ELT 2: Analyze the potential severity of injury or illness if engaging in unhealthy behaviors.
- ELT 3: Demonstrate a variety of behaviors to avoid or reduce health risks to self and others.
- ELT 4: Examine barriers that can hinder healthy decision making.
- ELT 5: Demonstrate how to influence and support others to make positive health choices.
- ELT 6: Analyze how environment and personal health are interrelated.
- ELT 7: Analyze how peers influence healthy and unhealthy behaviors. Analyze how the culture supports and challenges health beliefs, practices, and behavior.
- ELT 8: Analyze personal susceptibility to injury, illness, or death if engaging in unhealthy behaviors.
- ELT 9: Analyze how public health policies and government regulations can influence health promotion and disease prevention. Analyze the relationship between access to health care and health status.
- ELT 10: Compare and contrast the benefits of and barriers to practicing a variety of healthy behaviors.
- ELT 11: Describe the interrelationships of emotional, intellectual, physical, and social health.

Eighty-percent (80%) of any specialty course's ELTs must be earned to pass the course. (Graduation Requirement)

ADVANCED PLACEMENT (AP)

ASCTE offers fourteen (14) credit-bearing College Board Advanced Placement (AP) Courses*. Two (2) AP courses are embedded into the current ASCTE curriculum. Unembedded AP offerings complement the ASCTE curriculum but do not replace any required courses in the ASCTE core subject matter.

Again some AP courses are embedded in the ASCTE academic track. In contrast, others are considered electives and open for students with the following; a minimum 3.5 GPA in the subject area, being in good standing with ASCTE, and having parent and the Dean of Student Affairs permission.

The following Advanced Placement courses beyond those embedded include AP Biology, AP Chemistry, AP Computer Science A, AP Computer Science Principles, AP Language and Composition, AP Physics 1, AP Physics C Electricity & Magnetism, AP Psychology, AP Statistics and AP US History.

Students earn grades in credit-bearing courses.
**** Students must pay for exam fees unless it's 100% embedded in a required course.***
Students electing to take AP will be charged a $50 cancellation charge if the student chooses to withdraw from the course without completing the national exam.
Credit-Bearing courses are added to the ASCTE GPA calculations.

COURSE OVERLOAD

Under normal circumstances, a student at the Alabama School of Cyber Technology and Engineering will be registered for thirteen courses within a year. Enrolling for more than the normal courses, is an overload and requires special permission. Students seeking to overload should complete this form and submit it to the Dean of Teachers and Student Learning no later than the end of the first week of the semester.

Approval for credit overloads is not guaranteed, though approval for overloads will not be unreasonably withheld for qualified students. Students requesting an overload should have a current 4.0 GPA in all courses. Prior to approval, students may be requested to meet with appropriate academic personnel to discuss this request before a decision is made. Approval will not normally be granted until the first day of the semester. Approval for credit overload does not constitute registration in and does not guarantee availability of any particular course or section. Students will be notified of the disposition of request via ASCTE email.

ENRICHMENT & ELECTIVES

2024-2025 Enrichment offerings based on student interest and are subject to change:

At ASCTE, we are dedicated to providing our students with a multicultural education that prepares them for the demands of the 21st century and beyond. As a cyber & engineering mission-focused high school, we recognize the importance of proficiency in critical languages. Therefore, ASCTE offers two in person foreign language options; Mandarin and Russian. We also offer Spanish 1, 2 & 3 online through the ACCESS program. This unique approach ensures that our students graduate equipped with technical expertise and the linguistic and cultural competency needed to thrive in an increasingly interconnected world.

Foreign Language

- **ACCESS - Spanish I or Spanish II (Both Winter and Spring Term)**

  Brief Description

  This is an online course to take Spanish as a foreign language. Students may take one of the two courses offered, Spanish 1 or Spanish 2. Students enrolling in Spanish 2 must have a credit on their transcript for Spanish 1. is the study and application of the basic principles of debate involving support for the basic types of arguments (induction, deduction, causation) and debate strategies (affirmative or negative argument construction and extension, case development, refutation or rebuttal of argument claims and evidence, and persuasive speaking).

- **Mandarin Chinese**

  Brief Description

  Mandarin Chinese I (270161)

  The Mandarin Chinese I is an introduction to the spoken and written language of China, with a focus on communicative competence to build a foundation for further study. Mandarin is one of the United States State Department's critical languages. Students will participate in a variety of research-based Comprehensible Input activities in order to acquire vocabulary, syntax, and grammar with a goal of novice-mid to novice-high level as defined by the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines. Class activities will include special person interviews, listening to and retelling stories, character reading and writing, and an introduction to Chinese culture. Some work outside class will be expected of students.

  Mandarin Chinese II (270162)

  Mandarin Chinese II is the continuing study of the spoken and written language of China, with a focus on communicative competence. Mandarin is one of the United States State Department's critical languages. Students will participate in a variety of research-based Comprehensible Input activities in order to acquire vocabulary, syntax, and grammar with a goal of *Novice High* to *Intermediate Low* level as defined by the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines.

