



2024-2025 STEM Academy School Profile

ABOUT THE STEM ACADEMY

The Mercer County Technical School District launched a STEM (science, technology, engineering, and math) Academy in September 2015. This full-time, 4-year high school program is possible through the award of a \$300,000 county vocational partnership grant from the New Jersey Department of Education.

The STEM Academy provides Mercer County high school students with an academically challenging and rigorous curriculum, including Project Lead The Way and a problem-based curriculum. Students will work toward the completion of college credits and industry-valued credentials while in high school.

MISSION STATEMENT

It is the mission of the STEM Academy to provide a highly specialized learning environment that promotes the development of a confident, well-rounded STEM professional through unique academic experiences specific to the field.

This will be achieved by:

- Implementing challenging cross curricula experiences that promote critical thinking skills and foster opportunities for leadership.
- Embracing high professional standards in ethics and character development.
- Providing authentic clinical experiences and internships through professional and community partnerships.
- Utilizing state-of-the-art equipment and technology that will enhance employment and academics.
- Opportunities in an ever-changing environment.

ADMINISTRATION

Mr. Matthew Carey, Superintendent

Mr. Jared Warren, Principal

GUIDANCE

Ms. Dana Tanzini, School Counselor

LOCATION

STEM Academy

Sypek Center

129 Bull Run Road

Pennington, NJ 08534

T: 609.737.9784

www.mcts.edu



ACCREDITATION

Mercer County Technical Schools is certified by the New Jersey State Department of Education and is also accredited by the Middle States Association of Colleges and Schools.

CLASS LENGTH

Classes are 80 minutes in length and are offered on a rotating A/B block schedule.

CLASS RANK

The STEM Academy does not rank its students.

COLLEGE CREDIT

The STEM Academy students take courses with curricula from Project Lead The Way and Mercer County Community College. Through an articulation agreement with Mercer County Community College, students begin earning college credit during 9th, 10th, and 11th grade and spend the majority of their 12th-grade year on the Campus of Mercer County Community College.

CREDENTIALS

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).

ENROLLMENT

There are 143 students enrolled in grades 9-12. An additional 40-48 students will be admitted in each subsequent year.

EXPERIENTIAL LEARNING

Students have the opportunity to demonstrate what they've learned by participating in such co-curricular student organizations as SkillsUSA. In addition, students may elect to participate in the Debate Team, Student Council, Yearbook, Robotics Club, Math League, Esports, and Literature club

FACULTY

The average teacher-to-student ratio is 1:18.

LOCATION

The STEM Academy is located at the Sypek Center in Pennington, New Jersey.

SENIOR INTERNSHIP/STRUCTURED LEARNING EXPERIENCE

A recommended Senior Internship Program/SLE will support learners as they gain experience in these occupational fields of Science, Technology, Engineering, and Mathematics.

CURRICULUM

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).

OUR GRADUATES HAVE BEEN ACCEPTED TO THESE COLLEGES AND UNIVERSITIES

Cabrini University

Capitol Technology University

Carnegie Mellon University

Columbia University

Cornell University

Drew University

Drexel University

East Stroudsburg University

Elon University

Fairleigh Dickinson University

Georgian Court University

Hawaii Pacific University

Kean University

Mercer County Community College

Monmouth University

Montclair State University

New England College

New Jersey City University

New Jersey Institute of Technology

New York Institute of Technology

New York University

Northeastern University

Ohio University

Pace University

Pennsylvania State University

Philadelphia University

Quinnipiac University

Ramapo College

Rensselaer Polytechnic Institute

Richard Stockton College of New Jersey

Rider University

Rochester Institute of Technology

Rowan University

Rutgers University, New Brunswick

Savannah State University

Seton Hall University

Stevens Institute of Technology

Stockton University

Syracuse University

Temple University

The College of New Jersey

University of Kansas

STEM Academy
Engineering Pathway
Course Sequence

Core	Grade 9	Grade 10	Grade 11	Grade 12
English Language Arts	English I	English II	English III	English IV
Mathematics (*)	Algebra I or Geometry	Geometry or Algebra II	Algebra II or AP Pre-Calculus	<i>MAT151 Calculus I</i>
				<i>MAT201 Probability & Statistics for Science & Engineering</i>
Science	Biology	Chemistry	Physics or Environmental Science	<i>PHY115 University Physics I</i>
				<i>CHE101 General Chemistry</i>
Social Studies	World History	US History I	US History II	
Financial, Economic Business, and Entrepreneurial Business Literacy			Foundations in Personal Finance	<i>ECO112 Microeconomics</i>
Health, Safety, and Physical Education	Physical Education & Health I	Physical Education, Health II & Drivers Education	Physical Education & Health III	Physical Education & Health IV
Visual and Performing Arts		Visual & Performing Arts Seminar		
World Languages	Spanish I / Spanish II	Spanish II		
21st Century Life & Careers, OR Career Technical Education	Introduction to Engineering Design (Project Lead the Way)	Principles of Engineering (Project Lead The Way)	Civil Engineering & Architecture (Project Lead the Way)	<i>CIV103 Statics</i>
				Engineering Design & Development / Capstone Course
Interdisciplinary Studies, STEM Internship	AP Computer Science Principles (Project Lead The Way) OR Environmental Sustainability (Project Lead The Way)	Aerospace Engineering (Project Lead the Way)	Digital Electronics (Project Lead The Way)	<i>CIV105 Introduction to Engineering</i>
				<i>COS101 Introduction to Computer Science</i>
Technology	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 an opportunity for students to earn dual enrollment credit on MCTS's campus. See specific course descriptions detailed below.

