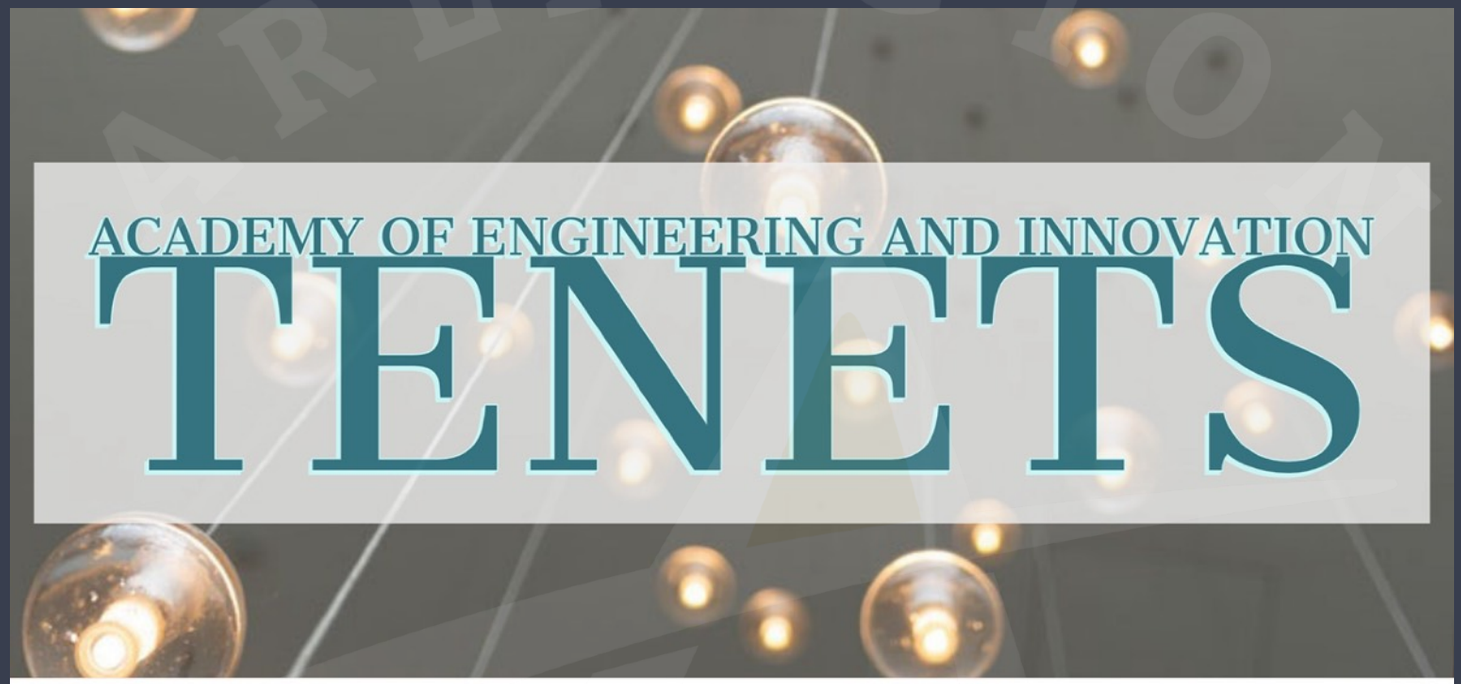
AHS ACADEMY OF ENGINEERING AND INNOVATION

Arlington High School

ACADEMY OF ENGINEERING AND INNOVATION

- What is the AHS Academy of Engineering and Innovation (AE&I)?
- Vision and Mission of Academy of Engineering and Innovation
- Courses offered in Academy of Engineering and Innovation

