



CURRICULUM

Bachelor of Science in Electrical Engineering (BSEE)

Academic Year 2018-2019

Reference CMOs: CMO No. 88 s. 2017, CMO No. 4 s. 2018 and CMO No. 20, s. 2013

Curriculum Description

Electrical Engineering is a profession that involves the conceptualization, development, design, improvement and application of safe, healthy, ethical and economical way of utilizing materials and energy in unit Processes and operations for the benefit of society and the environment through the knowledge of mathematics, chemistry, biology, information technology and other natural, applied and social sciences, gained by study, research and practice.

Program Educational Objectives of Electrical Engineering

The electrical engineering alumni three to five years after graduation shall:

1. Demonstrate professional; expertise through analytical and innovative thinking for the purpose of solving industry-based engineering problems design of advanced electrical system and involvement in research oriented projects.
2. Engage their engineering profession in the globally competitive environment through continuous professional education, research and development, and other creative and innovative efforts in science, engineering, and technology, as well as other professional careers
3. Exhibit holistic leadership and professionalism, through peer-recognized expertise in team-based environments as agents of sustainable economic development.

Student Outcomes

The following skills, knowledge, and behaviors are expected to be attained by students as they progress through the program:

- a. Ability to apply knowledge of mathematics and science to solve engineering problems.
- b. Ability to design and conduct experiments, as well as to analyze and interpret data.
- c. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, in accordance with standards.
- d. Ability to function on multidisciplinary teams.
- e. Ability to identify, formulate, and solve engineering problems.
- f. Understanding of professional and ethical responsibility.
- g. Ability to communicate effectively.
- h. Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- i. Recognition of the need for, and an ability to engage in life-long learning.
- j. Knowledge of contemporary issues.
- k. Ability to use techniques, skills, and modern engineering tools necessary for engineering practice.
- l. Knowledge and understanding of engineering and management principles as a member and leader in a team, to manage projects and in multidisciplinary environments.

CURRICULUM COMPONENTS

Classification/ Field / Course	Minimum No. of Hours/Week		Credit Units
	Lec	Lab	
Technical Courses			
Mathematics			
Calculus 1	3	0	3
Calculus 2	3	0	3
Engineering Data Analysis	3	0	3
Differential Equations	3	0	3
Natural/Physical Sciences			
Chemistry for Engineers	3	3	4
Physics for Engineers	3	3	4
Modern Biology	2	3	3
Engineering Sciences			
Computer-aided Design	0	3	1
Engineering Mechanics	3	0	3
Engineering Economics	3	0	3
Technopreneurship	3	0	3
Engineering Management	2	0	2
Introduction to Engineering	0	3	1
Engineering Drawing	0	3	1
Allied Courses			
Fundamentals of Deformable Bodies	3	0	3
Material Science and Engineering	3	0	3
Electronic Circuits: Devices and Analysis	3	3	4
Thermodynamics	3	0	3
Industrial Electronics	3	3	4
Electromagnetics	4	0	4
Fluid Mechanics	3	0	3
Fundamentals of Electronic Communications	3	0	3
Logic Circuits and Switching Theory	2	3	3
Microprocessor Systems	3	0	3
Computer Programming	0	3	1
Basic Occupational Safety and Health	3	0	3
Discrete Math	3	0	3
Environmental Science and Engineering	2	0	2
Professional Courses			
Numerical Methods and Analysis	2	3	3
Electrical Circuits 1	3	3	4
Electrical Circuits 2	3	3	4
Engineering Mathematics for EE	3	0	3
Electrical Machines 1	3	3	4
Electrical Apparatus and Devices	2	3	3
Electrical Machines 2	3	3	4
EE Laws, Contacts and Professional Ethics	2	0	2
Feedback Control System	3	0	3
Electrical Standards and Practices	0	3	1
Power System Analysis	4	3	5
Instrumentation and Control	2	3	3
Electrical Systems and Illumination Design	3	6	5
Fundamentals of Power Plant Engineering Design	2	3	3
Electrical Transmission, Distribution Systems and Substation Design	2	3	3
Research Methods	3	0	3
EE Design Project 1	0	3	1
EE Design Project 2	0	3	1
Electrical Maintenance and Operations	3	0	3
Seminars/Colloquia	0	3	1
On-the-Job Training	320 hrs		4
Electives 1,2	6	0	6
EE Practice with Comprehensive Examination	0	6	2
SUB-TOTAL	118	84	150

Non - Technical Courses			
GE Core Courses			
Science, Technology and Society	3	0	3
Contemporary World	3	0	3
Readings in Philippine History	3	0	3
Understanding the Self	3	0	3
Art Appreciation	3	0	3
Purposive Communication	3	0	3
Mathematics in the Modern World	3	0	3
Ethics	3	0	3
Electives Mandated Courses			
Kontekstwalisadong Komunikasyon sa Filipino	3	0	3
Filipino sa Iba't Ibang Disiplina	3	0	3
ASEAN Literature	3	0	3
Life and Works of Rizal	3	0	3
PE 1, 2, 3, 4	8	0	8
NSTP 1, 2	6	0	6
SUB-TOTAL	50	0	50
GRAND TOTAL	168	84	200
SUMMARY			
Courses	Number of Units		
I. Technical Courses			
A. Mathematics	12		
B. Natural/Physical Sciences	11		
C. Basic Engineering Sciences	14		
D. Allied Courses	42		
E. Professional Courses	71		
II. Non-Technical Courses			
A. General Education Courses	24		
B. Filipino/Literature/Mandated Courses	12		
C. Physical Education	8		
D. NSTP	6		
GRAND TOTAL	200		

