

# MECHANICAL ENGINEERING (BS)

## Program Mission

The mission of Mechanical Engineering Program is to provide a multidisciplinary engineering undergraduate education built on an authentically Catholic liberal arts foundation. Graduates of the program will be professionals who are excellent problem solvers, committed to the highest ethical standards, and proficient communicators. They will understand the role of engineering as a profession and their duty as engineers to promote the good of society.

## Program Outcomes

The following are the program educational objectives used by the program for ABET accreditation, and thus are styled as broad statements describing the career and professional accomplishments that the program is preparing graduates to achieve.

1. Graduates will maintain a balanced lifestyle pursuing what is good, true, and beautiful. As they live out their vocation, they will contribute significantly to personal, family, workplace, community, and church endeavors.
2. Graduates will demonstrate technical knowledge and expertise in their profession and will innovate beyond the state of the art.
3. Graduates will demonstrate interpersonal and professional skills to effectively lead teams and projects of substantial size.

## Program Requirements

Code	Title	Hours
<b>Required General Education Courses</b>		
PHIL-3250	Ethics	3
THEO-2000	Christian Moral Life	3
<b>Science and Mathematics Courses</b>		
CHEM-1200 & CHEM-1201	General Chemistry I Lecture and General Chemistry I Laboratory	4
MATH-1300	Calculus I	4
MATH-1350	Calculus II	4
MATH-2300	Calculus III	4
MATH-3100	Differential Equations	3
PHYS-2100 & PHYS-2101	Classical Physics I and Classical Physics I Lab	4
PHYS-2110 & PHYS-2111	Classical Physics II and Classical Physics II Lab	4
<b>Engineering Courses</b>		
EENG-2060 & EENG-3060 or PHYS-3500	Linear Circuit Analysis I and Circuits Laboratory I or Electronics	4
ENGR-1200	Introduction to Engineering	2
ENGR-1500	Technical Drawing	2
ENGR-1520	Intro to Engineering Design Laboratory	1
ENGR-2000 or CSCI-2300	Computer Applications in Engineering or Programming for Scientists & Engineers	2
ENGR-2300	Statics	3
ENGR-2310	Dynamics	3

ENGR-2320	Mechanics of Materials	3
ENGR-3150	Statistical Analysis of Data	3
ENGR-3170	Engineering Economy & Society	3
ENGR-3250	Thermodynamics	3
ENGR-3300	Fluid Mechanics	3
ENGR-3400	Materials Laboratory	2
ENGR-3410	Thermofluids Laboratory	2
ENGR-3500	Materials Science	3
ENGR-3600	Heat & Mass Transfer	3
MENG-3180	Manufacturing Process Lab I	1
MENG-3220	Design of Machinery	3
MENG-3240	Junior Design	2
MENG-4240	System Dynamics & Control	3
MENG-4600	Engineering Design I	3
MENG-4610	Mechanical Engineering Design II	3
MENG-4700	Senior Seminar	1
MENG-4730	Mechanical Measurements & Control Lab	2
Mechanical Engineering (ME) Electives <sup>1</sup>		15
MENG-COMP	Senior Comprehensive Exam	0
<b>Total Hours</b>		<b>108</b>

<sup>1</sup> At least 9 credits of ME electives must be primary ME electives, which are generally MENG courses numbered 3000 or above (that are not MENG degree requirements).

Up to six hours of ME electives can come from an approved list of secondary ME electives, which includes specific courses from other engineering disciplines.

Courses required for the major may be repeated but students must pass all required courses on their first or second attempt.

## Mechanical Engineering (ME) Electives

### Primary ME Electives

At least 9 credits of ME electives must be primary ME electives, which are generally MENG courses numbered 3000 or above (that are not MENG degree requirements).

Code	Title	Hours
MENG-3820	Ergonomics	3
MENG-4810	Vibration & Structural Dynamics	3
MENG-4820	Intro to Finite Element Analysis	3
MENG-4830	Environmental Stewardship	3
MENG-4840	Introduction to Robotics	3
MENG-4850	Heating, Air Conditioning & Ventilation	3
MENG-4860	Intermediate Thermodynamics	3
MENG-4910	Intermediate Fluid Dynamics	3
MENG-4920	Nonlinear Dynamics & Chaos	3

### Secondary ME Electives

Up to six hours of ME electives can come from an approved list of secondary ME electives, which includes specific courses from other engineering disciplines.

