

Hampton City Schools
GAITE Career Pathway Model for Mechanical Engineering Technology



Career Cluster: Science, Technology, Engineering and Mathematics
Career Pathway: Engineering and Technology
Technical Studies: Mechanical Engineering Technology
Related Industry Certifications Available:
 NOCTI and Autodesk CADD
Transferable Credits: up to 33 credits



	Grade	English	Math	Science	S.S.	Required Courses or Recommended Electives and/or CTE Courses		
Middle School	7	Language Arts 7	Pre-Algebra	Life Science	US History	Inventions and Innovations (8461) Gateway to Technology if available	Student Choice Elective	Physical Education
	8	Language Arts 8	Algebra I 3130	Physical Science	Civics and Economics	Technological Systems (8462) Gateway to Technology if available	Foreign Language I -or- Computer Solutions	Physical Education

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
SECONDARY <i>Career Coaching,</i>	9	English 9 1130	Geometry 3143 - or - Algebra II 3135 - or - Alg II/Trig 3137	Earth Science 4210	World History 2340 - or - Geography 2210	Health & PE and For. Language II	Intro to Engineering Drawing & Design PLTW 8436	Basic Technical Drawing & Design 8435	<ul style="list-style-type: none"> • Automated Manufacturing Technician • Calibration Technician • Manager, Supervisor • Quality Control Technician • Quality Engineer • Precision Inspector • Production Manager • Mechanical Engineering Technician • Industrial Engineer Technician • Engineering Assistant • Project Manager • Drafter • Mechanical Engineer
	10	English 10 1140	Algebra II 3135 - or - Alg II/Trig 3137 - or - Elementary Functions - or - Pre-Calculus	Biology I 4310	World History 2340 - or - Geography 2221	Health & PE and For. Language III	Principles of Engineering I PLTW 8490	Digital Electronics 8416	
	11	English 11 1150 - or - AP English 1195	Elementary Functions - or - Pre-Calculus - or - AP Calculus AB	Chemistry 4410	US/VA History 2360 - or - AP American History 2341	For. Lang IV	Computer Integrated Manufacturing PLTW 8425	Machine Technology – NHREC (0560) Or Material and Processes of Industry (MEC 113)DE DL	
	12	English 12 1160 -or- AP English 1196	AP Calculus AB - or - AP Calculus BC	AP Physics 4410	US/VA Gov 2440 - or - AP Government 2440	AP Foreign Language	Engineering Design and Development 8491	Computerized Numerical Controls(CNC) – NHREC (0570) (MAC 121,122) Or Material and Processes of Industry (MEC 113) DE DL Or Polymers and Composites (MEC 220) DE DL	

Postsecondary Placement Assessments (Reading, Writing, & Math)

POSTSECONDARY Community College Career Placement	Year 1 1st Semester	College Composition I (ENG 111) (If not taken as dual enrollment)	Pre-Calculus I (MTH 163) (If not taken as dual enrollment)	College Success Skills (SDV 100)	Engineering Drawing Fundamentals (DRF 151) (If not taken as dual enrollment)	Materials and Processes of Industry (MEC 113) (If not taken as dual enrollment)	Intro to Eng. Tech (MEC 100) (If not taken as dual enrollment)		
	Year 1 2nd Semester	Principles of Economics I (ECO 201)	Social Science Elective	College Composition II (ENG 112) (If not taken as dual enrollment)	Health - or - PE Elective (HLT/PED)	Pre-Calculus II (MTH 164) (If not taken as dual enrollment)	Mechanics I-Statics for Engineering Tech (MEC 131) (If not taken as dual enrollment)		
	Year 2 1st Semester	Adv. Tech. Drafting I - or - Parametric Solid Modeling (DRF 211 - or - 241) (If not taken as dual enrollment)	Mechanics II-Strength of Materials for Eng. Tech. (MEC 132) (If not taken as dual enrollment)	College Physics PHY 201	Calculus I (MTH 173) (If not taken as dual enrollment)	Electronic Circuits and Instrumentation (MEC 103)	Elective chosen from MEC, DRF, - or - IND 145		
	Year 2 2nd Semester	Humanities Elective	College Chemistry (CHM 111)	Mechanics III—Dynamics for Eng. Tech (MEC 133)	College Physics (PHY 202)	Basic Fluids Mechanic-Hydraulics/Pneumatics (MEC 161) - or - Polymers and Composites (MEC 220)			
4-year Institution	University/College: Old Dominion University					Future DL classes to be offered			
	Degree or Major: Mechanical Eng. Tech.					DE Dual Credit course (HS to CC)			
	Number of Articulated CC Credits:					DL Distance Learning AP Advanced Placement			

CAREER PATHWAY SUPPLEMENTAL INFORMATION

TOPIC: Career-Technical Student Organization Related Activities	TOPIC: Work-Based Learning (Cooperative Education, Mentoring, Internships, Job Shadowing, and Service Learning)
<p>Skills USA Related Activities:</p> <ul style="list-style-type: none"> 3-D Visualization and Animation Architectural Drafting Automated Manufacturing Technology CNC Milling Technology CNC Turning Technology Customer Service Electronics Applications Electronics Technology Entrepreneurship Mechatronics Occupational Health and Safety Power Equipment Technology Precision Machining Technology Principles of Technology Related Technical Math Robotics and Automation Technology Sheet Metal TeamWorks Technical Drafting Total Quality Management Welding 	<p><u>COOPERATIVE EDUCATION</u></p> <p>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><u>JOB SHADOWING</u></p> <p>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><u>MENTORING</u></p> <p>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><u>INTERNSHIP</u></p> <p>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><u>SERVICE LEARNING</u></p> <p>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>