- **Russian**

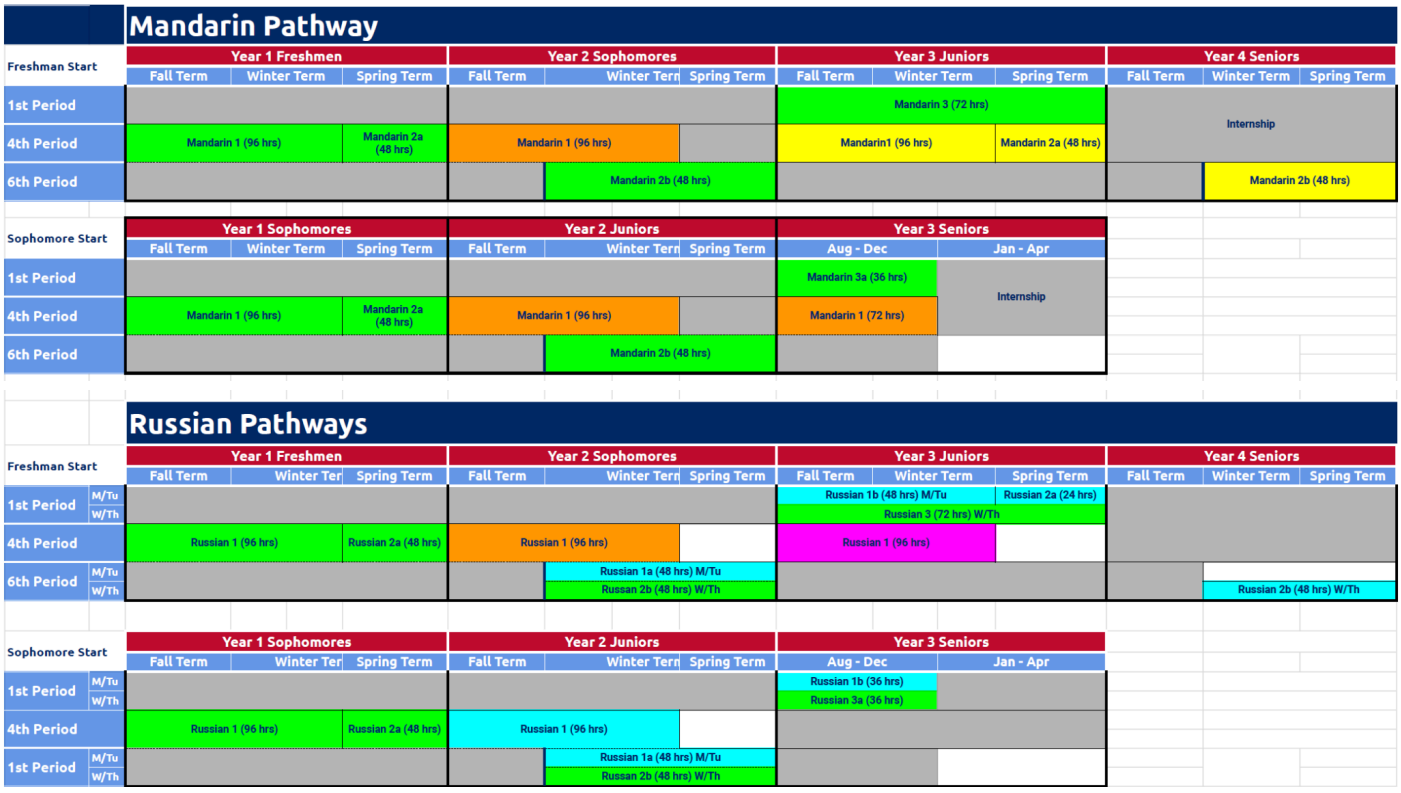
  Brief Description

  Russian I (270171)

  Russian Language I is an introductory course designed for students with little to no background in Russian. The course focuses on developing communicative competence with an emphasis on listening, speaking, reading, and writing in Russian using the Cyrillic Russian alphabet. Russian is one of the United States State Department's critical languages.
  The course will be taught primarily using the research-based instructional methodology of Teaching Proficiency through Reading and Storytelling (TPRS). This method allows students to gain proficiency in Russian by creating a natural, immersive, and engaging learning environment that combines storytelling and reading in the classroom. The goal of this course is for students to achieve a novice-mid or novice-high level in listening, speaking, reading, and writing as defined by the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency

Guidelines (available at https://www.actfl.org/uploads/files/general/Resources-Publications/ACTFL_Proficiency_Guidelines_2024.pdf).
Class activities will include special person interviews, listening to and retelling stories, reading and writing in Cyrillic, and an introduction to the cultures of Russian speaking countries and people groups around the world. Students will be expected to do work outside class to gain proficiency.

Russian II (270172)
Russian Language II is an intermediate course designed for students who have completed the Russian Language I course. Students will continue building on the concepts and skills learned in Russian Language I with the goal of achieving a higher level of communicative competence in listening, speaking, reading, and writing in Russian. Russian is one of the United States State Department's critical languages.
As with Russian Language I, this course will also be taught primarily using the research-based instructional methodology of Teaching Proficiency through Reading and Storytelling (TPRS). Students will be expected to participate more in co-creating stories with the instructor and reading at a higher reading level. The goal of this course is for students to achieve a novice-high to intermediate-low level in listening, speaking, reading, and writing as defined by the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines (available at https://www.actfl.org/uploads/files/general/Resources-Publications/ACTFL_Proficiency_Guidelines_2024.pdf). Class activities will include special person interviews, listening to and retelling stories, reading and writing in Cyrillic, and interacting with the various cultures of Russian speaking countries and people groups around the world. Students will be expected to do work outside class to gain proficiency.



