

# Bachelor of Science in Mechanical Engineering

Learn more about the Bachelor of Science in Mechanical Engineering.

## Summary of Requirements

### University Requirements

All new students are required to complete the university's General Education (GenEd) curriculum.

All Temple students must take a minimum of two writing-intensive courses for a total of at least six credits. The writing-intensive course credits are counted as part of the major; they are not General Education (GenEd) or elective credits. The writing-intensive courses must be completed at Temple University and students may not transfer in credits to satisfy this requirement. The specific writing-intensive courses required for this major are:

Code	Title	Credit Hours
ENGR 2196 or ENGR 2996	Technical Communication Honors Technical Communication by Design	3
ENGR 4296 or ENGR 4996	Senior Design Project II Honors Senior Design Project II	3

### Department Requirements

Code	Title	Credit Hours
<b>Required Math &amp; Basic Science Courses</b>		
MATH 1041 or MATH 1941	Calculus I Honors Calculus I	4
MATH 1042 or MATH 1942	Calculus II Honors Calculus II	4
MATH 2043 or MATH 2943	Calculus III Honors Calculus III	4
MATH 3041 or MATH 3941	Differential Equations I Honors Differential Equations I	3
MEE 3011	Analysis and Computation of Linear Systems in Mechanical Engineering	3
PHYS 1061 or PHYS 1961	Elementary Classical Physics I Honors Elementary Classical Physics I	4
PHYS 1062 or PHYS 1962	Elementary Classical Physics II Honors Elementary Classical Physics II	4
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or CHEM 1953	General Chemistry Laboratory I Honors Chemical Science Laboratory I	1
<b>Required General Education Courses</b>		
Select one of the following:		4
ENG 0802	Analytical Reading and Writing	
ENG 0812	Analytical Reading and Writing: ESL	
ENG 0902	Honors Literature/Reading/Writing	
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life Honors Intellectual Heritage I: The Good Life	3
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good Honors Intellectual Heritage II: The Common Good	3
GenEd 08xx or 09xx (U.S. Society)		3
GenEd 08xx or 09xx (Global/World Society)		3
GenEd 08xx or 09xx (Human Behavior)		3
GenEd 08xx or 09xx (The Arts)		3
GenEd 08xx or 09xx (Race and Diversity)		3

**Required Mechanical Engineering Courses**

MEE 1117	Fundamentals of Mechanical Engineering Design	2
MEE 2305	Instrumentation and Data Acquisition Lab	1
MEE 3117	Computer-Aided Mechanical Design	3
MEE 3301	Machine Theory and Design	3
MEE 3305	Materials Laboratory	1
MEE 3506	Fluid Mechanics Laboratory	1
MEE 4572	Heat and Mass Transfer	3

Select one of the following:

MEE 4422 & MEE 4405	Mechanical Vibrations and Vibrations Laboratory <sup>1</sup>	4
MEE 4571 & MEE 4506	Advanced Thermodynamics and Combustion and Energy Conversion Laboratory <sup>1</sup>	4

Mechanical Engineering Technical Electives 9

**Required Engineering Courses**

ECE 2112	Electrical Devices & Systems I	3
ECE 2113	Electrical Devices & Systems I Lab	1
ENGR 1101 or ENGR 1901	Introduction to Engineering & Engineering Technology Honors Introduction to Engineering	3
ENGR 1102	Introduction to Engineering Problem Solving	3
ENGR 2196 or ENGR 2996	Technical Communication Honors Technical Communication by Design	3
ENGR 2331 or ENGR 2931	Engineering Statics Honors Engineering Statics	3
ENGR 2332	Engineering Dynamics	3
ENGR 2333 or ENGR 2933	Mechanics of Solids Honors Mechanics of Solids	3
ENGR 3001	Engineering Economics	3
ENGR 3201	Material Science for Engineers	3
ENGR 3553 or ENGR 3953	Mechanics of Fluids Honors Mechanics of Fluids	3
ENGR 3571	Classical and Statistical Thermodynamics	3
ENGR 4169	Engineering Seminar	1
ENGR 4177	Senior Design Project I for Mechanical Engineering	2
ENGR 4296 or ENGR 4996	Senior Design Project II (WI) Honors Senior Design Project II	3
Free Elective		6

Total Credit Hours 128

- <sup>1</sup> Students in the **Bachelor of Science in Mechanical Engineering Program** must take either of the following sequences of courses:
- MEE 4422 (technical elective; offered every Fall semester) and MEE 4405 (lab elective)
- OR**
- MEE 4571 (technical elective; offered every Spring semester) and MEE 4506 (lab elective).