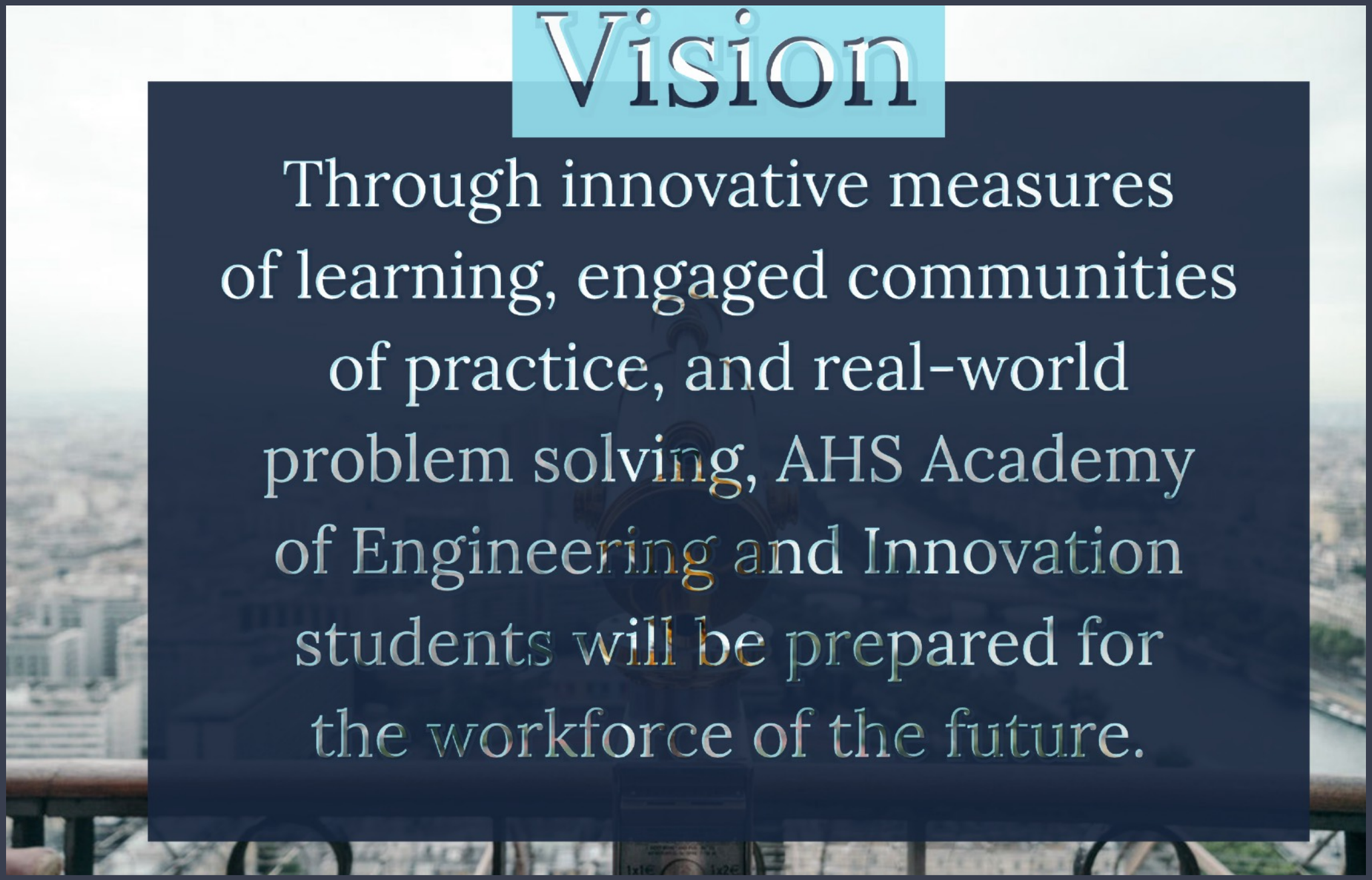


Tenets of the Academy of Engineering and Innovation

Overview - Academy of Engineering and Innovation (AE&I)

Arlington High School Academy of Engineering and Innovation offers a unique insight for students who are interested in STEM (Science, Technology, Engineering, and Mathematics) careers. The goal of this program is to prepare our Academy students to be career and college ready for STEM and Engineering careers of the future.

Students will be equipped with the necessary skills that are needed to be successful in the workplace. Every student will be challenged to take risks, learn from failures, communicate effectively, and become productive users of digital technologies.



Vision for AEI

Vision and Mission of Arlington High School Academy of Engineering and Innovation