Student who want to study three foreign languages in sequence should start with Level 1 of the first language in their first year at ASCTE.

- **Archaeology**

  Brief Description

  Want to know what Archaeology is all about? Why is it important? And how is it done? Join this class as we study human history through the analysis of human artifacts and other remains.

- **Arduino Electronic Controllers**

  Brief Description

  Design/build some useful, fun projects involving an Arduino (or Raspberry Pi) Controller and coach students through the process of learning how to connect and program the controller to design and build something, thus gaining experience with these popular electronic controllers and prepping them for their Capstone project. This would involve some CAD design, some programming, and possibly some fab shop equipment and is open to all students. (Suggest designing/building a simple mobile robot)

- **Basic Self - Defense**

  Brief Description

  Chief of Security, Officer Melvin Harris will instruct students in the fundamental concepts of self-defense. This course is primarily designed for beginners interested in being exposed to differing philosophies in self-defense. The course covers techniques for both standing and ground fighting. Academically, the course covers topics of assault, battery, and home invasion crimes.

- **Broadcast Radio Operations**

  Brief Description

  Broadcast Radio Operations will support the creation and initial operation of WDND Sentinel Radio, the new ASCTE FM radio station. This course will include technical aspects of broadcast radio including transmitter and antenna, FCC regulations for radio transmissions and content, and studio operations.

- **CO2 Race Cars (Winter/Spring Term)**

  Brief Description

  This enrichment will offer opportunities for students to: utilize CAD skills to design a race car based on certain requirements and constraints; learn to use basic woodworking equipment to fabricate the race car, then allow students to race their cars. As time permits, students can then iterate on their design and fabrication for improved race performance. (*1st year students need to be introduced to CAD*

in Honors Engineering 101 prior to being allowed to register for this enrichment.)

- **College Math Skills**

  Brief Description

  This mathematics elective is designed to provide college admission standardized test (SAT/ACT) support and to be an extension of the ASCTE math program. Course content is based on students' individual skill levels. The content will assist students in preparation for college admission standardized tests and college math placement exams. This course will also review fundamental math skills required for a first semester college math class. No Essential Learning Targets (ELTs) are attached to this course.

- **Cyber Patriot**

  Brief Description

  This elective is for students interested in cybersecurity and competing in the National Youth Cyber Defense Competition. Students will form teams and learn the fundamentals of cybersecurity, network defense, cryptography, access control, and risk management. Through practical lab exercises, students will develop skills in identifying and mitigating cyber vulnerabilities. Students will learn to use industry-standard security tools and technologies, and work together to develop critical thinking and problem-solving skills essential for success in the competition. This course will provide students with valuable experience and an opportunity to compete at the national level.

- **Drama**

  Brief Description

  Drama is an introduction to the theater. Learn basic theater principles in stage movement, voice, diction, and pantomime. Practice techniques to overcome stage-fright and develop self-confidence. Concentrate on improvisational techniques and acting skills for in-class performance and video projects. Students become acquainted with the history and vocabulary of theater. Areas of technical production such as make up, lighting, costuming, and set design are studied. Activities may include performance, acting skills, writing of original scenes, in-class performance and video projects, as well as acting in established scenes. Develop oral interpretation skills. For any student interested in theater arts. A student may encounter fees involved in competition-level productions/performances.

A student may be asked to cover the cost to provide their own costume/makeup in part or whole depending on production.

- ## Driver and Traffic Safety Education

  Brief Description

  This course is designed to develop good driving skills, knowledge and attitudes with an emphasis on safety. Classroom, simulation, range and road experience will be included. Students will have knowledge and understanding, through classroom activities, of content areas. Students will practice and demonstrate, through driver simulation, the skills and learning of content areas. Students will practice and demonstrate, on the road and range, the skills and learning of the content area. (*Certificate may be earned in this course*)

  Essential Learning Targets :

  - ELT 1: Explain requirements for obtaining an Alabama Learner License and an Alabama Driver License, including any restrictions.
  - ELT 2: Describe Alabama's basic speed law.
  - ELT 3: Identify traffic signs, traffic signals, and pavement markings as basic types of traffic controls.
  - ELT 4: Explain basic maneuvers of driving, including steering, braking, passing, lane changing, merging, parking, signaling, and turning.
  - ELT 5: Describe driver responsibilities toward other highway users, including pedestrians, motorcyclists, bicyclists, and drivers of commercial vehicles and buses.
  - ELT 6: Identify dangerous driving situations that may occur on rural roads and urban streets. Explain how nature affects the ability to properly control a vehicle.
  - ELT 7: Identify responsibilities of owning and operating a vehicle, including factors involved in purchasing a vehicle, purchasing insurance, and maintaining a vehicle.
  - ELT 8: Boating Safety

- ## Fundamentals of Rocketry

  Brief Description

  Fundamentals of Rocketry will introduce students to the basic concepts needed to understand the operation of rockets, including types of rockets, combustion, aerodynamics, and controls. Students will work in teams to develop and build model rockets according to the specifications of the American Rocketry Challenge, and teams may compete in the challenge if basic qualifications are met.

