

## STEM Academy

### Engineering Pathway - Arthur R. Sypek Center

Science and engineering occupations lead to economic competitiveness in an increasingly globalized world. For any 21st century economy to prosper, it is essential to maintain a science and engineering workforce of sufficient size and quality. These professionals are also crucial for addressing imminent challenges such as international security, global climate change, and domestic and global health. Of the top 10 highest-paying college majors, seven of them are in engineering.

Our Engineering program engages students in open-ended problem-solving, where they learn to apply the engineering design process to solve real-world problems that make the world a better place through innovation. Students will utilize the same industry-leading technology and software present in some of the world's top companies. They will be immersed in design as they investigate topics such as sustainability, forces, structures, circuit design, manufacturing, and the environment. This pathway includes a rigorous series of courses designed by Project Lead The Way (a nonprofit STEM education program taught across the U.S. and endorsed by the nationally recognized College Board). The courses include Introduction to Engineering Design, Principles of Engineering, Civil Engineering & Architecture, Digital Electronics, and Computer Integrated Manufacturing. All STEM Academy students join their respective Career Technical Student Organization, TSA - Technology Student Association, and are continually challenged as they compete in local, regional, and state-level competitions such as Tests of Engineering Aptitude, Mathematics and Science (TEAMS), TSA VEX Robotics Competition, and LEAP (Leadership. Education. Achievement. Personal Growth).

All of these exposures provide our students with the opportunity to learn about various engineering disciplines before beginning postsecondary education or careers. In year one (1), students will begin their journey through Project Lead The Way curriculum and have the opportunity to earn their Autodesk Fusion 360 Certified User certification. In year two (2), students earn their OSHA 10 certification and a possible NIMS credential - Machining Level I. In year three (3), students will earn their NIMS CNC Mill Operator certification. Students who successfully complete MCTS's Engineering pathway will also earn dual credits as part of our dual credit arrangement with Mercer County Community College. Students have additional articulated credit opportunities through the Rochester Institute of Technology (RIT).

#### Industry Valued Credentials & Certifications

- OSHA 10 Certification
- Autodesk Fusion 360
- Remote Pilot Certificate (FAA Part 107)

#### Dual Enrollment & Articulation Agreements

- Mercer County Community College
- The College of New Jersey (TCNJ)
- Rochester Institute of Technology

#### Admissions

[mcts.edu/admissions](https://mcts.edu/admissions)



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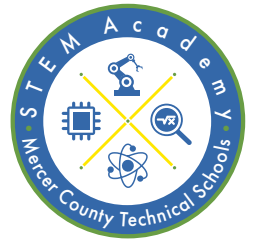


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## Engineering Pathway

### Course Sequence



Core	Grade 9	Grade 10	Grade 11	Grade 12
<b>English Language Arts</b>	English I	AP Seminar: English II	<b>English III</b>	<b>English IV</b>
<b>Mathematics (*)</b>	Algebra I or Geometry	Geometry or <b>Algebra II</b>	<b>Algebra II or AP Pre-Calculus</b>	MAT151 Calculus I
				MAT201 Probability & Statistics for Science & Engineering
<b>Science</b>	<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>	PHY115 University Physics I
				CHE101 General Chemistry
<b>Social Studies</b>	<b>World History</b>	<b>US History I</b>	<b>US History II</b>	
<b>Financial, Economic Business, and Entrepreneurial Business Literacy</b>			Foundations in Personal Finance	ECO112 Microeconomics
<b>Health, Safety, and Physical Education</b>	Physical Education & Health I	Physical Education, Health II and Drivers Education	Physical Education & Health III	<b>Physical Education &amp; Health IV</b>
<b>Visual and Performing Arts</b>		Visual & Performing Arts Seminar		
<b>World Languages</b>	Spanish I/ <b>Spanish II</b>	<b>Spanish II</b>		
<b>21st Century Life &amp; Careers, OR Career Technical Education</b>	<b>Introduction to Engineering Design (Project Lead the Way)</b>	<b>Principles of Engineering (Project Lead The Way)</b>	<b>Civil Engineering &amp; Architecture (Project Lead the Way)</b>	CIV103 Statics
				Design & Development /Capstone Course
	<b>AP Computer Science Principles (Project Lead The Way)</b>	<b>Computer Science A (Project Lead The Way)</b>	Aerospace Engineering (Project Lead the Way) or <b>Digital Electronics (Project Lead The Way)</b>	MAT152 Calc II
<b>Interdisciplinary Studies, STEM Internship</b>				MAT201 Prob & Stat for Sci & Engineering
<b>Technology</b>	Integrated throughout all courses			

- Students have the opportunity to earn up to sixty (60) credits at Mercer County Community College, per the requirements in the articulation agreement.
- Bolded courses** provide opportunity for students to earn dual enrollment credit on MCTS campus. See specific course descriptions details by visiting, [www.mcts.edu/admissions](http://www.mcts.edu/admissions)
- All post-secondary agreements are reviewed annually.
- All courses **may be subject to change\***
- Board Approved 03/19/2025
- Created 09/12/2025

**Admissions**  
[mcts.edu/admissions](http://mcts.edu/admissions)

