

High School to College and Career Pathway: Secondary

Area of Study: Technology and Engineering Education



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

Middle School		State Requirements			High School Suggested Education Plan				College & Careers																																			
7 th Grade	8 th Grade	Middle School	High School	9 th Grade Suggested	10 th Grade Suggested	11 th Grade Suggested	12 th 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	<p>There are a number of options for education and training beyond high school, depending on your career goals.</p> <ul style="list-style-type: none"> > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training <p>Pre-Engineering is:</p> <ul style="list-style-type: none"> > High skill > High wage > High demand > Nontraditional for females <p>Sample Occupations</p> <ul style="list-style-type: none"> > Civil Engineer > Civil Engineering Technician > Electrical Engineer > Technology and Engineering Education Teacher > Mechanical Engineer > Mechanical Engineering Technician <p>For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org.</p>																																				
Math 7 1.00	Pre-Algebra 1.00	2.00	Math 3.00	Elem Algebra or Applied Math 1.00	Geometry or Applied Math II 1.00	Intermediate Algebra 1.00	Pre-Calculus 1.00																																					
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology 1.00	Physics 1.00 or Physics with Technology 1.00	Chemistry 1.00																																					
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 2.50	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																																								
			Financial Literacy .50			Financial Literacy .50																																						
Keyboarding .50			Computer Tech. .50	Computer Technology .50																																								
CTE Intro 1.00	Exploring Technology .50	1.00	Career and Technical Education 1.00	<p>Career and Technical Education Recommended Pathway Courses</p> <p>(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)</p> <p>CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL</p> <table border="1"> <thead> <tr> <th>Course #</th> <th>Foundation Courses: (required)</th> <th>Credit</th> </tr> </thead> <tbody> <tr> <td>21.0115</td> <td>Engineering Design</td> <td>.50</td> </tr> <tr> <td>21.0114</td> <td>Pre-Engineering</td> <td>1.00</td> </tr> <tr> <td>21.0116</td> <td>Materials & Processes</td> <td>.50</td> </tr> <tr> <td colspan="3">Elective Courses:</td> </tr> <tr> <td>21.0104</td> <td>Foundations of Technology</td> <td>.50</td> </tr> <tr> <td>21.0200</td> <td>Energy Foundations</td> <td>.50</td> </tr> <tr> <td>20.0112</td> <td>Advanced Technology</td> <td>.50</td> </tr> <tr> <td>48.0101</td> <td>Drafting/CAD</td> <td>1.00</td> </tr> <tr> <td>47.0105</td> <td>Electronics</td> <td>1.00</td> </tr> <tr> <td>14.3101</td> <td>Material Science</td> <td>1.00</td> </tr> <tr> <td>32.0199</td> <td>Student Internship (Critical Workplace Skills)</td> <td>.50</td> </tr> </tbody> </table> <p>Many Utah post-secondary programs accept high school courses toward a two- or four-year degree through concurrent enrollment. Check regional post-secondary Pathways for details.</p>					Course #	Foundation Courses: (required)	Credit	21.0115	Engineering Design	.50	21.0114	Pre-Engineering	1.00	21.0116	Materials & Processes	.50	Elective Courses:			21.0104	Foundations of Technology	.50	21.0200	Energy Foundations	.50	20.0112	Advanced Technology	.50	48.0101	Drafting/CAD	1.00	47.0105	Electronics	1.00	14.3101	Material Science	1.00	32.0199	Student Internship (Critical Workplace Skills)	.50
Course #	Foundation Courses: (required)	Credit																																										
21.0115	Engineering Design	.50																																										
21.0114	Pre-Engineering	1.00																																										
21.0116	Materials & Processes	.50																																										
Elective Courses:																																												
21.0104	Foundations of Technology	.50																																										
21.0200	Energy Foundations	.50																																										
20.0112	Advanced Technology	.50																																										
48.0101	Drafting/CAD	1.00																																										
47.0105	Electronics	1.00																																										
14.3101	Material Science	1.00																																										
32.0199	Student Internship (Critical Workplace Skills)	.50																																										
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.		Core Curriculum and elective requirements may vary district to district. Check with your school counselor. Concurrent enrollment course offerings vary by school and district.																																										
Get the Facts In Utah, an engineer, professional or structural, must be licensed.																																												
					<p>2.00 credits</p> <p>1.00 credits</p> <p>3.00 credits for completion</p>																																							

Note: For more information, talk to your school counselor.