- ## Fusion CAD + Fabrication Shop

Brief Description
This course is an introduction to basic Computer Aided Design and 3D modeling functions and techniques using “hands-on” applications. Topics include technique, terminology, hardware, basic computer aided design (CAD) and operating system functions, file manipulation, industry standards for CAD drawings, and basic CAD software applications in producing softcopy and hardcopy. Students will spend the first 4-6 weeks to produce 3D models and/or two-dimensional drawings and then work in the Fabrication Shop to build the project with tools in the shop.

- **Graphic Arts**

Brief Description

This course combines creative minds and technology to produce effective messages through digital design. Students will become familiar with the fundamentals and principles of Graphic Design. Students will be engaged in creative thinking, completion planning and efficient execution of projects. Students will learn numerous software applications such as but not limited to Adobe Illustrator, Adobe Photoshop, InDesign and the foundations of typography, page layout and composition with focus on aesthetics.

- **Guitar Fabrication**

Brief Description

The course will begin with design decisions such as guitar body wood choice, then proceed in CAD with guitar body, neck, and fretboard designs. Discussions involved in the design phase will include the math of musical scales, design tolerances, the physics of sound waves, guitar electronics, fastener/adhesive types, and performance/cost tradeoffs. During the fabrication phase, the ASCTE shop CNC Router will be used to cut the body and neck from the CAD files. This will involve introducing students to CAM (Computer Aided Manufacturing) setup within the CAD/CAM software tool to define cutting tool paths and bit characteristics. The final phase will include assembly of electronics components (pickups, potentiometers, switches), sanding, coating and finishing of the guitar body and neck, assembly of the fretboard and strings. Finally, all components will be assembled together.

****There is a fee associated with this course. Class size is limited to 10 students.*

- **Intellectual Property Basics**

Brief Description

IP Basics will introduce students to the basic forms of intellectual property, including trade secrets, copyrights, trademarks, and patents. The majority of the term will focus on utility patents as well as basic case law pertaining to intellectual property.

- **Into the Cyberverse**

Brief Description

If you've ever wanted to learn a new programming language, prepare for capture the flag competitions, practice for hackathons, modify the linux kernel, or start a scholarly cyber research project, then this elective is for you! The "Into the Cyberverse" elective is designed to be a catch-all elective for students who are interested in exploring Cybersecurity concepts not covered in class. Students who are registered for this elective are expected to register with a research topic or they will be given a topic to research by the elective instructors. This elective will result in students who are more experienced and confident in the field of Cybersecurity.

- **Machine Learning and Intrusion Detection**

  Brief Description

  This elective is designed for students interested in cybersecurity and machine learning. In this course, students will learn how to train machine learning models to identify and detect malicious network traffic. Students will use real-world datasets and open-source tools to train and implement machine learning models that will identify and classify different types of network traffic. Through team-based projects and lab exercises, students will work collaboratively to train and optimize their models for peak performance. This course is ideal for students interested in pursuing a career in cybersecurity or data science, and will provide them with valuable skills and knowledge in both fields.

- **Makerspace Lab**

  Brief Description

  Students will work on individual projects within the makerspace lab to design, model, and create 3-D objects and/or two-dimensional drawings. This course is open to students of all levels.

- **Math Foundations**

  Brief Description

  This mathematics elective is designed to provide course support and a review of the ASCTE math program. Course content is based on students' individual skill levels. It proceeds at a pace to aid and accommodate students with current math placement as well as preparation for future mathematics coursework. No Essential Learning Targets (ELTs) are attached to this course. Students may be assigned to this course based on test scores or academic performance in Math 101.

- **MBSE Model Based Systems Engineering**

  Brief Description

  MBSE (Model-Based Systems Engineering) – Sys 101 is a Dual Enrollment class with Calhoun. This course will be taught by an ASCTE Engineering instructor on the ASCTE campus. Students will enroll via Calhoun Community College normal class registration process. MBSE is a growing technology

involving modeling complex systems by integrating different detailed lower-level subsystem models. This is the first in a series of courses offered by Calhoun introducing this technology. This first course provides the student with an in-depth knowledge of systems engineering and how to view and analyze complex products from a systems perspective. The follow-on courses (taught on Calhoun campus) will focus more on software tools involved in building models, including Systems Modeling Language (SML), system architecture development, and specifically using the CAMEO tool.

****Students must be enrolled into Engr201 or have completed Engr201 at ASCTE to register for this course. The course will meet 3-4 days/week at ASCTE.*

- **Metal Working**

  Brief Description

  Students will learn the techniques and skills necessary to join and manipulate metal pieces through welding processes, including arc welding, gas welding, and metal fabrication, equipping them with the ability to create and repair metal structures and components.

