



Career Cluster: Advanced Manufacturing & Engineering


Career Pathway: Engineering

| JUNIOR HIGH / MIDDLE SCHOOL | | | |
|--|---|--|-----------------------------|
| College and Career Awareness | | | |
| Exploring Technology | | | |
| HIGH SCHOOL | | | |
| SUPPORTING COURSES: Suggested high school courses that support the Career Pathway (Courses DO NOT count towards the Pathway) | | | |
| Chemistry | Geographical Information Systems, Intro * | Math 1050 * | |
| EXPLORER COURSES: Choose one or more of the following courses. | | | |
| 3D Print Technology | Electromechanical 1 | Manufacturing Principles 1 + | Robotics 1 + |
| Architectural Design 1 * | Electronics, Intro + | Mechanical Design and Engineering 1 | Robotics Technology |
| CAM Automated Manufacturing | Engineering Principles 1 + | Metalworking 1 | UAS: Drones, Intro * |
| Composites 1 * | Engineering Technology | Physics (AP) | Welding Technician, Entry * |
| Computer Programming 1 * | Machining 1 * | Plastics 1 | Woodworking, Beginning |
| CONCENTRATOR COURSES: To be a concentrator you must pass one of the following courses AND one explorer course. | | | |
| Aerospace Engineering | Electromechanical 2 | Materials Science | Robotics 2 * |
| Digital Electronics | Engineering Principles 2 * | Mechanical Design and Engineering 2 | |
| COMPLETER COURSES: To be a completer you must pass a concentrator course and enough courses to equal 3.0 credits in this Pathway. | | | |
| Automation Principles | Computer Programming, Advanced | Engineering Capstone | UAS: Design and Maintain |
| Calculus (AP) | Electronics, Advanced * | Mechanical Design and Engineering 3 | |
| CTE Internship | | Apprenticeship | |
| POSTSECONDARY: There are many options for education and training beyond high school. | | | |
| Utah System of Higher Education: ushe.edu (Utah's public colleges and universities) | | UtahMajors.org: Majors Guide | |

* concurrent enrollment course + recommended explorer course

HIGH SCHOOL TO POSTSECONDARY EDUCATION AND TRAINING

There are several options for education and training beyond high school, depending on your career goals.

|  | Certificate | 2-Year Associate Degree | 4-Year Bachelor's Degree |
|---|---|---|--|
| | <ul style="list-style-type: none"> > Machine Operator > Production Technician | <ul style="list-style-type: none"> > Electro-Mechanical Technicians > Electronics Equipment Assembler | <ul style="list-style-type: none"> > Automation Engineer > CTE Teacher > Electrical Engineer > Electronics Drafter |

Career and Technical Education provides all students access to high-quality, rigorous career-focused programs that result in attainment of credentials with labor market value. [Credentials of Value](#)

Utah CTE classes are open to all qualified students without regard to race, color, national origin, sex, disability, or age.

Advice to Students

"Taking a CTE course is not for the faint of heart. It is difficult and time consuming. However, through the courses you will fall in love with the subject you are studying. My advice is to never give up no matter how hard it gets."

Ashley Zolnik
 Future Manufacturing Engineer

LEARN MORE ABOUT OCCUPATIONS AND WAGES

Advanced Manufacturing & Engineering

Department of Workforce Services
[Utah Occupational Explorer](#)

TSA

is the Career and Technical Student Organization (CTSO) for students in the Engineering Career Pathway.

TSAweb.org | UtahTSA.org
[Utah TSA flyer](#)





