APPLIED TECHNOLOGY HIGH SCHOOL

A Bergen County Technical Schools/Bergen Community College Career & Technical Education high-school program

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Located on the Paramus Campus of Bergen Community College, Applied Technology High School provides students a unique educational experience through a blend of academic high school curriculum, college classes, and hands-on technical training. With a curriculum that is centered on “smart machines,” students learn to apply math, science, and technology to hands-on projects in the fields of automation, electronics, and advanced manufacturing as they acquire the essential skills needed to pursue a career in a wide variety of areas including engineering technology. The program’s dual enrollment coursework allows students to earn advanced standing into several technical associates programs at the college, including an A.A.S. program in General Engineering Technology. Associates degrees earned at BCC are transferable to all four-year public colleges and universities in New Jersey.

What is Engineering Technology?
While Engineering typically focuses on conceptual design, Engineering Technology focuses on application and implementation. Graduates with a degree in engineering technology fill a critical workforce need for the installation, maintenance, and support of automated manufacturing systems that are projected to return much of the production that has been outsourced over the past decade back to factories here in the United States. Graduates from a two- or four-year program in engineering technology qualify as technicians and are prepared for employment in a variety of sectors including manufacturing, construction, and product design.

Profile of an Applied Tech Student

- A student who desires both an academic and technical educational environment that focuses on the practical application of math, science, and technology to hands-on projects in automation and electronics.
- A student excited at the prospect of attending school on a college campus.
- A student with a 3.0-3.4 gpa and proficient scores on the NJ ASK/Terra Nova who demonstrates the desire to challenge her/himself academically through Dual Enrollment courses.

Sports Offered
Applied Technology students participate in sports, clubs, and activities with students from Bergen County Academies and Bergen Tech/Paramus and Teterboro.

**Fall**
- Boys/Girls Basketball—Varsity, Junior Varsity, and Freshman
- Boys/Girls Bowling
- Boys/Girls Fencing
- Boys/Girls Indoor Track
- Cheerleading

**Winter**
- Boys/Girls Basketball—Varsity, Junior Varsity, and Freshman
- Boys/Girls Bowling
- Boys/Girls Fencing
- Boys/Girls Indoor Track
- Cheerleading

**Spring**
- Boys/Girls Golf
- Girls Lacrosse—Varsity and Junior Varsity
- Boys Tennis—Varsity and Junior Varsity
- Boys/Girls Track—Varsity
- Boys Volleyball—Varsity and Junior Varsity

Scope and Sequence

**9th Grade:**
Career and Technical Education (CTE) Course—The Design Process
Science—Physics
Math—Algebra I
Social Studies—U.S. History I
Language Arts—Academic Literacy
World Language—Mandarin I (LAN 116) (Dual Enrollment Course)
Health & PE—First Aid/PE
Electives

Scope and sequence details subject to change based on student, staffing, or logistical needs.

After-School Clubs and Activities

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<thead>
<tr>
<th>Club</th>
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<tbody>
<tr>
<td>Art Club</td>
<td>Fitness Club</td>
<td>Student Newspaper</td>
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<tr>
<td>Debate Team</td>
<td>Interact</td>
<td>Technology Club</td>
</tr>
<tr>
<td>Drama Club</td>
<td>Poetry Club</td>
<td>TechNotes (Glee Club)</td>
</tr>
<tr>
<td>Environmental Club</td>
<td>SAT/ACT Prep</td>
<td>Weightlifting Club</td>
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Robotics and MakerSpace events are offered throughout the school year.
State Grants Spur Innovative New CTE Programs

Seven New Jersey county vocational-technical school districts have launched new career and technical education programs in high-demand industries this fall, thanks to new state grants to support partnerships with businesses, colleges and universities, government, and local high schools.

More than 165 students are enrolled in the first year of the innovative programs, funded by a $3 million state grant approved by the state Legislature and Governor Christie last year. Additional students will be enrolled in each program over the next three years.