- **Music Technology I**

  Brief Description

  Music Technology I will give students an introductory experience into the world of Music Technology. Students will use Reason Studios 11 software to create musical masterpieces that range across genres. Students will use technology to create, record, and perform music. This course will allow students to fuse the worlds of engineering and the arts. It will uniquely meet students at their individual musical experience level. Music Technology I offers room for growth and development for students who identify as beginners or professionals in their musical ability. Students will gain knowledge and experience in music theory, history, and technology while working with professional music software.

- **Music Theory**

  Brief Description

  Music Theory and Composition is a course designed to introduce students to the study of musical notation, melody, rhythm, tonal harmony, and harmonic analysis. The foundational skills taught will enhance student knowledge of why and how music works. With said knowledge, students will be able to formally analyze various styles of music and create original compositions.

- **Networking**

  Brief Description

  This course is designed to teach networking fundamentals based on the OSI Model. Students will learn cabling, switching, IPV4 subnetting, wireless, and routing protocols. The class will use Cisco Packet Tracer to build virtual networks and test packet flow. We will study best practices with real-world scenarios. These skills will be very useful in your future careers in technology. We all

learn to work on the devices connected to the network and how they connect.

- **Office Aide**

  Brief Description

  In this position, students may be assigned to work as aides for various offices/departments (main office, student services, IT, etc.) within the school. Students must have and maintain a positive attitude and reputation to be considered for this position. Duties may include, but not limited to:
  - Escorting guests to and from designated meetings.
  - Delivering mail.
  - Assisting front office staff as needed.

  There is an application process for this position. Interested students should email Mrs. Foster (andrea.foster@ascte.org) for the application link.

- **Operations Research Survey Course**

  Brief Description

  Do you wonder what happened to cause Southwest Airlines to cancel 16,000 flights over the winter holiday season in 2022? Would you like to understand how UPS or FedEx determine the best route to deliver packages every day? Have you considered whether it is preferable to have customers wait in a single line and be checked out at multiple registers or to have multiple lines with a single register at each line? If so, you should check out Operations Research *(aka The Science of Better!).* In this Operations Research Survey Course, we will discuss Optimization (or "Mathematical Programming"), Queueing Theory, and Modeling & Simulation.

- **Outdoor Court Sports**

  Brief Description
  In this elective course students will receive an introduction to court sports and will learn the basic principles, techniques, safety guidelines and scoring of court sports such as tennis, badminton and pickleball.

- **Personal Finance**

  Brief Description
  This course provides essential knowledge and skills required to manage personal finances efficiently. Topics include budgeting, saving, investing, credit management, taxes, and insurance. Through interactive lessons and real-life scenarios, students will learn to make informed financial decisions, plan for future financial goals, and understand the impact of financial choices. The course aims to build a foundation for financial literacy, empowering students to achieve financial security and independence.

- **Poetry Writing**

  Brief Description

Poetry Writing is a course where students will learn to write, edit, interpret, and perform poetry. Students will gain knowledge about multiple genres and styles of poetry. This course will challenge students to write, critique, and read poetry from their peers and other well-known established poets. At the conclusion of the course, students will have a portfolio of original writings.

- **Programmable Drones**

  Brief Description
  Students will learn the flight principles and operational interfaces behind unmanned aerial vehicles. This course is open to students of all levels.Younger students with limited programming experience will use block coding. This will reinforce skills they are learning in CYB 101.More experienced students will have the opportunity to use more advanced languages such as Java and Python.

- **Radio Frequency Engineering**

  Brief Description

  RF Engineering will introduce students to the basic principles of electromagnetic waves, wireless communication, radio operations, and RADAR. The radio operation portion of the class will include some hands-on learning using equipment from the Amateur Radio Club. Approximately half of the term will focus on communications, with the other half focused on RADAR.

- **Robotics**

  Brief Description

  In this course students, working in small groups, will create a robot using a platform of their choice (Arduino, Raspberry Pi, VEX, Tello Drone, CoDrone). Students will have the option of using this robot to compete in robotics competitions throughout the year. Enrollment in this course is not a prerequisite for participating in competitions but highly encouraged.This course is limited to second and third year students who have successfully completed CYB 101 and ENG 101 with a 3.0 or higher.

- **SAT/ACT Prep**

  Brief Description
  Students will use software provided to all students to review key concepts and skills, and practice with sample questions and exams to improve their performance on standardized tests.

  Course components include:
  - Pre-testing to identify your strengths and weaknesses.
  - Skills development and test-taking strategies.

- Mini-practice tests.
- Access to full-length practice exams.
- The final test to see how far you've come.

- **School of Rock**

  Brief Description
  The 'School Of Rock' class is a thrilling ensemble experience where you'll collaborate with fellow students to form your own band, learn to play songs together, create your own song, and fully harness your musical skills while creating harmonious synergy. From song selection and arrangement to stage performance, this hands-on class offers a unique, immersive experience, culminating in a live showcase for friends and family to enjoy your musical journey.

- **Sports Officiating**

  Brief Description
  This course is an elective course that focuses on the professional philosophy, and professional requirements for officiating sports for athletic contests. This course will cover officiating football, basketball, wrestling, volleyball, soccer, baseball, track and field, and softball. Upon completion of the course students will be afforded the option to take certification exams for any of the sport components and become a restricted certified official with the Alabama High School Athletic Association at the middle/junior high school level. The prerequisite for this course is Lifelong Individualized Fitness Education (LIFE) or its equivalent. The student must be age 16 or older, or turn age 16 during the school year. The teacher of this course must hold current registration as an Alabama High School Athletic Association official (any sport).

