

## DESIGN, PRODUCTION & REPAIR - AUTOMATION ENGINEERING PATHWAY –

This pathway focuses on using engineering, technology, and computer systems to design, build, and maintain automated processes that improve efficiency and productivity in manufacturing and industry. It includes topics like robotics, electronics, mechanical systems, programming, control systems, sensors, and the ethical and safety standards of engineering. Students learn how to design and troubleshoot automated equipment, integrate new technologies, and apply problem-solving skills to real-world engineering challenges.

**CAREERS INCLUDE** Automation Engineer, Robotics Technician, Mechanical Engineer, Electrical Engineer, Industrial Engineer, Mechatronics Specialist, Manufacturing Engineer, Process Control Technician, PLC Programmer, Maintenance Engineer, Systems Integrator, Quality Control Engineer, Instrumentation Technician, Engineering Technician, Robotics Programmer, Design Engineer, CNC Programmer / Operator, Test Engineer, Automation Project Manager, Industrial Maintenance Mechanic

### SAMPLE PLAN OF STUDY\*

\*This course has a co/prerequisite. †This course is offered at CTEC. ¥This course counts as a STEM Elective

<p><b>FRESHMAN YEAR</b></p> <p>(1.0) English                  (1.0) Math (based on math course progression)                  (1.0) Science                  (1.0) Social Studies                  (1.0) Physical Education                  (1.0) Performing/Fine Arts Credit                  (1.0) <b>Engineering Design</b> ¥                  (1.0) Elective</p>	<p><b>SOPHOMORE YEAR</b></p> <p>(1.0) English                  (1.0) Math (based on math course progression)                  (1.0) Science                  (1.0) Social Studies                  (0.5) Health                  (1.0) <b>Robotics I</b> ¥†                  (1.0) <b>Principles of Engineering</b> *¥† (prereq, not in Pathway)                  (1.5) Electives</p>
<p><b>JUNIOR YEAR</b></p> <p>(1.0) English 11/AP Lang &amp; Comp                  (1.0) Math (based on math course progression)                  (1.0) Science                  (1.0) Social Studies                  (0.5) Communications Credit                  (1.0) <b>Digital Electronics</b> *¥† &amp;/or <b>Computer Integrated Manufacturing</b> *¥†                  (1.0) <b>Robotics II</b> *¥†                  (1.5) Electives</p>	<p><b>SENIOR YEAR</b></p> <p>(1.0) English 12 or AP Lit &amp; Comp or AP Lang &amp; Comp                  (1.0) Math (based on math course progression)                  (1.0) Science                  (0.5) Political Participation or Con. Law/AP Government                  (0.5) Financial Literacy                  (1.0) <b>Digital Electronics</b> *¥† &amp;/or <b>Computer Integrated Manufacturing</b> *¥†                  (1.0) <b>Engineering Workplace Experience</b> *¥†                  (2.0) Electives</p>

**Bolded courses lead to Pathway Completion**

**PATHWAY COURSES:** Pathway completion requires students to complete three (3) credits in the pathway, with at least two (2) of those credits being a combination of technical and application-level courses. Additionally, a student must earn one of the following: an industry-recognized certification (IRC), nine (9) + college hours aligned to the pathway, or complete a high-quality work-based learning experience -- Entrepreneurial Experience (EntX), Client Connect Project (CCP), or Internship.

TECHNICAL LEVEL	APPLICATION LEVEL
Engineering Design ¥ Robotics I †¥	Digital Electronics *†¥      Cybersecurity *†¥ Computer Integrated Manufacturing *†¥      Robotics II *†¥ Engineering Workplace Experience *¥

<p><b>Other Recommended Courses</b></p> <p>AP Calculus AB*                  Principles of Engineering *¥†                  AP Computer Science Principles ¥†                  Drafting/CAD</p>	<p><b>Opportunities for Pathway Completion:</b></p> <p>Engineering Workplace Experience – Internship                  Digital Electronics – College Hours                  Computer Integrated Manufacturing – College Hours</p>	<p><b>Graduation Requirements:</b></p> <p>English – 4 credits                  Math - 4 credits                  Science – 3 credits                  Social Studies – 3.5 credits                  STEM Elective – 1 credit                  Fine Arts – 1 credit                  Communication – 0.5 credit                  Financial Literacy – 0.5 credit                  Physical Education/Health – 1.5 credits                  Postsecondary Assets – 2 required</p>
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\*This sample plan of study offers an example of what a student's individual plan of study in this pathway might look like. Please note that some courses may not be offered on an annual basis and participation in classes may be subject to space