**Suggested Academic Plan**Please note that this is a **suggested** academic plan. Depending on your situation, your academic plan may look different.**Bachelor of Science in Mechanical Engineering****Requirements for New Students starting in the 2020-2021 Academic Year**

Year 1		Credit Hours
Fall		
ENGR 1101 or 1901	Introduction to Engineering & Engineering Technology	3
MATH 1041 or 1941	Calculus I	4

MEE 1117	Fundamentals of Mechanical Engineering Design	2
PHYS 1061 or 1961	Elementary Classical Physics I	4
ENG 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
	Term Credit Hours	17
<b>Spring</b>		
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or 1953	General Chemistry Laboratory I	1
MATH 1042 or 1942	Calculus II	4
PHYS 1062 or 1962	Elementary Classical Physics II	4
ENGR 1102	Introduction to Engineering Problem Solving	3
	Term Credit Hours	15
<b>Year 2</b>		
<b>Fall</b>		
ECE 2112	Electrical Devices & Systems I	3
ECE 2113	Electrical Devices & Systems I Lab	1
MATH 2043 or 2943	Calculus III	4
ENGR 2331 or 2931	Engineering Statics	3
ENGR 2196 or 2996	Technical Communication [WI]	3
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
	Term Credit Hours	17
<b>Spring</b>		
ENGR 2332	Engineering Dynamics	3
MEE 2305	Instrumentation and Data Acquisition Lab	1
MATH 3041 or 3941	Differential Equations I	3
ENGR 3571	Classical and Statistical Thermodynamics	3
ENGR 2333 or 2933	Mechanics of Solids	3
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
	Term Credit Hours	16
<b>Year 3</b>		
<b>Fall</b>		
ENGR 3553 or 3953	Mechanics of Fluids	3
MEE 3506	Fluid Mechanics Laboratory	1
ENGR 3001	Engineering Economics	3
MEE 3011	Analysis and Computation of Linear Systems in Mechanical Engineering	3
MEE 3301	Machine Theory and Design	3
GenEd Breadth Course		3
	Term Credit Hours	16
<b>Spring</b>		
ENGR 3201	Material Science for Engineers	3
MEE 3117	Computer-Aided Mechanical Design	3
MEE 3305	Materials Laboratory	1
ENGR 4169	Engineering Seminar	1
	Mechanical Engineering Technical Elective #1	3
	Mechanical Engineering Technical Elective #2	3
	GenEd Breadth Course	3
	Term Credit Hours	17
<b>Year 4</b>		
<b>Fall</b>		
ENGR 4177	Senior Design Project I for Mechanical Engineering	2
MEE 4572	Heat and Mass Transfer	3
	Select one of the following: <sup>1</sup>	4

MEE 4422 & MEE 4405	Mechanical Vibrations	
OR Mechanical Engineering Technical Elective #3		
GenEd Breadth Course		3
Free Elective		3
Term Credit Hours		15
<b>Spring</b>		
ENGR 4296 or 4996	Senior Design Project II [WI]	3
Select one of the following: <sup>1</sup>		4
MEE 4571 & MEE 4506	Advanced Thermodynamics and Combustion	
OR Mechanical Engineering Technical Elective #4		
GenEd Breadth Course		3
GenEd Breadth Course		3
Free Elective		2
Term Credit Hours		15
Total Credit Hours:		128

<sup>1</sup> Either MEE 4422 & MEE 4405 (in Fall) OR MEE 4571 & MEE 4506 (in Spring) are required in the Mechanical Engineering Program. When the choice is made, one credit of free elective replaces the lab in the other term.

## Bachelor of Science in Mechanical Engineering - Temple Rome Semester Abroad Option

Year 1		
Fall		Credit Hours
ENGR 1101 or 1901	Introduction to Engineering & Engineering Technology	3
MATH 1041 or 1941	Calculus I	4
MEE 1117	Fundamentals of Mechanical Engineering Design	2
PHYS 1061 or 1961	Elementary Classical Physics I	4
ENGR 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
Term Credit Hours		17
<b>Spring</b>		
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or 1953	General Chemistry Laboratory I	1
MATH 1042 or 1942	Calculus II	4
PHYS 1062 or 1962	Elementary Classical Physics II	4
ENGR 1102	Introduction to Engineering Problem Solving	3
Term Credit Hours		15
Year 2		
Fall		Credit Hours
ECE 2112	Electrical Devices & Systems I	3
ECE 2113	Electrical Devices & Systems I Lab	1
MATH 2043 or 2943	Calculus III	4
ENGR 2331 or 2931	Engineering Statics	3
ENGR 2196 or 2996	Technical Communication [WI]	3
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
Term Credit Hours		17
<b>Spring</b>		
Semester Abroad at Temple Rome		
ENGR 2332	Engineering Dynamics	3
ENGR 2333	Mechanics of Solids	3
ENGR 3571	Classical and Statistical Thermodynamics	3
ITAL 1001	Italian Language I [LA]	4
Term Credit Hours		13

