

Bachelor of Science in Engineering - Electromechanical Engineering Concentration

Learn more about the Bachelor of Science in Engineering.

The Bachelor of Science in Engineering with the Optional Concentration in Electromechanical Engineering (BSE-EME) integrates the tenets of Electrical Engineering and Mechanical Engineering to provide an interdisciplinary professional career in this burgeoning area. The program offers a relevant, stimulating, and effective course of undergraduate study to produce electromechanical engineers to meet the needs of the new century in robotics, process control and automation. The program emphasizes all aspects of electromagnetics, transducers, sensors, electronics, digital processing and mechanical principles to integrate these components into electromechanical devices and systems for automated manufacturing processes. Professional employment includes the analysis, design and installation of robotics and automation for diverse industries. The intent of the BSE-EME program is to provide better and more efficient electromechanical systems which will have a profound impact on the global society.

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 and Major Requirements

Code	Title	Credit Hours
Required Math & Basic Science Courses		
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
Select one of the following:		3
ENGR 2011	Engineering Analysis & Applications	
MEE 3011	Analysis and Computation of Linear Systems in Mechanical Engineering	
Select one of the following:		3
CEE 3048	Probability, Statistics & Stochastic Methods	
ISE 2101	Applied Statistical Methods for Industrial and System Engineers	
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

Required General Education Courses

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	Intellectual Heritage I: The Good Life	3
or IH 0951	Honors Intellectual Heritage I: The Good Life	
IH 0852	Intellectual Heritage II: The Common Good	3
or IH 0952	Honors Intellectual Heritage II: The Common Good	
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 Engineering Courses

ENGR 1101	Introduction to Engineering & Engineering Technology	3
or ENGR 1901	Honors Introduction to Engineering	
ENGR 1102	Introduction to Engineering Problem Solving	3
ENGR 1117	Engineering Graphics	2
or MEE 1117	Fundamentals of Mechanical Engineering Design	
ENGR 2196	Technical Communication	3
or ENGR 2996	Honors Technical Communication by Design	
ENGR 2331	Engineering Statics	3
or ENGR 2931	Honors Engineering Statics	
ENGR 2332	Engineering Dynamics	3
ENGR 2333	Mechanics of Solids	3
or ENGR 2933	Honors Mechanics of Solids	
ENGR 3001	Engineering Economics	3
ENGR 4169	Engineering Seminar	1
ENGR 4172	Senior Design Project I for Engineering	2
ENGR 4296	Senior Design Project II	3
or ENGR 4996	Honors Senior Design Project II	
ECE 2332	Principles of Electric Circuits	4
ECE 2333	Principles of Electric Circuits Lab	1
ECE 2612	Digital Circuit Design	3
ECE 2613	Digital Circuit Design Laboratory	1
ECE 3612	Processor Systems	3
or ECE 3914	Honors Microprocessor Systems	
ECE 3613	Processor Systems Laboratory	1
or ECE 3915	Honors Microprocessor Systems Lab	
ECE 3732	Electromechanical Energy Systems	3
ECE 3733	Electromechanical Energy Systems Laboratory	1
MEE 3301	Machine Theory and Design	3
ECE 1111	Engineering Computation I	4
or CIS 1057	Computer Programming in C	
Technical Elective #1		3
Technical Elective #2		3
Technical Elective #3		3

Required Business Elective Courses

Select two of the following		6
ACCT 2101	Financial Accounting	
or ACCT 2901	Honors Financial Accounting	

ACCT 2102 or ACCT 2902	Managerial Accounting Honors Managerial Accounting
ECON 1101 or ECON 1901	Macroeconomic Principles Honors Macroeconomic Principles
ECON 1102 or ECON 1902	Microeconomic Principles Honors Microeconomic Principles
HRM 1101 or HRM 1901	Leadership and Organizational Management Honors Leadership and Organizational Management
HRM 2501	Introduction to Human Resource Management
MKTG 2101 or MKTG 2901	Marketing Management Honors Marketing Management
MSOM 3101	Operations Management
RMI 2101 or RMI 2901	Introduction to Risk Management Honors Introduction to Risk Management

Required Additional Electives

Free Elective	2
Total Credit Hours	128

Suggested Academic Plan

Please note that this is a **suggested** academic plan. Depending on your study plan, your academic plan may look different.