Career Cluster: Advanced Manufacturing & Engineering


Career Pathway: Manufacturing & Production

| JUNIOR HIGH / MIDDLE SCHOOL | | | |
|--|-------------------------------------|--|---------------------------|
| College and Career Awareness | | | |
| Exploring Technology | | | |
| HIGH SCHOOL | | | |
| SUPPORTING COURSES: Suggested high school course that supports the Career Pathway (Course DOES NOT count towards the Pathway) | | | |
| Secondary Math 2 | | | |
| EXPLORER COURSES: Choose one or more of the following courses. | | | |
| 3D Print Technology | Machining 1 * | Small Business Math * | |
| Biomanufacturing 1 | Marketing 1 * | Welding Technician, Entry * | |
| CAM Automated Manufacturing | Manufacturing Technology | Woodworking, Beginning + | |
| Composites 1 * + | Mechanical Design and Engineering 1 | | |
| Entrepreneurship * | Plastics 1 + | | |
| CONCENTRATOR COURSES: To be a concentrator you must pass one of the following courses AND one explorer course. | | | |
| Composites 2 | Manufacturing Principles 1 | Plastics 2 | Woodworking, Intermediate |
| COMPLETER COURSES: To be a completer you must pass a concentrator course and enough courses to equal 3.0 credits in this Pathway. | | | |
| Automation Principles | Non-Destructive Testing * | Woodworking, Advanced | |
| Manufacturing Principles 2 | UAS: Design and Maintain | | |
| CTE Internship | Apprenticeship | | |
| POSTSECONDARY: There are many options for education and training beyond high school. | | | |
| Utah System of Higher Education: ushe.edu (Utah's public colleges and universities) | | UtahMajors.org: Majors Guide | |

* concurrent enrollment course + recommended explorer course

HIGH SCHOOL TO POSTSECONDARY EDUCATION AND TRAINING

There are several options for education and training beyond high school, depending on your career goals.

|  | Certificate | 2-Year | 4-Year Bachelor's Degree |
|---|--|--|--|
| | <ul style="list-style-type: none"> > Cabinetmaker > Machine Operator > Production Technician | <ul style="list-style-type: none"> > Controls Technician > Project Manager | <ul style="list-style-type: none"> > CTE Teacher > Manufacturing Engineer > Product Designer |

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Advice to Students

"I would definitely recommend taking CTE classes during high school. They teach multiple skills that you can use in life and give you many experiences that will allow you to have a head start in life."

Luke Asher
 Future Precision Machinist

LEARN MORE ABOUT OCCUPATIONS AND WAGES

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[Utah Occupational Explorer](#)

SkillsUSA | TSA

is the Career and Technical Student Organization (CTSO) for students in the Manufacturing & Production Career Pathway.

[SkillsUSA.org](https://www.skillsusa.org) | [TSAweb.org](https://www.tsa.org)
[UtahSkillsUSA.org](https://www.utahskillsusa.org) | [UtahTSA.org](https://www.utahtsa.org)
[SkillsUSA Utah flyer](#) | [Utah TSA flyer](#)




Career Cluster: Advanced Manufacturing & Engineering

Career Pathway: Welding & Machining

| JUNIOR HIGH / MIDDLE SCHOOL | | |
|--|--------------------------------|--|
| College and Career Awareness | | |
| Exploring Technology | | |
| HIGH SCHOOL | | |
| EXPLORER COURSES: Choose one or more of the following courses. | | |
| Machining 1 * | Sheet Metal | |
| Metal Working 1 | Welding Technician, Entry * | |
| CONCENTRATOR COURSES: To be a concentrator you must pass one of the following courses AND one explorer course. | | |
| Machining 2 * | | |
| Welding Technician, Intermediate * | | |
| COMPLETER COURSES: To be a completer you must pass a concentrator course and enough courses to equal 3.0 credits in this Pathway. | | |
| Machining 3 | Welding-Pipe Fitting | Welding Technician, Advanced * |
| Non-Destructive Testing * | Welding-Structural Fitting | |
| CTE Internship | Apprenticeship | |
| POSTSECONDARY: There are many options for education and training beyond high school. | | |
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* concurrent enrollment course + recommended explorer course

| HIGH SCHOOL TO POSTSECONDARY EDUCATION AND TRAINING | | | |
|--|--|---|--|
| There are several options for education and training beyond high school, depending on your career goals. | | | |
|  | Certificate | 2-Year Associate Degree | 4-Year |
| | > Tool and Die Maker > Tool Maker > Welder | > Machine Tool Technician > Welding Technician | > CTE Teacher > Machine Tool Engineer > Welding Engineer |

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Advice to Students

“**CTE courses can help you** decide what career you would like and provide necessary instruction and training that can help you be successful in the future. They teach real world skills that can transfer to many different careers.”

Breanna Duvall
 Future Welde

LEARN MORE ABOUT OCCUPATIONS AND WAGES

Advanced Manufacturing & Engineering

Department of Workforce Services
[Utah Occupational Explorer](#)

FFA | SkillsUSA

is the Career and Technical Student Organization (CTSO) for students in the Welding & Machining Career Pathway.

FFA.org | SkillsUSA.org
UtahFFA.org | UtahSkillsUSA.org
[Utah FFA flyer](#) | [SkillsUSA Utah flyer](#)