PROGRAM OF STUDY

FIRST YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
GEd 102	Mathematics in the Modern World	3	0	3		
GEd 105	Readings in Philippine History	3	0	3		
GEd 101	Understanding the Self	3	0	3		
SCI 401	General Chemistry	3	3	4		
GEd 106	Purposive Communication	3	0	3		
ENGG 401	Introduction to Engineering	0	3	1		
MATH 401	Differential Calculus	3	0	3		
PE 101	Physical Fitness, Gymnastics and Aerobics	2	0	2		
NSTP 111	National Service Training Program 1	3	0	3		
Total		23	6	25		
FIRST YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
MATH 402	Integral Calculus	3	0	3	MATH 401	
SCI 403	Physics 1	3	3	4	MATH 401	MATH 402
GEd 104	The Contemporary World	3	0	3		
GEd 109	Science, Technology and Society	3	0	3		
GEd 108	Art Appreciation	3	0	3		
CpE 401	Computer Programming 1	0	3	1		
ENGG 402	Engineering Drawing	0	3	1		
PE 102	Rhythmic Activities	2	0	2	PE 101	
NSTP 121	National Service Training Program 2	3	0	3	NSTP 111	
Total		20	9	23		
FIRST YEAR						
Midterm						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
SCI 402	Modern Biology	2	3	3		
GEd 103	Life and Works of Rizal	3	0	3		
GEd 107	Ethics	3	0	3		
Total		8	3	9		
SECOND YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
MATH 403	Engineering Data Analysis	3	0	3	MATH 401	
MATH 404	Differential Equations	3	0	3	MATH 402	
ENGG 409	Engineering Mechanics	3	0	3	SCI 403	
EE 401	Electrical Circuits 1	3	3	4	MATH 402, SCI 403	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	0	3		
ECE 401	Electromagnetics	4	0	4	SCI 403	MATH 404
ME 431	Thermodynamics	3	0	3	SCI 403, MATH 402	
ENGG 403	Computer-Aided Design	0	3	1	ENGG 402	
PE 103	Individual and Dual Sports	2	0	2	PE 101	
Total		24	6	26		
SECOND YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
EE 402	Advanced Mathematics for EE	3	0	3	MATH 404	
ENGG 410	Fundamentals of Deformable Bodies	3	0	3	ENGG 409	
EE 403	Electrical Circuits 2	3	3	4	EE 401	EE 402
ECE 421	Electronic Circuits: Devices and Analysis	3	3	4	EE 401	
Fili 102	Filipino sa Iba't Ibang Disiplina	3	0	3		
EE 404	Electrical Machines 1	3	3	4	EE 401, ECE 401	
CpE 405	Discrete Mathematics	3	0	3	MATH 402	
PE 104	Team Sports	2	0	2	PE 101	
Total		23	9	26		

THIRD YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 415	Numerical Methods and Analysis	2	3	3	MATH 404, CpE 401	
CpE 409	Logic Circuits and Switching Theory	2	3	3	ECE 421	
EE 406	Electrical Machines 2	3	3	4	EE 403, EE 404	EE 405
ENGG 412	Materials Science and Engineering	3	0	3	SCI 401, ENGG 409	
ENGG 404	Engineering Economics	3	0	3	MATH 403	
ECE 423	Fundamentals of Electronic Communications	3	0	3	ECE 421	
EE 407	EE Laws, Contacts and Professional Ethics	2	0	2	3rd year standing	
EE 405	Electrical Apparatus and Devices	2	3	3	EE 403, EE 404	
Litr 102	ASEAN Literature	3	0	3		
	Total	23	12	27		
THIRD YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 416	Research Methods	3	0	3	MATH 403	
EE 410	Power System Analysis	4	3	5	EE 406	EE 409
ENGG 413	Environmental Science and Engineering	2	0	2	SCI 401	
ECE 424	Industrial Electronics	3	3	4	ECE 421	
EE 408	FeedbackControl System	3	0	3	EE 402, ECE 421	
EE 409	Electrical Standards and Practices	0	3	1	EE 407	
CpE 416	Microprocessor Systems	3	0	3	CpE 409	
EEE 401	EE Elective 1	3	0	3	3rd year standing	
	Total	21	9	24		
THIRD YEAR						
Midterm						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 406	Engineering Management	2	0	2		
ME 406	Fluid Mechanics	3	0	3	ENGG 410	
ENGG 411	Basic Occupational Safety and Health	3	0	3		
	Total	8	0	8		
FOURTH YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 417	On-the-Job Training	320		4	4th year standing	
ENGG 405	Technopreneurship	3	0	3	4th year standing	
EEE 402	Elective 2	3	0	3	EEE 401	
EE 411	EE Design Project 1	0	3	1	4th year standing	
	Total	6	3	11		
FOURTH YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
EE 412	Electrical Systems and Illumination Design	3	6	5	EE 410	
EE 413	Fundamentals of Power Plant Engineering Design	2	3	3	EE 410	
EE 414	Transmission, Distribution Systems and Substation Design	2	3	3	EE 410	
EE 415	EE Design Project 2	0	3	1	Graduating	
EE 416	Electrical Maintenance and Operations	3	0	3	4th year standing	
EE 417	Seminars/Colloquia	0	3	1	Regular Standing	
EE 418	Electrical Engineering Practice with Comprehensive Examination	0	6	2	Graduating	
ICE 420	Instrumentation and Control	2	3	3	EE 408	
	Total	12	27	21		
GRAND TOTAL UNITS		168	84	200		

EE Elective Tracks

- Renewable Energy for Sustainable Development
 - Solar Energy
 - Biogas/Biomass Energy
- Machine Automation and Process Control
 - Pneumatic and Electropneumatics
 - Programmable Logic Controlled in Manufacturing & Power Systems