And thanks to the Legislature’s willingness to commit an additional $3 million for a second round of grants in the 2015-2016 budget, county vocational-technical schools are gearing up to launch more new partnerships next year.

“This is a great example of New Jersey’s government, business and education communities all working together towards a
common goal: Making career and technical education an engine that drives our state’s economy and serves all types of students,” said Timothy McCorkell, president of the New Jersey Council of County Vocational-Technical Schools (NJCCVTS) and superintendent of the Monmouth County Vocational School District.

In January of last year, Assembly Speaker Vincent Prieto announced that he would make career and technical education a major priority during the 2014-2015 legislative session.

The bill establishing the grant program was part of a comprehensive legislative package the Speaker introduced to expand CTE opportunities throughout the state. It received enthusiastic support from Senators and Assembly members of both parties and was signed by Governor Christie in December.

“We must make it clear that there are also many well-paying careers that can be launched with an industry credential or an associate’s degree,” Speaker Prieto said.

“As our economy begins to grow again, employers will look to our county vocational-technical schools to meet this need, and we need to make sure our students are ready to go. These grants, along with the laws I sponsored to improve vocational education throughout the state, are a great step in the right direction,” he said.

The grants to provide start-up funds for new programs that could be launched in available facilities for the 2015-2016 school year were awarded by the NJ Department of Education in April.

“The curriculum at BCTS’s Applied Technology High School focuses on “smart machines” in the fields of automation, electronics and advanced manufacturing

Funded with a $600,000 grant and located on the Paramus campus of Bergen County College (BCC), the program is operated through a partnership with BCC and New Jersey Institute of Technology (NJIT).

Business partners include Howmedica Osteonics Corp (Stryker Orthopedics), Triangle Manufacturing, Sandvik Coromant, the Commerce & Industry Association of New Jersey and the Bergen Workforce Investment Board.
With a curriculum centered on “smart machines,” students will learn to apply math, science and technology to hands-on projects in the fields of automation, electronics and advanced manufacturing.

“There was a great deal of excitement about this program throughout Bergen County and in the business community. We had 31 seats available for the freshman class and 65 students applied,” said Assistant Superintendent Andrea Sheridan. When all four classes are enrolled, the total population at the school will be about 100 students.

“These are students whose interests were not well-aligned with the existing CTE programs at any of our other schools: They are academically proficient, but their main passion is taking things apart to see how they work, and using that information to create other things. These young people have the interest and aptitude for successful careers in the constantly-innovating world of advanced manufacturing,” Sheridan said.

Because advanced manufacturing is a global industry with a strong presence in Asia, all students will take Mandarin as their foreign language. Other courses will include physics, various engineering disciplines – such as robotics, CAD and aerospace engineering – and internships and other work-related learning experiences with the program’s business partners.

Students will receive college credits for many of their courses. By the time they graduate from high school, they will have completed 23 credits towards an associate’s degree at BCC. They will be able to complete their degrees at BCC in an accelerated time, and will also be eligible to enter NJIT’s electrical engineering program as sophomores.

The Camden County Technical School District (CCTS) is using its $443,711 grant to create a new Law and Public Safety Academy grade 12 option.

Students will spend two days a week at the Camden County Emergency Training Center in Blackwood for technical training, and three days a week at the Blackwood campus of Camden County College (CCC) taking their academic courses and earning college credits.

CCTS seniors at the Camden EMTC complex. They take their academic courses at Camden County College

The program is operated through partnerships with CCC and the Camden County Police Department.

“We have been planning for this for some time, but this grant will speed that process up dramatically and greatly increase access for students in Camden County,” said CCTS assistant superintendent John Marcellus.

Ten students, many of whom are Camden city residents, are enrolled for the 2015-2016 school year. Enrollment will expand to 50 students in 2016-2017 and to 60 students in 2017-2018.

“There is a huge job growth projection in the law enforcement field in our part of the state, so we are excited about the high number of young people who will be prepared for employment and have up to 30 college credits under their belts when they graduate from high school as a result of this expanded partnership opportunity.” Marcellus said.