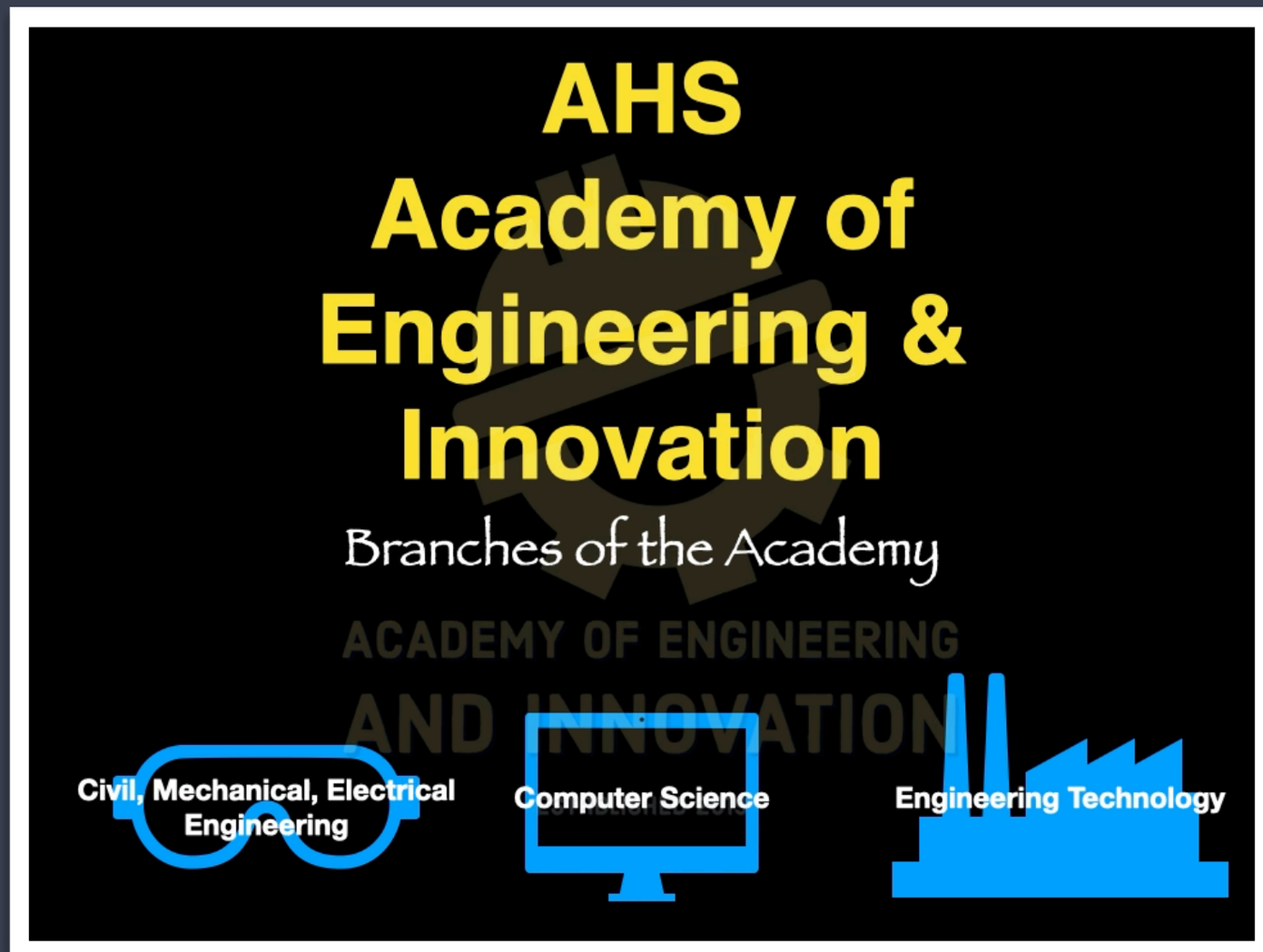
BRANCHES OF ACADEMY

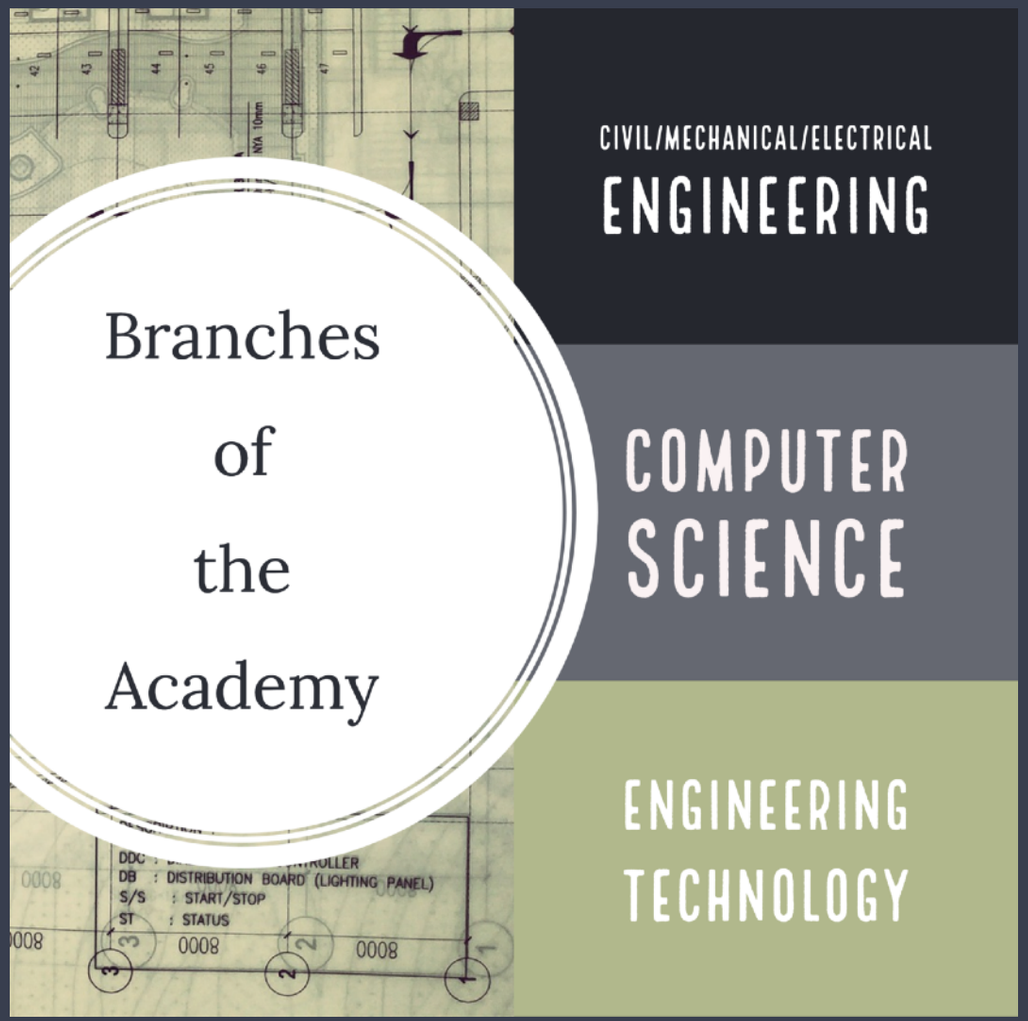
This program has three engineering branches:

1. **Civil/Mechanical/Electrical Engineering**
   - ***(CME)***
2. **Computer Science**
   - ***(CompSci)***
3. **Engineering Technology**
   - ***(ET)***

MAJORS OF THE AEI:

STEM	Coding
Mechatronics	Cybersecurity
Welding	Machining
BioSTEM	





ACADEMY COURSES

Students will first select their branch of the academy. Within the branch, students will then select a major. Once the major is established, students will complete three courses within their "major". In addition to selecting a major, students will select and complete two courses from another branch as their "minor".

For example, a student choosing a major of the manufacture engineering branch would take three years of welding courses. Then this student could take a variety of courses from the other branches including STEM 1 + Coding 1, Mechatronics 1 + Mechatronic 2, Cybersecurity 1 + Coding 1, etc. as a "minor".

By offering these courses to the students, they will be able to discover their interest and have exposure to other careers within engineering. With many of the branches offering more than three courses, we strongly urge students to complete the pathways. An example of this would be completing the STEM program of study (STEM 1-4).

TABLE 1: COURSES AVAILABLE FOR ACADEMY MINOR

Coding 1	Coding 2	Cybersecurity 1	Cybersecurity 2
AP Computer Science	Mechatronics1	Mechatronics 2	Mentor Approved Fine Arts
STEM 1	STEM 2	Welding 1	Welding 2
Machining 1	Machining 2	Foundations of Computer Science	BioSTEM 1
BioSTEM 2	AP/DE/DC Math Courses	PreCalculus	Calculus
Entrepreneurship	JROTC 1	JROTC 2	AP Research
AP Seminar	AP Science Courses	DE Science Courses	DC Science Courses

MENTORS OF THE ACADEMY:

LEAD MENTORS FOR EACH ENGINEERING BRANCH:

Civil/Mechanical/Electrical Engineering:

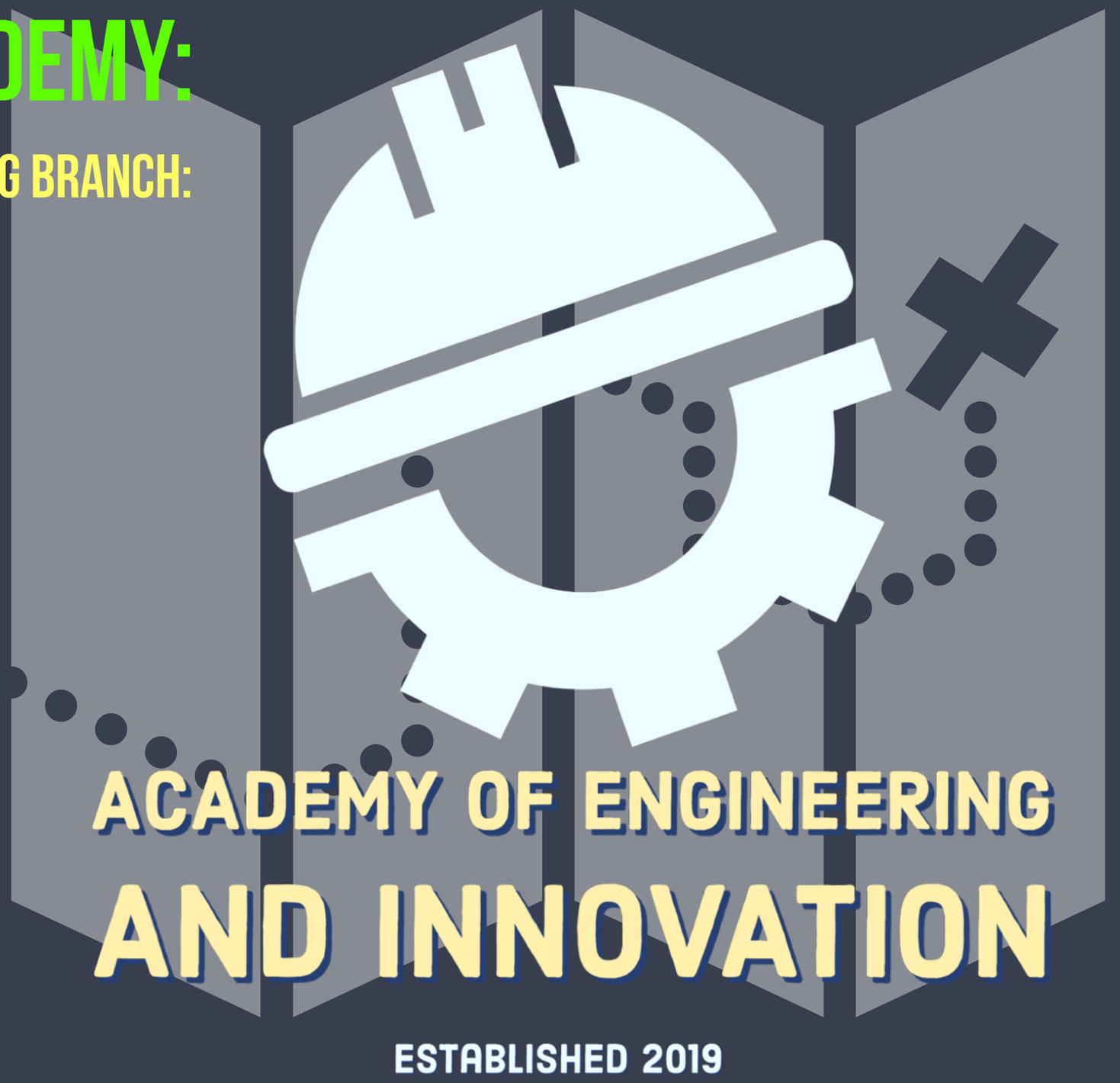
- Casey Sandlin-Rogers
- Samuel Che-Casales
- Dr. Kristin Hennessy-McDonald
- LTC John Block

Computer Science:

- Carl Stephen
- Devon Coburn
- Adam Sykes

Engineering Technologies:

- Neil Stewart



Academy of Engineering and Innovation

APPLICATION INFORMATION

- Application Requirements for Academy
- Academy Based Learning Experiences (ABLE)
- Requirements of the Academy

ENTRY INFORMATION FOR THE ACADEMY:

Entry Requirements for Applying for the Academy include:

1. Completed application

✳The student application can be found **here**. For this application multiple documents must be submitted for review. Also, there are two short-answer response questions.

