ENGINEERING, CERTIFICATE OF ACHIEVEMENT

Engineering involves the use of science and mathematics to develop products, systems, or services that benefit society. This program prepares students for transfer into an Engineering baccalaureate program by providing coursework aligned with three key discipline clusters:

- Mechanical, Civil, Aerospace, and Manufacturing
- Electrical
- Computer and Software

The Engineering Certificate of Achievement is intended to provide the shortest pathway to transfer with the greatest amount of major preparation, and includes a minimal set of General Education classes required for admissions to most university engineering baccalaureate programs.

Since individual university engineering transfer requirements differ, please confirm course selection with an MPC counselor.

Learning Outcomes

Upon successful completion of the program, students will be able to:

- Use the engineering method to solve technical problems or create products or processes.
- Use the scientific method to investigate phenomena in the natural world and use concepts, experiments, and/or theory to explain them.
- Analyze and evaluate complex issues or problems, draw reasoned conclusions and/or generate solutions, and effectively communicate their results.

Certificate of Achievement Major Requirements

Code	Title	Units
Required Core		
ENGR 1A	Introduction to Engineering	3
MATH 20A	Calculus with Analytic Geometry I	4
MATH 20B	Calculus with Analytic Geometry II	4
MATH 20C	Calculus of Several Variables	4
MATH 32	Differential Equations	4
PHYS 3A	Science and Engineering Physics I	4
PHYS 3B	Science and Engineering Physics II	4
PHYS 3C	Science and Engineering Physics III	4
Select one Track from the following:		13-23
Mechanical, Civil, Aerospace, Manufacturing Track		
CHEM 1A	General Chemistry I	
ENGR 2	Engineering Design Graphics	
ENGR 4	Engineering Materials	
ENGR 8	Engineering Statics	
ENGR 12 & ENGR 12L	Engineering Circuits and Engineering Circuits Laboratory	
ENGR 17	Programming and Problem-Solving in MATLAB	
or CSIS 10C	Programming Methods I.5: C and C++	
Electrical Track		
CHEM 1A	General Chemistry I	
CSIS 10C	Programming Methods I.5: C and C++	
ENGR 12 & ENGR 12L	Engineering Circuits and Engineering Circuits Laboratory	
Computer, Software Track		
CSIS 10A	Programming Methods I: Java	
CSIS 10B	Programming Methods II: Java	
CSIS 10C	Programming Methods I.5: C and C++	
CSIS 12	Discrete Structures	
or MATH 40	Discrete Mathematics	
ENGR 12 & ENGR 12L	Engineering Circuits and Engineering Circuits Laboratory	
Total Units		**44-54**

Recommended GE Courses Required for Transfer

Code	Title	Units
ENGL 1A	College Composition	3-5
or ENGL 1AE	College Composition: Enhanced	
ENGL 1B	Introduction to Literature	3
or ENGL 2	Argumentative Writing and Critical Thinking	
SPCH 1	Public Speaking	3
or SPCH 2	Small Group Communication	

Please refer to the graduation requirements section of the Catalog for information about degree and certificate requirements including Reading and Writing, Mathematics, Information Competency, and General Education requirements.

The model sequence of coursework below is one pathway for students to complete the program. The information below is not an official educational plan. An MPC Counselor can assist you with creating a personalized education plan based on your academic, career, and personal goals. Visit MPC's Counseling website for more information about Counseling and up-to-date program requirements.

Year 1		
Fall		**Units**
ENGR 1A	Introduction to Engineering	3
MATH 20A	Calculus with Analytic Geometry I	4
Engineering Track Course		3-5
	Units	**10-12**
Spring		
MATH 20B	Calculus with Analytic Geometry II	4
PHYS 3A	Science and Engineering Physics I	4
Engineering Track Course		3-5
	Units	**11-13**
Year 2		
Fall		
MATH 20C	Calculus of Several Variables	4
PHYS 3B	Science and Engineering Physics II	4
Engineering Track Course		3-5
Engineering Track Course		3-5
	Units	**14-18**

Spring		
PHYS 3C	Science and Engineering Physics III	4
MATH 32	Differential Equations	4
Engineering Track Course		3-5
Engineering Track Course		3-5
	Units	**14-18**
	Total Units	**49-61**