Hudson County Schools of Technology (HCST) launched a new culinary arts partnership with Harrison High School (HHS) and Hudson County Community College (HCCC) with its $368,484 grant.
Twenty Harrison sophomores are enrolled in the program, which will be expanded to include juniors and seniors in future years. Harrison is renovating part of its building to create state-of-the-art working kitchens as the instructional site.

“We really need more quality CTE programs at our comprehensive high schools,” said Harrison Director of Personnel and Human Resources Dr. James Doran. “When we heard that this grant program encouraged county vocational-technical schools to partner with local high schools, we reached out to HCST and asked to work with them.”

Before coming to HHS, Dr. Doran was the principal of the adult high school at HCST, and he is a strong proponent of career and technical education.

“Students in CTE programs learn the technical skills they need to get a job, but they also acquire the employability skills – like time management, problem-solving and teamwork – that help them succeed throughout their careers and in college,” he said. “If we had the resources and the room, we’d have several dedicated CTE programs at HHS. But this is a great start.

“Culinary arts was a good fit for us. Many of our students work after school and on the weekends at local restaurants, so they are familiar with the food business and would love to become chefs. They are also excited about graduating from high school with college credits if they want to continue their education with an associate’s degree,” Dr. Doran said.
Hunterdon County Vocational School District (HCVSD) created a full-time computer science and software engineering program in partnership with Raritan Valley Community College, Kean University, Rutgers University and Rowan University, and the Hunterdon Health Care System. Hunterdon’s grant is $590,096.

Located at Delaware Valley High School (DVHS) in Frenchtown, the curriculum will follow the model established by Project Lead the Way (PLW), a nationally-recognized non-profit organization specializing in computer science, engineering and biomedical science education.

“This is not your traditional high school IT program, where students just learn a few computer languages,” said Jessica Cangelosi-Hade, HCVSD Director of Curriculum, Computer Science and the Software Engineering Academy. “The students here will be the people who develop the computer languages of the future.

“Internships with local businesses will allow them to experience many different aspects of computer science,” Cangelosi-Hade said.

“Their capstone project will be solving a real-world problem, and their courses will concentrate on matters like simulation modeling, large data projections, artificial intelligence and cyber-security. And they will be receiving both industry credentials and college credits for much of that work,” she said.

Thirty-one students from throughout Hunterdon County are enrolled in the program for the 2015-2016 school year. Future classes will consist of about 20 students.

“Our superintendent and the staff at HCVSD started working on this project long before the grants were proposed,” Cangelosi-Hade said.

“Our Freeholders and our board have supported the idea of a full-time CTE program in our county, but we do not have the space at our all-shared-time Hunterdon County Polytech buildings in Flemington, so the timing of the grant to support a partnership with DVHS was perfect,” she said.

Mercer County Technical Schools (MCTS) opened a four-year, full-time Science, Technology, Engineering and Math (STEM) Academy in partnership with Mercer County Community College (MCCC).

Business partners include national and international manufacturers with facilities in the Trenton area, including KNF Neuberger, Palfinger, Nordson EFD, Guam, Inc. and Lawrence Mold and Tool Corporation.

“Trenton Makes, the World Takes is not an out-dated marketing slogan,” said MCTS Assistant Superintendent for Curriculum and Instruction Dana Hice-DePugh. “Companies in this region make innovative products that are sold all over the world.
“We’ve established great business partnerships with 30 of them, and they tell us that they are having a very difficult time finding employees with the technical knowledge and skills needed for high-paying careers in advanced manufacturing,” she said.

The curriculum follows the Project Lead the Way (PLW) advanced manufacturing model and also focuses on mechatronics, an emerging field at the heart of manufacturing’s resurgence that combines mechanical, electrical, control and computer systems.

The 31 students enrolled in the program will take all their courses at MCCC, many for dual credit. During their senior year, they will have internships with the local business partners.

MCTS worked with local community organizations to explain the new program to students and parents and encourage applications. The freshman class includes students from throughout the county.