2. Two Teacher recommendations and One Counselor Recommendation

✳General Educator Recommendation

- The teacher recommendation forms are available digitally. The student must first communicate with the teacher of reference through email or face-to-face contact. One of the teacher recommendations must come from a science, math, STEM, or Coding teacher.

✳Guidance Counselor Recommendation

- This will be obtained by AEI administrators through the application process.

3. Working interview:

✳After completing the online application and submitting the required documents for review, students interested in the academy will complete a task in which applicants will be paired up with other applicants. Lead Academy Teachers and administrators will watch as the students complete the task and provide feedback to the students. During this working interview, students will be assessed on how well they collaborate, communicate, execute workflow processes, and problem solve.

Links of Importance:

- **Online Application for Students**
- **Email template for teacher recommendation**

ACADEMY-BASED LEARNING EXPERIENCE

Academy-Based Learning Experiences (ABLE) are an important component of the Academy experience. Academy students must actively participate in **two** events per year.

These events include:

- Regional and state competitions
- Participate in LEAD Arlington
- Engineering Days:
  - -University of Memphis
  - -University of Tennessee (11th/12th only)
  - -Local schools
- Participate in local workshops or summer programs
- Participate in corresponding Governor's School for Academy-focused topics
- ACS ICC (Innovation Career Camp) Summer Camp Co-Teach with Instructor (8 hours)
- Participate in the Innovation Academy Fair

University of Memphis E-Day

ACADEMY REQUIREMENTS

Requirements for Academy students include:

- Complete 3 required courses in Academy-focus strand (major) while in high school
- Complete 2 required courses in other Academy-focus strand (minor) while in high school
- Maintain a working portfolio of projects completed in Academy courses
- Create and maintain a current resume
- Be an active member in a Career and Technical Student Organization (CTSO)
- Complete all ABLE requirements
- Attend 2 Academy-focused forum speakers
- Participate in the ACS District STEM Night
- Complete one culminating capstone project in the student's senior year
- Complete an online communication module during the summer between the student's junior and senior year
- Meet with strand advisor quarterly to review grades and progress within the academy
- Must maintain ACS Discipline Standards and AHS Handbook Policies and Procedures

Grounds for removal from Academy include:

- Inadequate progress towards the requirements of the academy
- Violations of the AHS Honor Code
- Continuous violations of ACS and AHS student handbook, policies and procedures
- Grades lower than 80% in each Academy course
- Failure to maintain discipline standards

Academy of Engineering and Innovation

KEY INFORMATION

- Capstone Project
- College Credit and Industry Certification
- Recognition

CAPSTONE PROJECT

Students must complete **one** culminating capstone project during their senior year. The capstone project may be identified by local industry partners, the student's mentor or major teacher, or their own idea (must be approved by the Academy mentor).

The capstone may be completed in partnership with other Academy strands and, in some cases, students may choose to group together with other Academy members to complete their project.

The capstone project can be completed using the school's lab including but not limited to the Fabrication Lab (FabLab), the welding lab, or STEM lab.

Industry Certifications available at Arlington High School for AE&I

INDUSTRY CERTIFICATIONS

While part of the Academy of Engineering and Innovation, you will have the opportunity to earn any of the industry-recognized professional certifications offered in the Academy. Some of these certifications are also worth college credit! Check with the institution of your choice for credit opportunities from certifications.

CERTIFICATIONS OFFERED

- OSHA 10
- NIMS Level 1 – Measurement, Materials, and Safety Certification
- AWS SENSE Entry Level Welder
- AWS SENSE Advanced Level Welder
- Microsoft Technology Associate Developer
- CompTIA Security+
- Certified Solid Works Associate

COLLEGE CREDIT

The Academy of Engineering and Innovation will prepare you to earn college credit, both while you are enrolled at Arlington High School and beyond. The Academy offers the potential for students to earn college credit while at AHS through traditional and nontraditional opportunities.

While ACS partners with local higher education institutions for some credit options, the awarding of any college-level credit is at the discretion of the higher education institution. Check with the institution of your choice for their policy on early credit recommendations.

Traditional Opportunities

College credit is offered through Dual Credit Pre-Calculus; Dual Enrollment Anatomy & Physiology, Biology, Career Skill Building & Workforce Success, College Algebra/Elementary Calculus, Mechatronics, Machining, and Welding; and Advanced Placement Calculus AB, Calculus BC, Statistics, Computer Science Principles, Biology, Chemistry, Environmental Science, and Physics.

