

**Career Cluster:** Science, Technology, Engineering and  
Mathematics



**Career Pathway:** Engineering and Technology

**Technical Studies:** Electrical Engineering Technology

**Related Industry Certifications Available:** NOCTI/Fiber Optics Installer (ETA)/  
Fiber Optic Cert. (RBT)/  
Electronics Technician Cert. (ETA)

	Grade	English	Math	Science	S.S.	Required Courses or Recommended Electives and/or CTE Courses		
<b>Middle School</b>	<b>7</b>	English 7	Math 7	Science 7	Social Studies 7	Inventions and Innovations (8461)	World Languages	
	<b>8</b>	English 8	Math 8 Or Algebra I 3130	Physical Science	Civics	Technological Systems (8462)	World Languages	

**Career Assessment:** Administration of a career assessment instrument is appropriate at the middle school level to help students and their parents plan for high school (Virginia's Career Planning System or other assessment product).

	Grade	English	Math	Science	S.S.	Required Courses or Recommended Electives and/or CTE Courses			Related Careers
<b>SECONDARY</b> <i>Career Coaching</i>	<b>9</b>	English 9 1130 Or Intensified Honors 9 1138	Algebra I 3130 Or Geometry 3143 Or Algebra II 3135	Earth Science 4211 Or Advanced Earth Science	World History I 2341 Or <b>AP Human Geography 2212</b> Or World History II 2342	Health & PE and For. Language (if necessary)	IT Fundamentals 6670 Or Advance Drawing & Design 8438 <b>(DRF 151) DE</b>	Introduction to Eng. Design PLTW 8439 <b>(MEC 100)</b>	<ul style="list-style-type: none"> <li>• Automated Manufacturing Technician</li> <li>• Calibration Technician</li> <li>• Manager, Supervisor</li> <li>• Quality Control Technician</li> <li>• Quality Engineer</li> <li>• Precision Inspector</li> <li>• Production Manager</li> <li>• Electrical Engineering Technician</li> <li>• Industrial Engineer Technician</li> <li>• Engineering Assistant</li> <li>• Project Manager</li> <li>• Drafter</li> <li>• Electrical Engineer</li> <li>• Electronics Technician</li> </ul>
	<b>10</b>	English 10 1140 Or Intensified English 1148	Geometry 3143 Or Algebra II 3135 Or Alg II/Trig 3136 Or Pre-Calculus 3161	Biology I 4311 Or Advanced Biology 4313	Geography 2340 Or <b>AP Human Geography 2212</b>	Health & PE and For. Language (if necessary)	IT Fundamentals 6670 Or Advance Drawing & Design 8438 <b>(DRF 151) DE</b> Or Intro Engineering Design 8490	Principles of Engineering PLTW 8441 <b>(MEC 100)</b>	

	<p><b>11</b></p>	<p>Honors English 11 2000 Or Advanced American Studies 1185</p>	<p>Geometry 3143 Or Algebra II/Trig 3136 Or Trigonometry 3166 Or Calculus 3175 Or <b>AP Calculus 3177</b></p>	<p>Chemistry 4410 Or Physics 45101</p>	<p><b>AP History 2000</b> Or Advanced American Studies 1183 Or American Studies 1185</p>	<p>For. Lang (if necessary)</p>	<p>Intro Engineering Design 8490 Or Advanced Engineering 8491 Or Introduction to Electronics and Robotics (8557) – NHREC</p>	<p>Computer Integrated Manufacturing PLTW 8442 Or Digital Electronics PLTW (8440)</p>	
	<p><b>12</b></p>	<p>*English 12 1160 <b>(Eng 111/112)</b> Or ADV World Lit 1190 Or <b>AP Lit &amp; Comp 1195</b> Or <b>AP Lang &amp; Comp 1213</b> Or English 111/112</p>	<p>Trigonometry 3166 Or Alg II/Trig 3136 Or *Pre-Calculus 3161 Or <b>AP Calculus 3177</b></p>	<p>Physics 45101 Or <b>AP Physics B 4413</b> Or Other Science Or <b>AP Chemistry 4411</b></p>	<p>US/VA Gov 2440 Or <b>AP Government 2445</b></p>	<p>Advanced Engineering 8438</p>	<p>Advanced Engineering 8491 Or Digital Electronics PLTW (8440) Or Advanced Robotics and Fiber Optics (8558)--NHREC</p>	<p>Digital Electronics PLTW (8440) Or Engineering Design &amp; Dev. PLTW 8443</p>	

