



Program Mission

The Engineering and Technology Academy is a personalized learning environment with high expectations where students receive the support needed to successfully complete a rigorous course of study. Students will engage in activities that will demonstrate the connections within various disciplines as concepts are reinforced in multiple contexts. With involvement from parents and community members opportunities for learning will extend beyond the classroom walls. The Academy is designed for students, parents, staff, and members of the community to work collaboratively to ensure the success of each child. Academy graduates will have the knowledge, experience, confidence, and problem-solving skills required to be successful in their future endeavors in our ever-changing world.



Program Vision

The Engineering and Technology Academy is a community of diverse learners that stresses mutual respect, individual responsibility, integrity, and a commitment to academic excellence in an atmosphere of support and collaboration. In the Engineering and Technology Academy, students experience connections between subjects as they strive to solve complex, real-life problems that require them to work both independently and with others. Academy students will demonstrate mastery of concepts through various forms of assessment including learning fairs and exhibitions.

ETA Fast Facts

The **ETA** (Engineering & Technology Academy) was started in 2002.

AVID (Advancement via Individual Determination) is a set of strategies designed to prepare students for post-secondary school education. The AVID curriculum is based on rigorous standards, driven by the WIC-R method, which stands for writing, inquiry, collaboration, and reading.

A **SLC** (Small Learning Community) is a school-within-a school. This academy model allows for teacher collaboration, common planning time, increased personalization for the students, and a strong emphasis on interdisciplinary connections.

Chapter 74 - The ETA is an approved Vocational Technical Educational Program, focused on the Engineering Technology Vocational Framework.

The **Senior Thesis Project** is a capstone project; a culmination of the student's learning.

Contact Information

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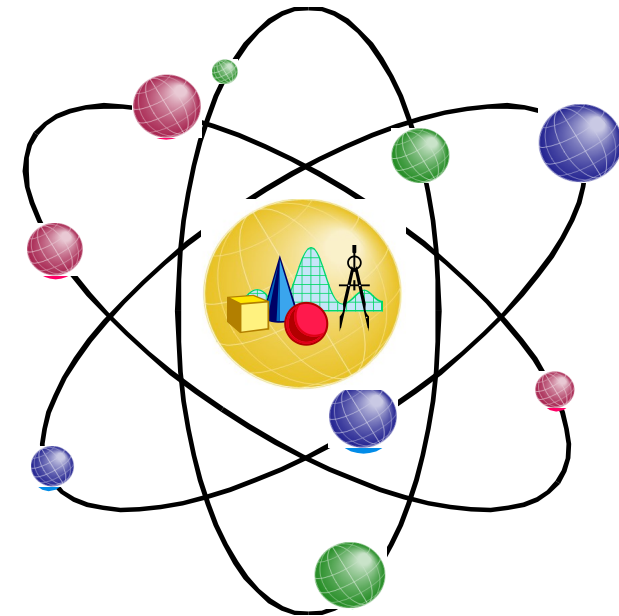
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Engineering & Technology Academy



A SMALL LEARNING COMMUNITY

AT

DOHERTY MEMORIAL HIGH SCHOOL

Program Principles

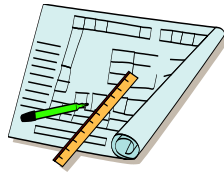
The principles of Engineering and Technology will be a common thread throughout the Academy experience. All students will learn to use:

- The Engineering Design Process
- The Scientific Method
- Microsoft Office package
- Internet Explorer
- AutoCAD 2010

Students also have the opportunity to learn and use:

- Laboratory instruments
- Graphing calculators
- Hand Tools
- Power tools (e.g. CNC, miter saw)
- Electronic Circuits, Meters, and PLC's

Students will eventually enroll in honors or Advanced Placement courses.



Program Key Features

- An emphasis on project-based learning practices.
- The incorporation of technology in all subjects.
- An increased focus on parental involvement.
- The use of curriculum mapping to develop thematic interdisciplinary units.
- Bi-weekly staff and guidance meetings to facilitate communication between students, parents, and teachers.
- The use of AVID (Advancement via Individual Determination), a college preparatory program that emphasizes strategies to improve organizational skills and study habits in the rigorous academic program of study needed to succeed.
- Emphasis on developing literacy and writing skills across the curriculum.
- A flexible block schedule in Grades 9 and 10 that includes an advisor/advisee program.
- Senior internship opportunity.

Grades 9 and 10

The focus of the first two years in the Academy consists of core academic subjects coupled with pathway courses that focus on engineering and/or technology principles.

AVID strategies are used to ensure that all students have the skills and support needed to experience success in the rigorous academic program of study.

Students will select course offerings that include:

- Introduction to Technology & Engineering (Grade 9):** This Chapter 74—Vocational approved course introduces students to various engineering concepts and principles. Students use advanced algebraic functions to analyze basic circuitry, fluid & thermal systems, and manufacturing technologies. Students use drafting software to design projects which are then manufactured. The emphasis is placed on the Engineering Design process. Stud
- Process Engineering (Grade 10):** As a Chapter 74—Vocational approved course, students will gain and apply relevant safety knowledge, complete and discuss academic and career plans, and gain and apply academic content knowledge in force distribution, manufacturing systems, basic electronics, thermodynamics, fluidics, and robotics.
- Exploring Technology & Engineering (Grade 10):** Within a Chapter 74 approved and project based learning environment, students will gain and apply academic content knowledge in the engineering design process, force distribution, materials usage and selection, lean manufacturing principles, alternative energy systems, and robotics.

All students are assessed throughout the year using proficiency standards in preparation to attain a Certificate of Proficiency (COPs).

Grades 11 and 12

The focus of the last two years, in addition to the focus on rigorous academic courses and engineering and technology principles, are the practical applications of the engineering processes.

The AVID plan is further implemented to prepare upperclassmen for post-secondary school technical and engineering study.

Students will select course offerings that include:

- Electrical Engineering (Grade 11):** Incorporating standards from the Engineering Technology Vocational Framework, students will gain and apply academic content knowledge in electrostatics, analog electronics, digital electronics, and power generation systems.
- Engineering Design and Fabrication (Grade 11):** This course gives students an opportunity to pursue skills and applications in Computer Aided Drafting (CAD). Areas of study will include use of many CAD commands, geometric construction, orthographic and isometric projection, architectural drawings, and dimensioning. Students will gain and apply relevant safety knowledge, complete and discuss academic and career plans, and apply appropriate academic content knowledge.
- Engineering Design and Manufacturing (Grade 12):** This course presents topics in architectural, civil engineering focuses on Architecture, Civil, Mechanical, and advanced CAD software. Centered on problem based tasks, topics including parametric building design, building information models, material takeoff, energy-efficient planning, rendering and presentation, and others will be explored.
- Practical Engineering (Grade 12):** Students apply their engineering knowledge and competency in a 20-week co-op with local area businesses & companies that are aligned with their chosen theme for their Senior Thesis. Students use all skills to complete the project; e.g. essay writing, CAD design schematics, calculations, physics, multimedia, etc.