High School to College and Career Pathway: Secondary

Area of Study: Technology and Engineering Education



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

Middle School		State Requirements			High School Suggested Education Plan				College & Careers																														
7 th Grade	8 th Grade	Middle School	Language Arts	High School	9 th Grade Suggested	10 th Grade Suggested	11 th Grade Suggested	12 th 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. > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training Project Lead the Way is: > High skill > High wage > High demand > Nontraditional for females Sample Occupations > Civil Engineer > Complex Analysis > Complex Design > Development Manufacturing Research > Electrical Engineer > Mechanical Engineer > Technology and Engineering Education Teacher For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org .																														
Math 7 1.00	Pre-Algebra 1.00	2.00	Math	3.00	Elem Algebra or Applied Math 1.00	Geometry or Applied Math II 1.00	Intermediate Algebra 1.00	Pre-Calculus 1.00																															
Science .50	Science 1.00	1.50	Science	3.00	Earth Systems 1.00	Biology 1.00	Physics 1.00 or Physics with Technology 1.00	Chemistry 1.00																															
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies	2.50	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																																		
			Financial Literacy	.50			Financial Literacy .50																																
Keyboarding .50			Computer Tech.	.50	Computer Technology .50																																		
CTE Intro 1.00	Exploring Technology .50	1.00	Career and Technical Education	1.00	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 <table border="1"> <thead> <tr> <th>Course #</th> <th>Foundation Courses: (required)</th> <th>Credit</th> </tr> </thead> <tbody> <tr> <td>21.0120</td> <td>Engineering Design, Introduction</td> <td>1.00</td> </tr> <tr> <td>21.0122</td> <td>Principles of Engineering</td> <td>1.00</td> </tr> <tr> <td>21.0121</td> <td>Digital Electronics</td> <td>1.00</td> </tr> <tr> <td>21.0124</td> <td>Engineering Design & Development *</td> <td>1.00</td> </tr> <tr> <td colspan="3">Elective Courses:</td> </tr> <tr> <td>21.0123</td> <td>Computer Integrated Manufacturing</td> <td>1.00</td> </tr> <tr> <td>21.0125</td> <td>Civil Engineering & Architecture</td> <td>1.00</td> </tr> <tr> <td>14.0201</td> <td>Aerospace Engineering</td> <td>1.00</td> </tr> <tr> <td>32.0199</td> <td>Student Internship (Critical Workplace Skills)</td> <td>.50</td> </tr> </tbody> </table> 4.00 credits for completion					Course #	Foundation Courses: (required)	Credit	21.0120	Engineering Design, Introduction	1.00	21.0122	Principles of Engineering	1.00	21.0121	Digital Electronics	1.00	21.0124	Engineering Design & Development *	1.00	Elective Courses:			21.0123	Computer Integrated Manufacturing	1.00	21.0125	Civil Engineering & Architecture	1.00	14.0201	Aerospace Engineering	1.00	32.0199	Student Internship (Critical Workplace Skills)	.50
Course #	Foundation Courses: (required)	Credit																																					
21.0120	Engineering Design, Introduction	1.00																																					
21.0122	Principles of Engineering	1.00																																					
21.0121	Digital Electronics	1.00																																					
21.0124	Engineering Design & Development *	1.00																																					
Elective Courses:																																							
21.0123	Computer Integrated Manufacturing	1.00																																					
21.0125	Civil Engineering & Architecture	1.00																																					
14.0201	Aerospace Engineering	1.00																																					
32.0199	Student Internship (Critical Workplace Skills)	.50																																					
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.		Core Curriculum and elective requirements may vary district to district. Check with your school counselor. Concurrent enrollment course offerings vary by school and district.																																					
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.																																							

Note: For more information, talk to your school counselor.