**Postsecondary Placement Assessments (Reading, Writing, & Math)**

<b>POSTSECONDARY</b> Community College <i>Career Placement</i>	<b>Year 1 1<sup>st</sup> Semester</b>	College Composition I (ENG 111) <b>(If not taken as dual enrollment)</b>	Pre-Calculus I (MTH 163) <b>(If not taken as dual enrollment)</b>	College Success Skills (SDV 100)	Electronics Troubleshooting (ETR 126) <b>(If not taken as dual enrollment)</b>	D.C. and A.C.Circuits (ETR 115) <b>(If not taken as dual enrollment)</b>	Intro to Eng. Tech (MEC 100) <b>(If not taken as dual enrollment)</b>		
	<b>Year 1 2<sup>nd</sup> Semester</b>	Social Science Elective	College Composition II (ENG 112) <b>(If not taken as dual enrollment)</b>	Health or PE Elective (HLT/PED)	Pre-Calculus II (MTH 164) <b>(If not taken as dual enrollment)</b>	Electronic Devices I (ETR 121) <b>(If not taken as dual enrollment)</b>	Industrial Electricity Applications (ETR 145)		
	<b>Year 2 1<sup>st</sup> Semester</b>	Humanities Elective	Principals of Lasers and Fiber Optics (ETR 231) <b>(If not taken as dual enrollment)</b>	Calculus I (MTH 173) <b>(If not taken as dual enrollment)</b>	Physics (PHY 201)	Programmable Controllers ELE 239	Digital Logic Circuits (ETR 179)		
	<b>Year 2 2<sup>nd</sup> Semester</b>	Linear Integrated Circuits (ETR 259)	Network Analysis (ETR 215)	Network Analysis Lab (ETR 217)	Physics (PHY 202)	Computer Electronics (ETR 273)			
<b>4-year</b> Institution	University/College: Old Dominion University								
	Degree or Major: Electrical Eng. Tech.					<b>*Dual Credit or Articulated (HS to CC)</b>			
	Number of Articulated CC Credits:								



## CAREER PATHWAY SUPPLEMENTAL INFORMATION

<b>TOPIC: Career-Technical Student Organization Related Activities</b>	<b>TOPIC: Work-Based Learning (Cooperative Education, Mentoring, Internships, Job Shadowing, and Service Learning)</b>
<p>Skills USA Related Activities:</p> <ul style="list-style-type: none"> <li>3-D Visualization and Animation</li> <li>Architectural Drafting</li> <li>Automated Manufacturing Technology</li> <li>CNC Milling Technology</li> <li>CNC Turning Technology</li> <li>Customer Service</li> <li>Electronics Applications</li> <li>Electronics Technology</li> <li>Entrepreneurship</li> <li>Mechatronics</li> <li>Occupational Health and Safety</li> <li>Power Equipment Technology</li> <li>Precision Machining Technology</li> <li>Principles of Technology</li> <li>Related Technical Math</li> <li>Robotics and Automation Technology</li> <li>Sheet Metal</li> <li>TeamWorks</li> <li>Technical Drafting</li> <li>Total Quality Management</li> <li>Welding</li> </ul>	<p><b><u>COOPERATIVE EDUCATION</u></b>            Cooperative education is a method of instruction that combines career and technical classroom instruction with directly related paid employment. <i>The Career and Technical Education Cooperative Education Handbook</i> provides detailed information concerning development, regulations, teacher qualifications, and operation and management. Co-op is available through the following related courses in this pathway: Accounting; Advanced Computer Information Systems; Computer Information Systems; Design, Multimedia, and Web Technologies; and Digital Input Technologies.</p> <p><b><u>JOB SHADOWING</u></b>            Job shadowing is a short-term, career-exploration form of worksite experience in which the student “shadows” (follows) a competent worker for a brief period of time. Job shadowing usually is the first form of worksite assignment given to students and is less intensive than mentoring, internship, and service learning</p> <p><b><u>MENTORING</u></b>            Mentoring is a relationship between an experienced person (the mentor) and a less experienced person, such as a student (the mentee), in which the mentor provides guidance, support, feedback and skill instruction to the mentee. School-coordinated mentoring is more complex than job shadowing but tends to be less demanding and possibly shorter in duration than an internship or service learning.</p> <p><b><u>INTERNSHIP</u></b>            An internship is a planned, progressive, structured educational activity or program that enables students to practice and develop career-related skills in a real workplace environment. An internship is more complex than job shadowing and mentoring when they are offered as separate programs.</p> <p><b><u>SERVICE LEARNING</u></b>            Service learning is a community-based form of the work-based learning experience in which students and teachers cooperate with their locality to address problems and issues by applying knowledge and skills from several courses or from a total program.</p>

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