

Advanced Manufacturing Pathway

Grade Level	I. English/ Language Arts	II. Math	III. Science	IV. Social Studies	V. World Languages	VI. Health and Wellness	VII. Possible Electives
5	5th Grade ELA/Social Studies	5th Grade Math	5th Grade Science			5th Grade Health and Wellness	NASA/Biotech 5 Coding 5
6	6th Grade ELA/Social Studies	6th Grade Math	6th Grade Science			6th Grade Health and Wellness	NASA/Biotechnology 6 Coding 6
7	7th Grade ELA/Social Studies	7th Grade Math	7th Grade Science			7th Grade Health and Wellness	NASA/Biotechnology 7 Coding 7
8	8th Grade ELA/English I Honors/	Math I Honors	8th Grade Science Or Earth Environmental Honors	World History Honors Or 8th grade Social Studies		8th Grade Health and Wellness	NASA Biotechnology 8 Coding 8
9	English I Honors or English II Honors	Math II Honors	Earth Environmental Honors Or Biology Honors or Physical Science Honors	World History Honors or Found Prin USA & NC: Civic Literacy Honors	2 Foreign Languages in the same language A two-credit minimum is required for admission to a university in the UNC system.	Health and Physical Education 9	Technology Engineering and Design Advanced Manufacturing I Advanced Manufacturing II Advanced Manufacturing III Advanced Manufacturing IV CPT 4.0 Robotics I Robotics II- Honors Computer Science I Computer Science II COA Intro to Computers (CIS 110) ECSU Intro to Computing (CSC 111)(CSC 114)
10	English II Honors Or English III Honors	Math III Honors	Biology Honors or Physical Science Honors or Chemistry Honors	Found Prin USA & NC: Civic Literacy Honors or American History Honors	Other languages are possible through NCVPS.	Advanced Physical Education	
11	English III Honors Or English IV Honors	Advanced Functions and Modeling Honors Pre-Calculus Honors (Math 4)	Chemistry Honors or Physical Science Honors	American History Honors or Economics and Personal Finance Honors			
12	English IV Honors			Economics and Personal Finance Honors			

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							Any COA Welding class Any COA Air Conditioning Heating and Refrigeration Technology class COA BPR- 111-Print Reading
11th and 12th-grade students may participate in Career-Based Internships/Pre-Apprenticeships coordinated by the Work-Based Learning Coordinator.							

* English IV - students can take COA ENG 111 (or ECSU ENG 102), ENG 112, and ENG 242 to meet the HS English IV requirement, students must take all three COA English classes to earn HS English IV credit

** American History- students can take COA HIS 131 and HIS 132 (OR ECSU 255 and ECSU 256) to meet the HS American History requirement, students must take both COA/ECSU History classes to earn HS American History Credit

*** Math 4- students can take any one of COA MAT 143, MAT 152, MAT 171 or ECSU MATH 115 or MATH 118 to meet the HS Math 4 requirement

COA	ECSU
Welding Technology Program	Mechanical and Automation Technology
Integrated Machining	
Computer Integrated Machining	
Marine Diesel Engine Repair	
Heating, Air and Refrigeration	
Computer-Aided Drafting Technology	

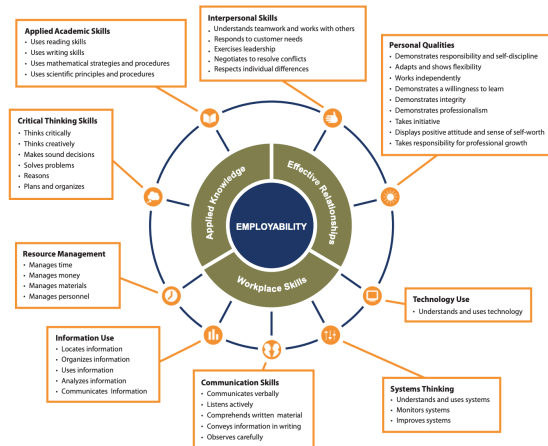
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**Sample Pathway Occupations
2021 Occupational Information Network (O*NET) Data**