“We and our business partners are as excited as the students are,” said Hice-DePugh. “It’s a very diverse, energetic group, with a strong female presence.”

The STEM Academy, funded with a $300,000 grant, is MCTS’ second full-time school. The Health Science Academy graduated its first class in 2014.

The **Morris County Vocational School District (MCVSD)** is using its $353,807 grant to launch a shared-time (grades 11-12) program in engineering design and advanced manufacturing in partnership with the County College of Morris (CCM) and the New Jersey Institute of Technology (NJIT).

The curriculum provides students with a strong foundation in design, materials science, electronics and computer programming.

“Our business partners have been telling us that they really need highly-skilled people in 21st century manufacturing in this part of the state, but we did not have the space to implement a comprehensive program ourselves,” said MCVSD director of curriculum and programs Shari Castelli.

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The program is also affiliated with the prestigious NASA HUNCH (High school students United with NASA to Create Hardware) program, an instructional partnership through which students create hardware for the international space station using materials, equipment and mentoring provided by NASA.

**Salem County Vocational Technical Schools (SCVTS)** created a new, four-year Law Enforcement/Firefighter/EMT Academy in partnership with Salem County Community College, the Salem County Sheriff’s Office, the Salem County Prosecutor’s Office, the Salem County Fire Academy and the Salem County Office of Emergency Management.

“Student and parent interest in law enforcement and emergency management has been growing in this part of the state. It’s been one of our highest-enrollment programs over the past several years,” said Salem County Technical High School principal Jason Helder.

“We already have great working relationships with the county officials who support our programs, and it seemed like a perfect fit to use this $343,902 grant as a platform to take a great partnership to the next level,” Helder said.

The 25 new students enrolled in the program will take their technical classes at the Salem County Emergency Management Complex in Woodstown. Arrangements are pending for them to take dual credit academic courses at Salem County College.

The curriculum includes industry-based certifications in 911 communications, EMT and firefighting.

Students will receive first aid and rescue training based on the New Jersey Department of Health EMT standards and will be trained in accordance with the New Jersey Department of Fire Safety standards for Community Emergency Response Team (TeenCERT) and First Responder certifications.

“It’s a great start for students who want to be police officers, state troopers, firefighters, criminal investigators, emergency dispatchers or EMTs,” said Helder.
COUNTY VOCATIONAL SCHOOL DISTRICT PARTNERSHIP GRANT

Hudson County Schools of Technology partnered with Harrison High School to establish a three year Culinary Arts program.

▪ NEED/ABSTRACT:
- We have chosen this area of career and technical education because the town of Harrison is currently going through a massive redevelopment with 700 residences as well as hotels, restaurants and retail establishments opening in the downtown area and the construction of a new, $256,000,000 PATH Station. Additionally, The Red Bull Arena, home to major league soccer opened in 2010. With this in mind, there is a growing need for professionals in the hospitality industry, especially food service. According to the NJ Office of Research and Information, the food services and hospitality industry will see a job growth of approximately 16% over the course of the next ten years.

Harrison High School offered an academic college prep track for all students, including Advanced Placement courses, a STEM Academy, and LEAP (Learning Enables All Possibilities), a college jump-start program; however, HHS did not offer a CTE program or a preparation program for students who did not plan to pursue an associate or bachelor degree. Therefore, we would like to fill this void with a culinary program, which would enable us to train the students in the culinary arts and afford them the opportunity to enter this growing area of the hospitality industry.

▪ AWARD:
- $368,484

▪ PARTNERS:
1. Hudson County Schools of Technology
2. Harrison High School
3. Hudson County Community College
4. Pomptonian Food Service

▪ PROGRAM OUTLINE: CTE COURSES

10th Grade
- Introduction to Commercial Cooking (5 High School Credits)
- Introduction to Hospitality (1 HCCC Credit)

11th Grade
- Food Sanitation and Culinary Principles (3 HCCC Credits)

12th Grade
- Tableservice I (2 HCCC Credits)
- Pantry and Breakfast Cookery (2 HCCC Credits)
- College Success Seminar (1 HCCC Credit)
Engineering Design and Advanced Manufacturing (EDAM) program offers high school juniors and seniors the opportunity to take classes in engineering, computer science, electronics and other technology applications to earn 32 college credits before high school graduation. Students enrolled in this program will also earn County College of Morris Certificates of Achievement in Mechanical Computer Aided Drafting and in Engineering Technology.

