



CURRICULUM

Bachelor of Science in Industrial Engineering (BSIE)

Academic Year 2018-2019

Reference CMOs: CMO No. 96 s. 2017, CMO No. 4 s. 2018 and CMO No. 20, s. 2013

Curriculum Description

Industrial Engineering deals with the design, improvement and installation of integrated systems of people, materials, information, equipment, monetary and energy to produce quality and cost – effective goods and services in a healthy and efficient work environment. The field of Industrial Engineering brings together the various sciences concerned with technology, the production of goods, performance of services and the way in which people work. It is the only engineering field with close links to management so many IEs move on to successful careers in management.

Program Educational Objectives of Industrial Engineering

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

1. Effectively practice Industrial Engineering in various functional areas of an organization.
2. Adapt Industrial Engineering practice to the changing needs of the society and achieve global competitiveness.
3. Adhere to professional, moral, ethical standards in the practice of industrial engineering.

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	Number of Hours/Week		Credit Units
	Lec	Lab	
I. TECHNICAL COURSES			
A. Mathematics			
Differential Calculus	3	0	3
Integral Calculus	3	0	3
Differential Equations	3	0	3
Sub-Total	9	0	9
B. Natural/Physical Sciences			
General Chemistry	3	3	4
Physics 1	3	3	4
Modern Biology	2	3	3
Sub-Total	8	9	11
C. Basic Engineering Sciences			
Computer-Aided Design	0	3	1
Computer Programming 1	0	3	1
Computer Programming 2	0	3	1
Engineering Mechanics	3	0	3
Engineering Economics	3	0	3
Basic Occupational Safety and Health	3	0	3
Technopreneurship	3	0	3
Engineering Drawing	0	3	1
Introduction to Engineering	0	3	1
Sub-Total	12	15	17
D. Allied Courses			
Thermodynamics	3	0	3
Elementary Electrical Engineering	3	0	3
Environmental Science and Engineering	3	0	3
Financial Accounting for IE	3	0	3
Managerial Accounting for IE	3	0	3
Principles of Economics	3	0	3
Sub-Total	18	0	18
E. Professional Courses			
1. Core Courses			
Advanced Mathematics for IE	3	0	3
Industrial Materials and Processes	2	3	3
Industrial Organization and Management	3	0	3
Statistical Analysis for IE 1	3	0	3
Statistical Analysis for IE 2	3	0	3
Work Study and Measurement	3	3	4
Operations Research 1	3	0	3
Operations Research 2	3	0	3
Quality Management Systems	3	0	3
Project Feasibility 1	3	0	3
Project Feasibility 2	2	3	3
Ergonomics 1	2	3	3
Ergonomics 2	2	3	3
Operations Management	3	3	4
Supply Chain Management	3	0	3
Informations Systems	3	0	3
Systems Engineering	3	0	3
IE Capstone Project	1	6	3
Engineering Values and Ethics	2	0	2
Methods of Research for IE	3	0	3
IE Practice with Comprehensive Examination	0	6	2
On-the Job- Training	320 hrs		4
Sub-Total	53	30	67
2. Electives			
IE Elective 1(CAD/CAM with Automation)	2	3	3
IE Elective 2(Industrial Quality Control)	3	0	3
IE Elective 3(Six Sigma)	3	0	3
Sub-Total	8	3	9
Total Professional Courses	108	57	131

II. NON-TECHNICAL COURSES				
A. Required General Education				
Understanding the Self	3	0	3	
Readings in Philippine History	3	0	3	
The Contemporary World	3	0	3	
Mathematics in the Modern World	3	0	3	
Purposive Communication	3	0	3	
Ethics	3	0	3	
Art Appreciation	3	0	3	
Science, Technology and Society	3	0	3	
Sub-Total	24	0	24	
B. General Education Electives				
Kontekstwalisadong Komunikasyon sa Filipino	3	0	3	
Filipino sa Iba't Ibang Disiplina	3	0	3	
ASEAN Literature	3	0	3	
Sub-Total	9	0	9	
C. Mandated Course				
Life and Works of Rizal	3	0	3	
Sub-Total	3	0	3	
D. Physical Education				
PE 101	2	0	2	
PE 102	2	0	2	
PE 103	2	0	2	
PE 104	2	0	2	
Sub-Total	8	0	8	
E. National Service Training Program				
NSTP 111	3	0	3	
NSTP 121	3	0	3	
Sub-Total	6	0	6	
TOTAL OF NON- TECHNICAL COURSES		50	0	50
GRAND TOTAL		158	57	181
SUMMARY				
Courses		Number of Units		
I. Technical Courses				
A. Mathematics		9		
B. Natural/Physical Sciences		11		
C. Basic Engineering Sciences		17		
D. Allied Courses		18		
E. Professional Courses				
1. Core Courses		67		
2. Elective Courses		9		
II. Non-Technical Courses				
A. General Education Courses		24		
B. Filipino/Literature		9		
C. Mandated Courses		3		
D. Physical Education		8		
E. NSTP		6		
GRAND TOTAL		181		