Nontraditional Opportunities

Opportunities for college credit to be earned in a nontraditional format include Prior Learning Assessments (portfolio learning credit) and American Council on Education (ACE) credit opportunities through online courses.

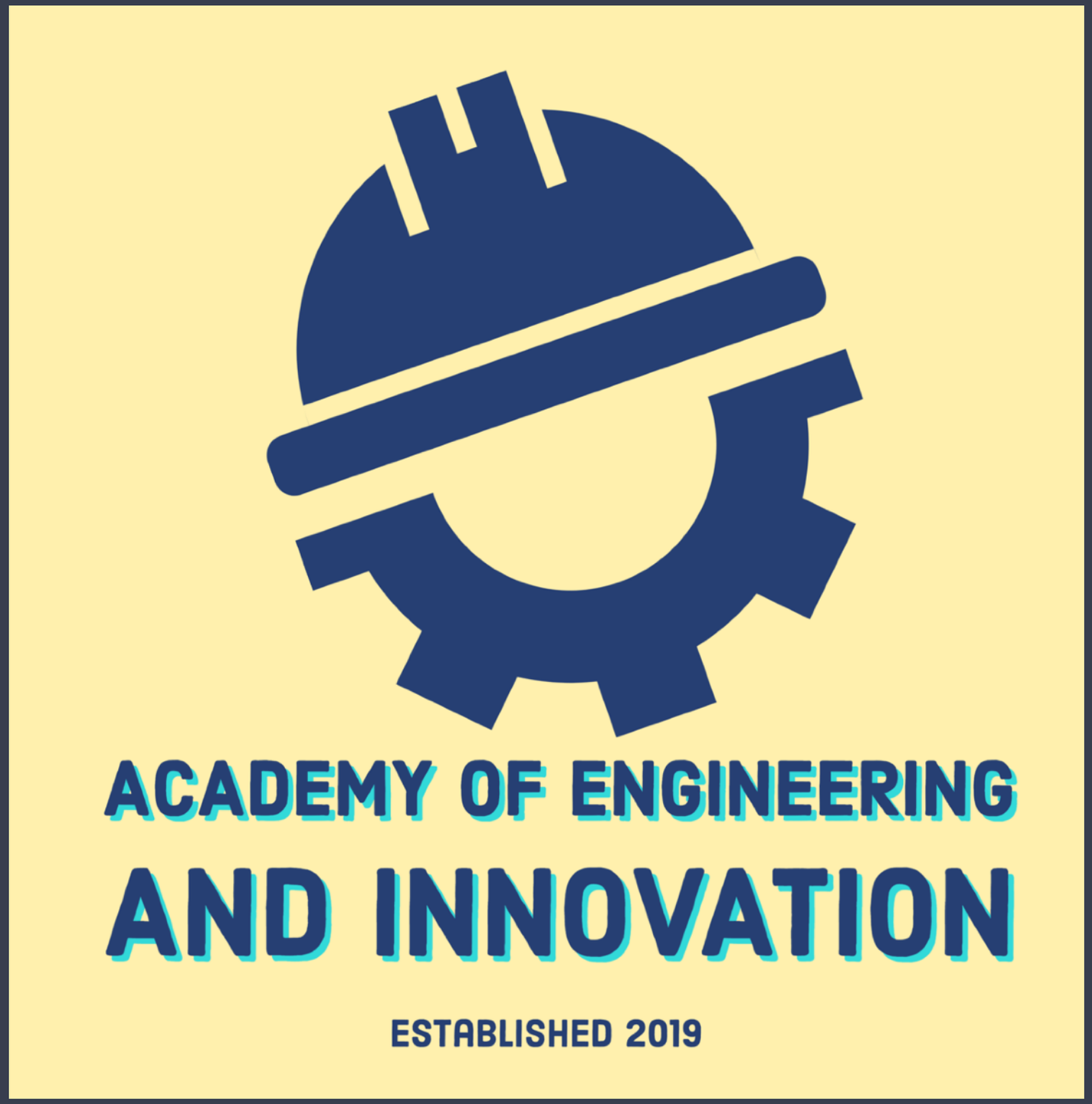
Some opportunities include a minimal cost while others may be without cost. Any cost surrounding these nontraditional opportunities will be incurred by the student.

