



Name _____

Learner ID _____

School/College/University _____

Science, Technology, Engineering and Mathematics: Engineering and Technology

Career Pathway Plan of Study for ► Learners ► Parents ► Counselors ► Teachers/Faculty

This Career Pathway Plan of Study (based on the Engineering and Technology Pathway of the Science, Technology, Engineering and Mathematics Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals.

*This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

EDUCATION LEVELS	GRADE	English/ Language Arts	Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives Learner Activities	*Career and Technical Courses and/ or Degree Major Courses for Engineering and Technology Pathway	SAMPLE Occupations Relating to This Pathway
Interest Inventory Administered and Plan of Study Initiated for all Learners								
SECONDARY	9	English 9	Algebra I	Physical Science	World History	1 year World Language, and minimum 1 year CTE course(s) Certain local student organization activities are also important including public speaking, record keeping and work-based experiences.	**Engineering 1 **Engineering 2	<ul style="list-style-type: none"> ► Aeronautical Engineer ► Aerospace Engineer ► Agricultural Engineer ► Agricultural Technician ► Application Engineer ► Architectural Engineer ► Automotive Engineer ► Biomedical Engineer ► Biotechnology Engineer ► CAD Technician ► Chemical Engineer ► Civil Engineer ► Communications Engineer ► Computer Engineer ► Computer Programmer ► Construction Engineer ► Electrical Engineer ► Electronics Technician ► Geothermal Engineer ► Industrial Engineer ► Manufacturing Engineer ► Manufacturing Technician ► Marine Engineer ► Mechanical Engineer ► Metallurgist ► Mining Engineer ► Nuclear Engineer ► Petroleum Engineer ► Product/Process Engineer ► Survey Technician ► Systems Engineer ► Transportation Engineer
	10	English 10	Geometry or Honors Geometry	Biology	U.S. History		**Engineering 3 **Engineering 4	
	11	English II	Algebra 2 or Honors Algebra 2	Chemistry or Physics	American Government Economics		**Mechanical Drafting 1 **Mechanical Drafting 2	
	College Placement Assessments-Academic/Career Advisement Provided							
	12	English 12	Pre-Calculus or Honors Pre-Calculus	Physics or other science course	MicroEconomics MacroEconomics Practical Law Sociology	**Computer Modeling and Animation		
Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.								
POSTSECONDARY	Year 13	English Composition English Literature	Algebra or Calculus	Lab Science	Economics Psychology	All plans of study need to meet learners' career goals with regard to required degrees, licenses, certifications or journey worker status. Certain local student organization activities may also be important to include.	Continue courses pertinent to the pathway selected.	
	Year 14	Speech/ Oral Communication Technical Writing			Sociology Public Policy			
	Year 15	Continue courses in the area of specialization.						
	Year 16							

**See course descriptions on page 2.

Engineering and Mechanical Drafting

Course Descriptions:

#1

Engineering Design 1 is a STEM (Science Technology Engineering and Mathematics) education class that will engage students in activities, projects, problem-based learning, and hands-on classroom experiences. Students create, design, build, discover, collaborate and solve problems while applying what they learn in math and science. Students acquire the computer skills necessary to create two dimensional geometry and solid models that are the foundation of engineering graphic communication.

#2

Engineering Design 2 is a STEM (Science Technology Engineering and Mathematics) education class that will engage students in activities, projects, problem-based learning, and hands-on classroom experiences. Students create, design, build, discover, collaborate and solve problems while applying what they learn in math and science. Students apply the computer skills learned in Engineering Design 1 to create projects and more advanced two dimensional geometry and solid models that are the foundation of engineering graphic communication.

#3

Engineering Design 3 a STEM (Science Technology Engineering and Mathematics) education class that is a continuation of Engineering Design 2. Students will learn the fundamentals of converting ideas, sketches, pictorials and three-dimensional objects into working drawings. Students will use prototyping methods to create functional projects. Students learn nomenclature and techniques to develop assembly and presentation drawings. Students discover the importance of speed, neatness and accuracy. As a result of this course, students understand possible careers in engineering and design.

#4

Engineering Design 4 is a STEM (Science Technology Engineering and Mathematics) education class that is a continuation of Engineering Design 3. Students will apply the learned fundamentals to brainstorm more complex ideas, sketches, pictorials and three-dimensional objects into complete working drawings. Students will use prototyping methods to create functional projects. Students learn nomenclature and techniques to develop assembly and presentation drawings. Students discover the importance of speed, neatness and accuracy. As a result of this course, students understand possible careers in engineering and design.

#5

education class that is a continuation of Engineering Design 4. This semester course allows students an opportunity to advance their engineering training. Students will apply advanced functions in parametric modeling, assembling and presentation drawings. Students will continue to apply the learned fundamentals to create more challenging projects.

#6

Mechanical Drafting/Design 2 is a STEM (Science Technology Engineering and Mathematics) education class that is a continuation of Mechanical Drafting/Design 1. This semester course allows students an opportunity to advance their engineering training. Students will apply advanced functions in parametric modeling, assembling and presentation drawings. Students will continue to apply the learned fundamentals to create more challenging projects.

#7

Computer Modeling and Animation is a STEM (Science Technology Engineering and Mathematics) education course. Students are introduced to animation techniques including hand drawing, digital 3- D modeling and digital animation. Students use computer programs to create digital models, render 3-D objects and generate scenes. Students will be exposed to basic game design. Basic personal computer knowledge is recommended.