York County School Division

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 Brainbench 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**					Inventions and Innovations (8461)		
	8		Math 8 Or Algebra I 3130			Technological Systems (8462)		

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 *Career*	**9**	English 9 1130 Or Advanced English 9 11301	Algebra I 3130 Or Geometry 3143 Or Algebra II 3135	Earth Science 4210	World History 2215 or Geography 2210	Health & PE and For. Language Economics and Personal Finance	Basic Technical Drawing & Design 8435	IT Fundamentals 6670	• Automated Manufacturing Technician • Calibration Technician • Manager, Supervisor • Quality Control Technician • Quality Engineer • Precision Inspector

	10	English 10 1140 Or Advanced English 10 11401	Geometry 3143 Or Algebra II 3135 Or Alg II/Trig 31371	Biology I 4310	World History 2216 or Geography 2210	Health & PE and For. Language (if necessary) Economics and Personal Finance	*Introduction to Engineering 8490 **(MEC 100) DE** *Engineering Drawing/Design (8436) **(DRF 231) DE**	**IT Fundamentals 6670**	• Production Manager • Mechanical Engineering Technician • Industrial Engineer Technician • Engineering Assistant • Project Manager • Drafter • Mechanical Engineer
	11	English 11 1150 Or AP English 11 1196 (DE)	Geometry 3143 Or Algebra II 3135 Or Trigonometry/ Discrete Math 3150/3154	Chemistry 4410 Or AP Chemistry 4470 (DE)	US/VA History 2360 Or AP US History 2319 (DE)	For. Lang (if necessary) Economics and Personal Finance	*Introduction to Engineering 8490 **(MEC 100) DE** Advanced Drawing/Design 8438 Machine Technology 8539 NHREC **(MAC 161) DE**		
	12	*English 12 1160 **Or** AP English 12 1195 (DE)	Trigonometry/ Discrete Math 3150/3154 Or *Calculus 31601 Or AP Calculus AB 31771 or CAL BC 31772 (DE)	Physics 45101 Or AP Chemistry 4470 (DE)	US/VA Gov 2440 Or AP US Gov 2445 (DE)	Economics and Personal Finance	*Introduction to Engineering 8490 **(MEC 100)** Advanced Drawing/Design 8438 Computer Numerical Control (CNC) Machining 8540 NHREC **(MAC 121, 122)**		

Postsecondary Placement Assessments (*Reading, Writing, & Math*)									
POSTSECONDARY Community College *Career Placement*	**Year 1 1st Semester**	College Composition I (ENG 111)	Technical Math I (MTH 115) or 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)**	Social Science Elective	Intro to Eng. Tech (MEC 100) **(If not taken as dual enrollment)**		
	Year 1 2nd Semester	Principles of Economics I (ECO 201)	Programmable Controllers (ELE 239)	Technical Writing (ENG 115)	Health or PE Elective (HLT/PED)	Technical Math II (MTH 116) or Pre-Calculus II (MTH 164)	Materials and Processes of Industry (MEC 113)		
	Year 2 1st Semester	Adv. Tech. Drafting I Or Parametric Solid Modeling (DRF 211 or 241)	Mechanics I-Statics for Engineering Tech (MEC 131)	College Physics PHY 201	Quality Control (IND 140)	Electronic Circuits and Instrumentation (MEC 103)	Numerical Control I (MAC 121) **(If not taken as dual enrollment)**		
	Year 2 2nd Semester	Humanities Elective	Intro to Metrology (IND 145)	World Class Manufacturing I (IND 181)	College Physics (PHY 202)	Basic Fluids Mechanic-Hydraulics/Pneumatics (MEC 161) Or Polymers and Composites (MEC 220)	Elective chosen from MEC, DRF, or MAC **(If not taken as dual enrollment)**		
4-year Institution	University/College: Old Dominion University Degree or Major: Mechanical Eng. Tech. Number of Articulated CC Credits:						**Future DL classes to be offered** **DE Dual Credit course (HS to CC)** **DL Distance Learning** **AP Advanced Placement**		

CAREER PATHWAY SUPPLEMENTAL INFORMATION

Industry Certifications available upon completion of identified courses	Course Title	Course Title	Course Title	Course Title	Course Title
CAD (NOCTI)	Engineering Drawing				
Auto CAD Cert,	Engineering Drawing				
NOCTI Pre-Engineering	Intro Engineering				

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CAREER PATHWAY SUPPLEMENTAL INFORMATION

TOPIC: Career-Technical Student Organization Related Activities	TOPIC: Work-Based Learning (Cooperative Education, Mentoring, Internships, Job Shadowing, and Service Learning)
Skills USA Related Activities: 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	**COOPERATIVE EDUCATION** Cooperative education is a method of instruction that combines career and technical classroom instruction with directly related paid employment. *The Career and Technical Education Cooperative Education Handbook* 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. **JOB SHADOWING** 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 **MENTORING** 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. **INTERNSHIP** 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. **SERVICE LEARNING** 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.