<b>Year 3</b>		
<b>Fall</b>		
MATH 3041 or 3941	Differential Equations I	3
ENGR 3201	Material Science for Engineers	3
MEE 3301	Machine Theory and Design	3
MEE 3305	Materials Laboratory	1
MEE 2305	Instrumentation and Data Acquisition Lab	1
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
GenEd Breadth Course <sup>1</sup>		3
	Term Credit Hours	17
<b>Spring</b>		
ENGR 3001	Engineering Economics	3
MEE 3011	Analysis and Computation of Linear Systems in Mechanical Engineering	3
ENGR 3553 or 3953	Mechanics of Fluids	3
MEE 3506	Fluid Mechanics Laboratory	1
GenEd Breadth Course <sup>1</sup>		3
Mechanical Engineering Technical Elective #1		3
ENGR 4169	Engineering Seminar	1
	Term Credit Hours	17
<b>Year 4</b>		
<b>Fall</b>		
ENGR 4177	Senior Design Project I for Mechanical Engineering	2
MEE 3117	Computer-Aided Mechanical Design	3
MEE 4572	Heat and Mass Transfer	3
Select one of the following: <sup>2</sup>		4
MEE 4422	Mechanical Vibrations	
& MEE 4405		
OR Mechanical Engineering Technical Elective #2		
GenEd Breadth Course <sup>1</sup>		3
Free Elective		2
	Term Credit Hours	17
<b>Spring</b>		
ENGR 4296 or 4996	Senior Design Project II [WI]	3
Select one of the following: <sup>2</sup>		4
MEE 4571	Advanced Thermodynamics and Combustion	
& MEE 4506		
OR Mechanical Engineering Technical Elective #3		
GenEd Breadth Course <sup>1</sup>		3
Mechanical Engineering Technical Elective #4		3
Free Elective		2
	Term Credit Hours	15
	Total Credit Hours:	128

<sup>1</sup> Students participating in the College of Engineering Temple Rome semester abroad program will not be required to complete the Global/World Society General Education requirement as the abroad experience will waive the Global/World Society requirement.

<sup>2</sup> Either MEE 4422 & MEE 4405 (in Fall) OR MEE 4571 & MEE 4506 (in Spring) are required in the Mechanical Engineering Program. When the choice is made, one credit of free elective replaces the lab in the other term.

## Approved Technical Electives

Code	Title	Credit Hours
BIOE 3719	Introduction to Bioengineering	3
BIOE 3725	Cell Biology for Engineers	3

BIOE 4741	Biomaterials for Engineers	3
CEE 3711	Environmental Engineering	3
ECE 3822	Engineering Computation II (Note: permission of instructor required)	3
ENGR 4116	Spacecraft Systems Engineering	3
ENGR 4201	Micro- to Nano-sized Machines	3
ENGR 4314	Continuum Mechanics	3
ENGR 4576	Computational Fluid Dynamics	3
MEE 3302	Kinematics of Mechanisms	3
MEE 3304	Mechanical Design and Fabrication	3
MEE 3421	Dynamic Systems	3
MEE 3422	Modeling and Control of Electromechanical Systems	3
MEE 4040	Special Topics	1 to 4
MEE 4173	Data Acquisition and Analysis for Engineers	3
MEE 4311	Mechanics of Composite Materials	3
MEE 4411	Introduction to Mobile Robotics (Note: MEE 3422 and MEE 4412 are prerequisites)	3
MEE 4412	Modern Dynamics for Robotics	3
MEE 4413	Robotic Manipulation (Note: MEE 3422 and MEE 4412 are prerequisites)	3
MEE 4422 & MEE 4405	Mechanical Vibrations and Vibrations Laboratory	4
MEE 4512	Compressible Fluid Dynamics	3
MEE 4513	Aerodynamics	3
MEE 4571 & MEE 4506	Advanced Thermodynamics and Combustion and Energy Conversion Laboratory	4
MEE 4574	Heating, Ventilating, and Air Conditioning	3
MEE 4575	Renewable and Alternative Energy	3
MEE 4577	Power Generation and Storage Technologies	3
MEE 4578	Fundamentals of Combustion	3
MEE 4643	Manufacturing Engineering	3
MEE 4731	Cardiovascular Fluid Dynamics	3