- **Strength & Conditioning**

  Brief Description
  This course is designed to give students the opportunity to learn fitness concepts and conditioning techniques used for obtaining optimal physical fitness. Students will benefit from comprehensive weight training and cardiorespiratory endurance activities. Students will learn the basic fundamentals of strength training, aerobic training, and overall fitness training and conditioning. Students will be empowered to make wise choices, meet challenges, and develop positive behaviors in fitness, wellness, and movement activity for a lifetime.

- **Stringed Instruments**

  Brief Description
  Embark on a comprehensive exploration of stringed instruments in this immersive class. Students will learn the basics of playing, delve into the fundamentals of music theory, understand the diverse types of stringed instruments and their construction, and recognize their role in various music genres from past and present. This multidimensional journey offers hands-on experience and theoretical knowledge, fostering a solid technical foundation, a broader appreciation for music, and the ability to express oneself confidently through the universal language of sound."

- **WHATEVER I NEED - WIN (802301)**

  Brief Description
  This non-graded course is designed to provide immediate interventions and support for students using a tiered approach. All students will receive basic support strategies such as study skills, time management, and advisory.

- **Yearbook**

  Brief Description
  The Yearbook Club includes the comprehensive coordination and execution of all tasks necessary for the development of the ASCTE Yearbook: The Sentinel. Students will engage in learning opportunities involving photography, interviewing techniques, storyboarding, essential computer skills and fundamental tools in Adobe Illustrator and Photoshop.

Shop Courses

- **Bicycle Motorization**
  Students will work together in small teams to assemble, install, and configure equipment on 2 bicycles to motorize them. One team will be responsible for learning about, installing, and testing an electric motor kit on a bicycle. The remaining team will be responsible for learning about, installing, and testing a combustion engine kit on a bicycle. The teams will test drive both motorized bikes over a period on the ASCTE campus, recording various performance measures. Students will then prepare a summary presentation on their work, performance analysis results, and recommendations.

- **Biochemistry**
  Students will learn the fundamental principles of the chemical processes and molecules that underpin biological systems, including the structure and function of proteins, nucleic acids, carbohydrates, and lipids, providing them with a foundation to understand the molecular basis of life.

- **Farmbot**
  Students will have an opportunity to assemble, program, and make operational a Farmbot system. When assembled and functional, this is an automated (programmable) robotic system that is designed to plant, monitor, and maintain various types of small plants in a raised bed structure. The system includes various sensors, motors, mechanisms working together with a computer controller to achieve this functionality. Students will gain valuable experience in understanding the challenges and benefits of assembling and operating such a system.
- **Green Power Car**
  ASCTE will enter a team in the GreenPower vehicle competition. This will students to gain more experience with CAD, fabrication, assembly, and operations while working with other students in a small team environment. This elective will take place for both the Winter and Spring terms, and students can participate in either one or both terms. The competition races occur during the Spring

term.

- **Intro to Computer Numerical Control (CNC)**
  Students will be introduced to designing and fabricating various cut, engraved, carved objects using programmable tools. There is currently a programmable CNC router (primarily wood cutting) and a programmable CNC water jet cutter (various materials) in our fabrication shop. This course will provide a basic introduction for working through the CAD, CAM, and machining processes to create a physical object from an electronic design file. Open to students who have at least a basic understanding of creating designs using Fusion 360 CAD.

- **Intro to Design and Woodworking**
  Students will learn/use CAD (either TinkerCAD or Fusion 360) application to design, fabricate, and assemble some useful and functional item. Emphasis will be on designing and building relatively simple objects that serve to further experience in CAD/3D printing and introduce various woodworking tools, such as band saw, drill press, belt sander, scroll saw, wood lathe, and programmable CNC router. Items such as a bluetooth speaker, wooden lamp, flashlight, bowl, engraved/carved wood sign/plaque are currently being considered.

- **Intro to Welding and Metal Working**
  Students will be given an opportunity to learn the basics of both MIG and stick welding. Safety, setup/configuration, and techniques will be emphasized, and students will benefit from use of a computer simulation program initially before attempting their first weld. After basic welding techniques are practiced and mastered, opportunities will be provided to make various items for use in our school and/or community.

STUDENT LEADERSHIP

Student Life & Leadership Student Ambassadors

The Student Ambassador Program is a leadership program that offers The Alabama School of Cyber Technology and Engineering (ASCTE) students an opportunity to represent and promote ASCTE to prospective students, their families, and other guests. Student Ambassadors will be able to help educate visitors about the campus life, history, traditions, and achievements of the school through conducting campus tours, supporting recruitment events, and supporting school functions.