This share-time program, located on the campus of the County College of Morris (CCM) in Randolph, NJ, consists of two years, during which EDAM students learn in CCM's newly remodeled, state-of-the-art engineering labs to obtain key skills required to work in the rapidly expanding field. EDAM program partners include Manufacture NJ Talent Network, New Jersey Business and Industry Association, National Manufacturing Company, Siemens HealthCare and New Jersey Manufacturing Extension Program. These partnerships provide students with work-based learning experiences to gain hands-on training in workplace practices and an inside track to employment opportunities upon program completion.

EDAM program completers also have the option of continuing at CCM to earn an Associate's Degree in Mechanical Engineering Technology just one year post high school graduation. Students earning this Associate's degree will be able to seamlessly transfer to New Jersey Institute of Technology and earn a Bachelor's Degree in Engineering Technology or Mechatronics.

Whichever pathway EDAM program completers take, they will have a multitude of opportunities for employment in the advanced manufacturing industry or for post secondary education.

For more information, visit www.mcvts.org

Year 1

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<tr>
<th>Fall</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENR 103 Basic Engineering Graphics</td>
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<td>ENR 117 Computer Aided Drafting I</td>
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<tr>
<td>MEC 110 Materials for Engineering Technology</td>
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<tr>
<td>ENR 119 Technical Computer Applications</td>
<td>1</td>
</tr>
<tr>
<td>ENR 124 Instrumentation and Measurements</td>
<td>2</td>
</tr>
<tr>
<td>MEC 117 Mechanical Prototyping</td>
<td>2</td>
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<tr>
<td>MEC 118 Computer Integrated Manufacturing</td>
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Total Credits Year 1 14

Year 2

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<tr>
<td>ENR 118 Computer Aided Drafting II</td>
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<td>ENR 120 Technical Computer Programming</td>
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<tr>
<td>ELT 110 Digital Principles</td>
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<tr>
<td>ELT 201* Electricity and Electronics</td>
<td>4</td>
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<tr>
<td>MEC 141* Strength of Materials for Engineering Technology</td>
<td>4</td>
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<tr>
<td>MEC 104* Statics</td>
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Total Credits Year 2 18

Total End Credits 32

* Courses are subject to change
* Requires College Algebra as Prerequisite
The Salem County Vocational Technical School District (SCVTS) has formed a partnership between the Salem County Department of Emergency Services and the Salem Community College to offer a newly designed Law Enforcement and Public Safety Program of Study (LEPS). Students within Salem County can seek to enroll as a full time student at the Career and Technical High School or work with one of our partnering high schools to enroll as a shared timed student earning the same LEPS credentials. Over the next three years, SCVTS seeks to enroll 75 students (25 per year) with year one, September 2015, enrolling 24 students.

The LEPS program has been designed using a stackable credential model allowing students to experience a three tiered program of study. The program has been aligned with the National Partnership for Careers in Law, Public Safety, Corrections and Security and is articulated with Salem Community College’s Associate Degrees and Certificate Programs.

Students will complete highly rigorous course work while working with Salem County Department of Emergency Services at their location in Woodstown, NJ. Students will have options to complete externships through structured learning experiences offered through supporting agencies and will equip students will the necessary skills to begin a career in Public Safety or begin furthering their education to enter Law Enforcement.

**PARTNERS:**
- Salem County EMS
- Salem County Fire Academy
- Salem County EMT Academy
- Salem County Office of the Sheriff
- Salem County Correctional Facility
- Salem County Prosecutor’s Office
- Salem Community College