Occupation Specialties	Entry Level of Education Needed	2021 Annual Wage Nationwide	2021 Annual Wage NC	Annual Openings 2021-2031 Nationwide	Annual Openings 2021-2031 NC	Bright Outlook Occupation: expected to grow rapidly in the next several years, or will have large numbers of job openings.
Industrial Engineers	Bachelor's Degree	\$95,300	\$81,380	22,400	790	Yes Faster than average (10% to 14%)
Industrial Production Managers	Bachelor's Degree	\$103,150	\$99,340	15,400	470	green economy activities and technologies are likely to increase the employment demand Average (4% to 9%)
Industrial Machinery Mechanics	HS Degree with Certifications	\$59,840	\$56,380	42,500	1,460	Much faster than average 16%-27%
Welders	Associates' Degree HS with Certifications	\$47,010	\$46,450	47,600	1,500	Green Increased Demand Average (2% to 13%)

Related Pathway Occupations*: Machinists Layout Workers Metal & Plastics Manufacturing Production Technicians Mechanical Engineering Technicians Metal-Refining Furnace Operators Millwrights	Other Related Information Technology Occupations*: Mechanical Engineers Industrial Engineers Multiple Machine Tool Setters Operators & Tenders Nuclear Power Reactor Operators Patternmakers, Metal & Plastic *ONET Online	Manufacturing is the production of goods for use or sale using labor and machines, tools, chemical and biological processing, or formulation. The term may refer to a range of human activity, from handicraft to high tech, but is most commonly applied to industrial production, in which raw materials are transformed into finished goods on a large scale. Such finished goods may be used for manufacturing other, more complex products, such as aircraft, household appliances or automobiles, or sold to wholesalers, who in turn sell them to retailers, who then sell them to end users – the "consumers". Manufacturing operates differently under different economic systems. In a free market economy, manufacturing is usually directed toward the mass production of products for sale to consumers at a profit. In a collectivist economy, manufacturing is more frequently directed by the state to supply a centrally planned economy. In mixed market economies, manufacturing occurs under some degree of government regulation. Modern manufacturing includes all intermediate processes required for the production and integration of a product's components. Some industries, such as semiconductor and steel manufacturers, use the term fabrication instead. The manufacturing sector is closely connected with engineering and industrial design. Examples of major manufacturers in North America include General Motors Corporation, General Electric, Pfizer, and Proctor and Gamble. According to the Bureau of Labor Statistics (BLS), many occupations are growing at a faster than average rate. Occupations that are directly or indirectly associated with manufacturing are software developers, first-line supervisors, cost estimators, boilermakers, and logisticians. However, there will be keen competition for jobs because of the rate of employment growth in the industry.
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Employability Skills Related to Advanced Manufacturing



<https://cte.ed.gov/initiatives/employability-skills-framework>

Communication Skills

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Speaking-Talking to others to convey information effectively.

Personal Qualities

Judgment and Decision Making — Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Resource Management

Time Management — Managing one's own time and the time of others.

Monitoring — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. Adjusting actions in relation to others' actions.

Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Applied Academic Skills

Mathematics-Using mathematics to solve problems.

Systems Thinking

Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.

Work-Based Learning Experiences Applicable for this Course of Study				Business/Industry Partnership Opportunities
Apprenticeship	Yes	Internship	Yes	Hoffer Flow Control Hockmeyer Equipment Corporation Avoca LLC Nucor Corporation B&M Contractors, Inc. CB's Auto Tire & Repair Services Regulator Marine Telephonics Electronic Systems, Inc. Universal Forest Productions, Inc. MiTek
Business or Industry Field Trip	Yes	Job Shadow	Yes	
Mentorship	Yes			

For more information about your education and career planning, including valuable financial aid information, see your school counselor

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Coursework	Credits	Coursework	Credits	Course	Credits	Coursework	Credits
Future-Ready Core				Future-Ready Occupational			
English/Language Arts	4	World Languages	2	English/Language Arts	4	Health/Physical Education	1
Math	4	Electives	10	Math	4	World Languages	Not Required
Science	3			Science	3	Employment preps	2
Social Studies	4			Social Studies	4	CTE	4
Health/Physical Education	1	TOTAL	28			TOTAL (includes 150 School Based Training, 225 Community Service Hours + 225 Paid Employment Hours) Career Portfolio and Completion of IEP Goals	22