Duties and Responsibilities

Support Student Life & Academic department events (Including, but not limited to: Orientation Days, Field Experience days, Lunch & Learn, and MOU signings)

- Conduct Campus Tours
- Meet and greet prospective students, families, and special guests
- Assist in Community Relation efforts

- Represent the school at off-campus events as needed. Provide assistance in the office as requested
- Perform other duties as assigned

Student Ambassador Eligibility Criteria

- Must have successfully completed at least two terms prior to applying
- Must have and maintain a minimum 3.25 GPA
- Must be a student in good standing and not on Academic, Residential, or Disciplinary Probation
- Must commit to working a full academic year

Student Ambassador Time Commitments

- Must be available to attend all Training Sessions- most will take place during after-school club time with Ambassador sponsor, Mr. Aaron Brazelton
- Must commit to working a full academic year beginning Fall through Spring and Summer

Student Ambassador desired Skills/Characteristics

- Enthusiasm to positively represent The Alabama School of Cyber Technology & Engineering
- Ability to work with diverse groups
- Organizational and time management skills
- Excellent communication skills in one-on-one and group setting
- Dependable, outgoing, and enthusiastic
- Possess the ability to listen, problem-solve, and react quickly

Instructions for Applying

Online applications may be completed by clicking on the following link Student Ambassador Application. Recruitment for Student Ambassadors takes place every Winter for the next academic year. Students must be available to commit a full academic year beginning in the summer and through the Fall and Spring. To be considered, students must submit the application by the priority deadline, which is **April 30**.

The application process consists of the following:

- Completed Student Ambassador Application
- Available for an Interview (early March)
- A Letter of Recommendation from faculty or staff member of ASCTE

Student Government Association (SGA)

The purpose of the Student Government Association (SGA) is to advise the School leadership team on the wants and needs of students. SGA is composed of class officers and team representatives.
Officers oversee the student body's wants, needs, and requests at grade level. Team representatives provide student input regarding educational decisions, student concerns, and requests.
General body meetings are held once per term with ASCTE leadership. These meetings include but are not limited to survey feedback, gaining student perspective on proposed upcoming academic and student life changes, and input on student suggested changes.

Class Officers

Each class elects class officers every May for the upcoming school year. Offices are:

- President
- Vice President
- Secretary
- Treasurer

To be elected, officers must run for office, make a speech, and be voted on by their peers.

Duties of the Class Officers

- Class officers are designed to help keep the class in order running smoothly.
- Class officers have the same eligibility for a sport, 2.5 minimum GPA.
- Class officers must attend all general body meetings.

Class Officer Responsibilities

President	• Conduct all meetings along with other class officers in your grade and your class advisor(s). • Work with the Vice president, secretary, and adviser to add to all class meetings and agenda forms that the Executive Board gives you. • Be a member of all class committees. • Attend all student government meetings and disseminate information about meetings to other members of your class.
Vice President	• Be a member of all class committees. • Work with the president, secretary and adviser to add all class meetings and agenda forms that the Executive Board gives you. • Attend all student government meetings and disseminate information about meetings to other members of your class, attend all student government meetings and disseminate information about meetings to other members of your class.

Secretary	• Keeps notes of all class meetings • Attend all student government meetings and disseminate information about meetings to other members of your class. • Work with the president, Vice president, and adviser to add to all class meetings and agenda forms that the Executive Board gives you.

Treasurer	• Attend all student government meetings and disseminate information about meetings to other members of your class. • Work with the president, Vice president, and adviser to add to all class meetings and agenda forms that the Executive Board gives you.

Team Representatives

Each team selects 2 representatives who will serve for the school year. Representatives are selected each Fall. To be selected, students must submit their interest on a form and are appointed by administration.

Duties of the Team Representatives

- Attend all general body meetings and disseminate information about meetings to other members of your class.
- Gather ideas and information from your classmates regarding school events, dances, themes, etc. and share them with the class adviser and executive board.

RESEARCH SUPPORT

LIBRARY

In cooperation with local Universities, the following research access will be provided to all ASCTE students.

- A variety of print, electronic, multimedia, and archival materials in addition to the provision of services to meet the information and research needs of all constituents.
- Access and borrowing privileges from any of these libraries' collections.
- Electronic access to the Online Public Access Catalog (OPAC).
- Multimedia and text tutorials, LibGuides, Ebrary & Ebsco ebooks, e-reference tools, and Films on Demand.

Research Libraries:

- Huntsville Public Library • The University of Alabama in Huntsville • Alabama A & M University
- Oakwood University

STUDENT SUPPORT

Counseling

ASCTE faculty and staff are trained annually to provide individualized support with a strong focus on confidentiality and student health. The ASCTE counselor facilitates ongoing outreach to ensure students feel supported. See the ***Student Handbook*** for additional information.

College & Career Counseling

In preparing students to graduate and for life beyond ASCTE, a dedicated academic counselor guides students through the college application and admissions processes, financial aid, and scholarship applications.

Academic Resources

Students at ASCTE will participate in the "Whatever I Need" (WIN) course each term which serves as a resource for academic success.

Mental Health Counseling

Counseling services available to students include talk sessions, treatment, surveys, or assessments related to mental health; however, it does not include instructional activities designed to educate students about mental health. Ongoing counseling services require parental consent unless there is an imminent threat to the student's health or others.

Additional Services for Students with Documented Disabilities

Students and parents who want more information on these services should contact the Dean of Student Services.