Bachelor of Science in Engineering (B.S.E.) - Electromechanical Engineering Concentration**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
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or 1953	General Chemistry Laboratory I	1
ENGR 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
	Term Credit Hours	15
Spring		
MATH 1042 or 1942	Calculus II	4
PHYS 1061 or 1961	Elementary Classical Physics I	4
ENGR 1102	Introduction to Engineering Problem Solving	3
Select one of the following:		2
ENGR 1117	Engineering Graphics	
MEE 1117	Fundamentals of Mechanical Engineering Design	
Select one of the following:		4
CIS 1057	Computer Programming in C	
ECE 1111	Engineering Computation I	
	Term Credit Hours	17
Year 2		
Fall		
MATH 2043 or 2943	Calculus III	4
PHYS 1062 or 1962	Elementary Classical Physics II	4
ECE 2332	Principles of Electric Circuits	4
ENGR 2331 or 2931	Engineering Statics	3
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
	Term Credit Hours	18
Spring		
MATH 3041 or 3941	Differential Equations I	3

ENGR 2332	Engineering Dynamics	3
ENGR 2333 or 2933	Mechanics of Solids	3
Business Elective #1		3
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
ECE 2333	Principles of Electric Circuits Lab	1
Term Credit Hours		16
Year 3		
Fall		
ECE 2612	Digital Circuit Design	3
ECE 2613	Digital Circuit Design Laboratory	1
ECE 3732	Electromechanical Energy Systems	3
ECE 3733	Electromechanical Energy Systems Laboratory	1
ENGR 2196 or 2996	Technical Communication [WI]	3
GenEd Breadth Course		3
Select one of the following:		3
ENGR 2011	Engineering Analysis & Applications	
MEE 3011	Analysis and Computation of Linear Systems in Mechanical Engineering	
Term Credit Hours		17
Spring		
Technical Elective #1		3
ECE 3612 or 3914	Processor Systems	3
ECE 3613 or 3915	Processor Systems Laboratory	1
ENGR 4169	Engineering Seminar	1
GenEd Breadth Course		3
GenEd Breadth Course		3
Select one of the following:		3
CEE 3048	Probability, Statistics & Stochastic Methods	
ISE 2101	Applied Statistical Methods for Industrial and System Engineers	
Term Credit Hours		17
Year 4		
Fall		
ENGR 4172	Senior Design Project I for Engineering	2
MEE 3301	Machine Theory and Design	3
Technical Elective #2		3
ENGR 3001	Engineering Economics	3
GenEd Breadth Course		3
Term Credit Hours		14
Spring		
ENGR 4296 or 4996	Senior Design Project II [WI]	3
Technical Elective #3		3
Business Elective #2		3
GenEd Breadth Course		3
Free Elective		2
Term Credit Hours		14
Total Credit Hours:		128

Approved Technical Electives

Code	Title	Credit Hours
ECE 3432	Robotic Control using Raspberry Pi Microcontroller	3
ECE 3512	Signals: Continuous and Discrete	4
ECE 3622	Embedded System Design	3

ECE 3623	Embedded System Design Laboratory	1
ECE 3712	Introduction to Electromagnetic Fields and Waves	3
ENGR 2181	Co-Op Work Experience I	3
ENGR 3117	Computer-Aided Design (CAD)	3
ENGR 3571	Classical and Statistical Thermodynamics	3
MEE 3302	Kinematics of Mechanisms	3
MEE 3422	Modeling and Control of Electromechanical Systems	3
MEE 4411	Introduction to Mobile Robotics	3
MEE 4412	Modern Dynamics for Robotics	3
MEE 4413	Robotic Manipulation	3