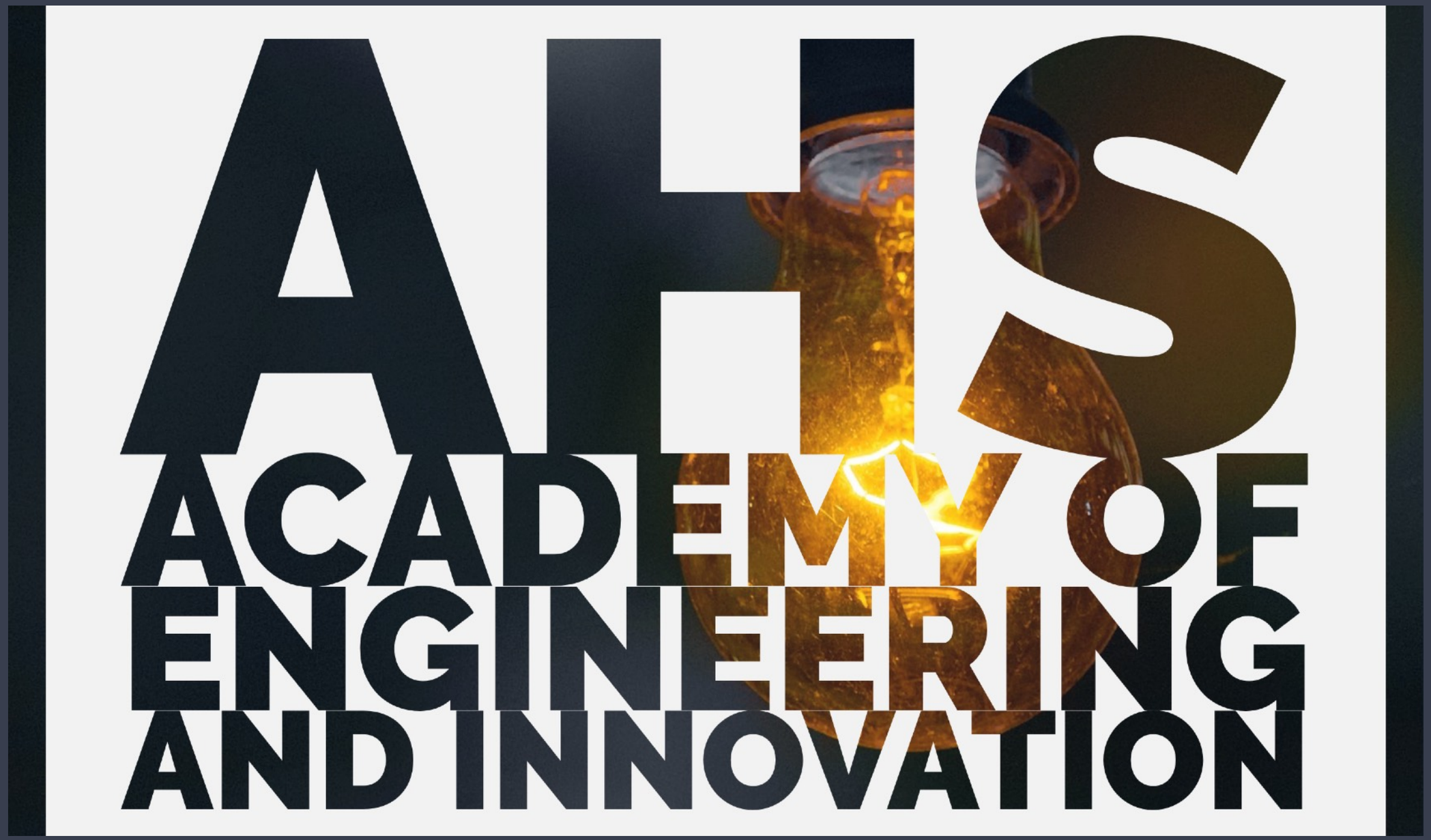
ARLINGTON COMMUNITY SCHOOLS

RECOGNITION

As an Arlington High School student selected for the Academy of Engineering and Innovation, you have set yourself apart from the general student population. Recognizing your hard work and dedication, you will be provided the following opportunities that are unique to Academy students:

- An Academy of Engineering and Innovation t-shirt
- Access to an Academy mentor who will provide ongoing 1:1 mentoring throughout the year
- Special recognition at graduation (for those who complete all requirements)
- Access to current industry professionals as mentors and Academy forum speakers
- Academy-specific industry site trips
- Overnight trip to an Academy-focused location





If you have additional questions about joining AEI or the application process, please contact Mrs. Diana Penny, Vice Principal of Arlington High School, at diana.penny@acsk-12.org.