STUDENT CLUBS AND ACTIVITIES

ASCTE clubs are activities that are offered annually. Students will have an opportunity to suggest potential club(s) not listed to the Director of Residential Life. The Dean of Students must approve any club(s) before a meeting may take place. Offerings of clubs and activities may be updated throughout the academic year.

Mu Alpha Theta Math Honor Society

The purpose of the ASCTE Chapter of Mu Alpha Theta is to inspire a keen interest in mathematics, develop strong scholarship in the subject, and promote the enjoyment of mathematics in high school. Mu Alpha Theta recognizes and encourages students who enjoy and excel in mathematics. New members are inducted each year who meet the requirements below:

- Members must be currently enrolled ASCTE students in grades 9 through 12.
- Members must be registered with Mu Alpha Theta at the school at which their permanent records reside.

- Members must have completed the equivalent of two years of college preparatory mathematics, including algebra and/or geometry, and have completed or are enrolled in a third year of college preparatory mathematics.
- Members must have at least a 4.0 math grade point average.

All Inducted members must pay dues and participate in meetings/activities each year.

National Honor Society

The purpose of the ASCTE Chapter of the National Honor Society is to create an enthusiasm for scholarship, to stimulate a desire to render service, to promote worthy leadership, and to encourage the development of character in students of ASCTE. The chapter operates under the direction of and in full compliance with the National Constitution of NHS. Membership in this chapter is an honor bestowed upon deserving students by the faculty and shall be based on the criteria of scholarship, service, leadership, and character. Eligible candidates are selected in the Spring of each year and must meet the following criteria:

- be a sophomore, junior or senior
- have been enrolled and completed three (3) terms at ASCTE
- maintain a minimum cumulative ASCTE grade point average of 4.0

Upon meeting the selection criteria, the faculty and staff consider and select those candidates who uphold the NHS pillars of service, leadership, and character to be formally inducted into NHS. Each member must pay annual dues and remain in good standing with the chapter. The chapter meets monthly.

BETA Club

The purpose of the ASCTE National Senior Beta Club is to promote academic achievement, character, leadership, and service at ASCTE. New members are inducted in the Fall of each year. To be eligible for membership a student must meet the following requirements:

- be a second year sophomore, junior, or senior
- be performing at or above grade level
- maintain an ASCTE cumulative grade point average of at least 3.75
- be in good standing in all categories for at least the term preceding membership review

All inducted members must pay national and local dues and also meet the annual service hours requirement. The club meets monthly.

Current standing clubs are as follows:

Band	SGA
ESports	Debate
	Cyberpatriot

SPORTS

ASCTE is a member of the **Alabama High School Athletic Association (AHSAA)** and may participate in the following sports for the 2023-2024 academic year based on student interest. ASCTE sports teams are not assigned to a region or conference and are, therefore, free to compete with any regional team and cannot compete in playoffs or championship tournaments according to the AHSAA rules. Sports may be updated throughout the academic year.

FALL	WINTER	SPRING
Cross Country	Basketball	Track & Field
Swimming	Bowling	Tennis
Volleyball	Indoor Track	Soccer

ASCTE has other competitive sports available to students that are not a part of the AHSAA. These include but are not limited to Archery, Bowling, and Capture the Flag.

Appendix A - Who to Contact

Below is a listing of each person and their area of responsibility. Please contact this individual first. If emailing or leaving a message on voicemail, you should receive a response within 24-48 hours.

Mrs. Michelle Whitlow (Student Affairs)

- General questions about students/student records
- Schedule Development/Student Schedules
- Good Standing/Behavior concerns
- Grades
- Transcripts
- Report Cards
- Student Clubs
- Honor Societies
- Student Activities (parties, extracurricular events)
- School Nurse
- Attendance
- REACH (day leave)
- Driving Permits/Enrollment Forms
- Driving & Parking Forms/requirements
- Address Changes

Dr. Rosemary Hodges (Academic Affairs)

- Institutional Effectiveness
- Policy & Procedures
- Government & Industry Partnerships
- Field Experience
- Internship(s)
- Course Design and Development
- Instructor Development & Efficacy
- Accreditation
- School Assessment
- SAT test Suite
- Tutoring/Navigation

Mr. Andrew Smith (Financial Affairs/Operations)

- Student Fees
- Payments
- School store
- Facilities/Operations

Mr. Aaron Brazelton (Admissions and Advancement)

- Annual Fund
- Admissions & Application process
- Campus Tours/Visits
- School fundraisers
- Student Recruitment/Retention
- Recruitment events
- Student Ambassadors

Mrs. Michelle Cundiff (Residential Life)

- Residential Life program - residential hall/schedule
- Residential Assistants
- Weeknight/weekend Events
- Residential Meals
- Residential Transportation
- REACH (after school or weekend Leave)

Mrs. Heather Terry (IT)

- Network issues
- Connectivity
- Computer problems/repairs
- Technology Support

Mrs. Beth Blair (Counseling)

- Emotional/Mental Health questions/concerns
- Appointments

Mrs. Priscilla Krause (Chief of Staff)

- If the above individuals are unavailable and have not responded to email within 48 hours, she can answer or direct you about all things ASCTE
- To see/speak with the President.