

High School to College and Career Pathway: Secondary

Career and Technical Education: Preparing Students for College and Career!



Area of Study: Technology and Engineering Education

Pathway: Pre-Engineering (Utah Pre-Engineering Program)

Get the Facts

In Utah, an engineer, professional or structural, must be licensed.

Workforce Trends

Due to the expansion of jobs in the technical fields and the increasing numbers of engineers who are retiring, the number of job openings in technology and engineering is increasing. There is a critical shortage of engineers and engineering technologists entering the field at a time when technology is reinventing itself every few years.

CAREER AND TECHNICAL EDUCATION Recommended Pathway Courses		
(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)		
CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL		
Course #	Foundation Courses: (required)	Credit
21.0114	Pre-Engineering (required)	1.00
21.0115	Engineering Design (required)	.50
Choose one of the following courses:		
21.0116	Materials & Processes	.50
21.0117	Automation & Robotics	.50
Elective Courses:		
14.3101	Material Science	1.00
15.0614	Introduction to Bio-Manufacturing	1.00
20.0112	Advanced Technology	.50
21.0104	Foundations of Technology	.50
21.0105	Physics with Technology	1.00
21.0200	Energy Foundations	.50
47.0105	Electronics	1.00
15.1301	Technical Design 1	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50

Pre-Engineering is:

- > High skill
- > High wage
- > High demand
- > Nontraditional for females

Sample Career Occupations

- > Civil Engineer
- > Civil Engineering Technician
- > Electrical Engineer
- > Technology and Engineering Education Teacher
- > Mechanical Engineer
- > Mechanical Engineering Technician

2.00 credits

1.00 credit

3.00 credits for completion



Middle School		State Requirements		High School Suggested Education Plan				College and Career
7th Grade	8th Grade	Middle School	High School	9th Grade Suggested	10th Grade Suggested	11th Grade Suggested	12th Grade Suggested	Beyond High School
Language Arts 7 1.00	Language Arts 8 1.00	2.00	Language Arts 4.00	Language Arts 9 1.00	Language Arts 10 1.00	Language Arts 11 1.00	Language Arts 12 1.00	There are a number of options for education and training beyond high school, depending on your career goals. <ul style="list-style-type: none"> > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org .
Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00	Math * 1.00	
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology 1.00	Chemistry 1.00	Physics or Physics with Technology 1.00	
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

* Talk to your school counselor about math requirements in the new common core curriculum. Core curriculum and elective requirements may vary district to district.

Concurrent enrollment course offerings vary by school and district. Many Utah postsecondary programs accept high school courses toward a two- or four-year degree through concurrent enrollment. Check regional postsecondary Pathways for details.

High School to College and Career Pathway: Secondary

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Area of Study: Technology and Engineering Education

Pathway: Project Lead the Way (National Pre-Engineering Program)

Get the Facts
Project Lead the Way is offered in over 45 states and the District of Columbia.

In Utah, an engineer, professional or structural, must be licensed.

Workforce Trends
Nationally, engineering is the second largest of all professions. In Utah, it is one of the fastest-growing industries, having a projected growth rate of 2.2 percent through the year 2018, creating 17,200 jobs.

CAREER AND TECHNICAL EDUCATION
Recommended Pathway Courses
(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)
CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
21.0120	Engineering Design, Introduction (required)	1.00
21.0122	Principles of Engineering (required)	1.00
<i>Choose one of the following courses:</i>		
14.0201	Aerospace Engineering	1.00
21.0121	Digital Electronics	1.00
21.0123	Computer Integrated Manufacturing	1.00
21.0124	Engineering Design & Development *	1.00
21.0125	Civil Engineering & Architecture	1.00
Elective Courses:		
21.0105	Physics with Technology	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50

* Recommended capstone course. However, Pathway may be completed by taking 1.00 credit from elective courses.

3.00 credits

Additional credits

3.00 credits for completion

Pre-Engineering is:

- > High skill
- > High wage
- > High demand
- > Nontraditional for females

Sample Career Occupations

- > Civil Engineer
- > Complex Analysis
- > Complex Design
- > Development Manufacturing Research
- > Electrical Engineer
- > Mechanical Engineer
- > Technology and Engineering Education Teacher

Middle School		State Requirements		High School Suggested Education Plan				College and Career
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Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00	Math * 1.00	
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology 1.00	Chemistry 1.00	Physics or Physics with Technology 1.00	
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

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