All post-secondary agreements are reviewed annually.

All courses **may be subject to change***

GRADING

Mercer County Technical School holds the door to student achievement wide open at all times. Students are invited to assess and reassess until each reaches the level of achievement in which he or she is willing to invest. Subjective factors are removed from the equation. When students are judged on academic achievement, they commit to academic excellence.

MCTS has adopted the following grading calculation guidelines:

- 50% Measurements of Achievement
- 40% Measurements of Process
- 10% Measurements of Practice

All teachers will use the following Grading System in determining student grades.

Letter Grade	Numerical Grade Range	Explanation
A	93-100	Mastery Demonstrates excellence in skills and course expectations.
A-	90-92	
B+	87-89	Proficiency Demonstrates competence in skills and course expectations.
B	83-86	
B-	80-82	
C+	77-79	Emerging Demonstrates progress in skills and course expectations.
C	70-76	
D	60-69	Difficulty Demonstrates limited progress in skills and course expectations.
F	0-59	Failing: Does not demonstrate necessary skills and does not meet the requirements to earn course credit.

Students who fail to earn at least a 60 final average in a non-elective course as defined in N.J.A.C. 6A:8-4.1 and attend and receive a passing grade in an approved summer school make-up program will receive the grade they earn. Both grades will appear on the student's transcript. Both grades will be used to calculate the student's grade point average.

A grade point average (GPA) is a standard scale used by many schools to calculate student academic achievement. Each range of number grades assigned to students will correspond to a scale number. Calculation of the GPA will take into consideration the number of credits associated with each course, the weight of the course, and the grade received by the student. The grading scale can be seen below:

Grade Scale Chart

Numerical Grade Range	Letter Grade	Non-Weight scale number	Half-Weight scale number	Full-Weight scale number
93-100	A	4.00	4.50	5.00
90-92	A-	3.75	4.25	4.75
87-89	B+	3.25	3.75	4.25
83-86	B	3.00	3.50	4.00
80-82	B-	2.75	3.25	3.75
77-79	C+	2.25	2.75	3.25
70-76	C	2.00	2.50	3.00
67-69	D+	1.25	1.75	2.25
60-66	D	1.00	1.50	2.00
0-59	F	0.00	0.00	0.00

The GPA can be calculated as weighted or unweighted. For the final GPA, MCTS will utilize the weighted GPA.

CALCULATING GPA

Weighted GPA

Determine which types of weighting each of your classes are categorized as (non-weighted, half-weighted, or full-weighted). Match the numerical grade to the corresponding scale number in the Grade Scale Chart. Determine the number of course credits allotted for each course. Multiply the course credits by the scale number for each class to get a final score number for each class. Add all the final score numbers together and divide that number by the total number of credits. This will give you your weighted GPA.

*The current 2023-2024 senior class is weighted out of a 4.0 grading scale. The grading scale above was implemented during the 2023-2024 school year.

Unweighted GPA

Match the numerical grades received in each class to the non-weighted scale number. Determine the number of course credits allotted for each course. Multiply the course credits by the non-weighted scale number for each course to get a final score number per class. Add all of the final score numbers together and divide that number by the total number of credits. This will provide you with your unweighted GPA.

Courses in the various subject areas will be categorized into one of the following levels.

Weighted Levels:	Full-Weighted (AP)	Half-Weighted (Honors)	Non-Weighted
Weight:	5.0	4.5	4.0
Courses:	<ul style="list-style-type: none"> → AP Precalculus 	<ul style="list-style-type: none"> → English I, II, III, IV → Algebra I, II → Geometry → Biology → Chemistry → Physics → Spanish II → World History → US History I → US History II → Visual & Performing Arts Seminar → All CTE-related courses 	<ul style="list-style-type: none"> → Spanish I → Health and PE → Foundations in Personal Finance

GUIDANCE & COUNSELING

Mercer County Technical High School has guidance counselors who are “specialists” in career planning and college admissions requirements. By working with them, students can be assured that the courses they are placed in each year will prepare them for the career goals they have set.

The process for course placement encourages open discussion between students, parents/guardians, counselors, and teachers. Hence, the student is comfortable with his or her schedule, and parents/guardians are assured that their child is prepared for a successful future.

This Program of Studies guide includes the academic and career technical education courses offered for the next school year within each program.

NAVIANCE

Naviance is a comprehensive student-centered life planning service available to all Mercer County Technical High School students. Family Connection empowers the student, family, and counselor to work together in planning for success during and beyond high school. All students can use Family Connection for college searches, career searches, and portfolio building for senior year. All college common applications will be sent electronically through Naviance: Parent Connection. Any student who is not familiar with the program should contact his/her school counselor.