Code	Title	Hours
CIVL-3120	Soil Mechanics	3
CIVL-3310	Environmental Engineering	3

CIVL-4140	Foundation Engineering	3
EENG-3130	Linear Circuit Analysis II	3
ENGR-3901 & ENGR-3902	Engineering for Human Development I and Engineering for Human Development II	3
ENGR-4150	Design Engineering Experiments	3
ENGR-4830	Project Engineering	3
ENGR-4840	Quality Engineerg	3
MATH-3300	Numerical Computation	3
PHYS-4300	Optics	3

## Suggested Sequence of Courses for a Bachelor of Science Degree in Mechanical Engineering

Course	Title	Hours
<b>Freshman Year</b>		
<b>First Semester</b>		
ENGR-1200	Introduction to Engineering	2
PHYS-2100	Classical Physics I	3
PHYS-2101	Classical Physics I Lab	1
CHEM-1200	General Chemistry I Lecture	3
CHEM-1201	General Chemistry I Laboratory	1
MATH-1300	Calculus I	4
GNST-1000	BC Experience	1
EXSC Fitness Course		1
<b>Hours</b>		<b>16</b>
<b>Second Semester</b>		
ENGR-1500	Technical Drawing	2
ENGR-1520	Intro to Engineering Design Laboratory	1
PHYS-2110	Classical Physics II	3
PHYS-2111	Classical Physics II Lab	1
MATH-1350	Calculus II	4
ENGL-1010	English Composition	3
THEO-1100	Introduction to Theology	3
<b>Hours</b>		<b>17</b>
<b>Sophomore Year</b>		
<b>First Semester</b>		
ENGR-2000	Computer Applications in Engineering	2
ENGR-2300	Statics	3
ENGR-3500	Materials Science	3
MATH-2300	Calculus III	4
PHIL-1750	Principles of Nature	3
EXSC-1115	Wellness for Life	1
<b>Hours</b>		<b>16</b>
<b>Second Semester</b>		
ENGR-2310	Dynamics	3
ENGR-2320	Mechanics of Materials	3
MATH-3100	Differential Equations	3
ENGR-3250	Thermodynamics	3
MENG-3180	Manufacturing Process Lab I	1
THEO-2000	Christian Moral Life	3
<b>Hours</b>		<b>16</b>

### Junior Year

#### First Semester

MENG-3220	Design of Machinery	3
ENGR-3150	Statistical Analysis of Data	3
ENGR-3300	Fluid Mechanics	3
ENGR-3400	Materials Laboratory	2
ENGR-3170	Engineering Economy & Society	3
PHIL-3250	Ethics	3
<b>Hours</b>		<b>17</b>

#### Second Semester

MENG-3240	Junior Design	2
MENG-4240	System Dynamics & Control	3
ENGR-3600	Heat & Mass Transfer	3
ENGR-3410	Thermofluids Laboratory	2
ME Elective		3
EENG-2060	Linear Circuit Analysis I	3
EENG-3060	Circuits Laboratory I	1
<b>Hours</b>		<b>17</b>

### Senior Year

#### First Semester

MENG-4600	Engineering Design I	3
ME Elective		3
MENG-4730	Mechanical Measurements & Control Lab	2
MENG-4700	Senior Seminar	1
Foreign Language		4
Historical Inquiry		3
<b>Hours</b>		<b>16</b>

#### Second Semester

MENG-4610	Mechanical Engineering Design II	3
ME Elective		3
ME Elective		3
Aesthetic Experience		3
Foreign Language		4
<b>Hours</b>		<b>16</b>

### Ninth Semester

ME Elective		3
MENG-COMP	Senior Comprehensive Exam	NULL
Aesthetic Foundation		3
Philosophical Inquiry Foundation		3
Historical Foundation		3
Faith Foundation		3
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>146</b>