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 101	Understanding the Self	3	0	3		
GEd 102	Mathematics in the Modern World	3	0	3		
GEd 105	Readings in Philippine History	3	0	3		
GEd 106	Purposive Communication	3	0	3		
PE 101	Physical Fitness, Gymnastics and Aerobics	2	0	2		
NSTP 111	National Service Training Program 1	3	0	3		
SCI 401	General Chemistry	3	3	4		
MATH 401	Differential Calculus	3	0	3		
ENGG 401	Introduction to Engineering	0	3	1		
	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 I	3	3	4	MATH 401	MATH 402
CpE 401	Computer Programming 1	0	3	1		
ENGG 402	Engineering Drawing	0	3	1		
GEd 104	The Contemporary World	3	0	3		
GEd 108	Art Appreciation	3	0	3		
GEd 109	Science, Technology and Society	3	0	3		
NSTP 121	National Service Training Program 2	3	0	3	NSTP 111	
PE 102	Rhythmic Activities	2	0	2	PE 101	
	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			
GEd 103	Life and Works of Rizal	3	0	3		
GEd 107	Ethics	3	0	3		
SCI 402	Modern Biology	2	3	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 404	Differential Equations	3	0	3	MATH 402	
IE 401	Statistical Analysis for IE 1	3	0	3		
IE 402	Principle of Economics	3	0	3		
IE 403	Financial Accounting for IE	3	0	3		
IE 404	Industrial Organization and Management	3	0	3	Second Year Standing	
CpE 402	Computer Programming 2	0	3	1	CpE 401	
ENGG 413	Environmental Science and Engineering	3	0	3	SCI 401	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	0	3		
PE 103	Individual and Dual Sports	2	0	2	PE 101	
	Total	23	3	24		
SECOND YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
IE 405	Statistical Analysis for IE 2	3	0	3	IE 401	
IE 406	Industrial Materials and Processes	2	3	3	SCI 401, SCI 403	
IE 407	Advanced Mathematics for IE	3	0	3	MATH 404	
IE 408	Work Study and Measurement	3	3	4	IE 401, IE 404	IE 406
ENGG 403	Computer-Aided Design	0	3	1	ENGG 402	
ENGG 404	Engineering Economics	3	0	3	MATH 402	
ENGG 409	Engineering Mechanics	3	0	3	SCI 403	
Fili 102	Filipino sa Iba't Ibang Disiplina	3	0	3		
PE 104	Team Sports	2	0	2	PE 101	
	Total	22	9	25		

THIRD YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
IE 409	Managerial Accounting for IE	3	0	3	IE 403	
IE 410	Operations Research 1	3	0	3	IE 407	IE 411
IE 411	Quality Management Systems	3	0	3	IE 405,IE 408	
IE 412	Ergonomics 1	2	3	3	IE 408	ENGG 411
IEE 401	IE Elective 1 (CAD/CAM with Automation)	2	3	3	ENGG 403	
ENGG 411	Basic Occupational Safety and Health	3	0	3		
ME 431	Thermodynamics	3	0	3	MATH 402, SCI 403	
Litr 102	ASEAN Literature	3	0	3		
	Total	22	6	24		
THIRD YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
IE 413	Operations Research 2	3	0	3	IE 410	
IE 414	Operations Management	3	3	4	IE 410, IE 411	
IE 415	Ergonomics 2	2	3	3	IE 412	
IE 416	Project Feasibility 1	3	0	3	IE 409	IE 414
IE 418	Engineering Values and Ethics	2	0	2		
EE 419	Basic Electrical Engineering	3	0	3	SCI 403	
IEE 402	IE Elective 2 (Industrial Quality Control)	3	0	3	IE 411	
	Total	19	6	21		
THIRD YEAR						
Midterm						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
IE 417	Project Feasibility 2	2	3	3	IE 416	
IEE 403	IE Elective 3 (Six Sigma)	3	0	3	IE 411	
	Total	5	3	6		
FOURTH YEAR						
First Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
ENGG 405	Technopreneurship	3	0	3	Fourth Year Standing	
ENGG 417	On-the- Job Training	320		4	Fourth Year Standing	
IE 419	Methods of Research for IE	3	0	3	IE 405	
	Total	6	0	10		
FOURTH YEAR						
Second Semester						
Course Code	Course Title	No. of Hour/s		Unit/s	Pre-requisite/s	Co-requisite/s
		Lec	Lab			
IE 420	Supply Chain Management	3	0	3	IE 414	
IE 421	Information Systems	3	0	3	CpE 402, Fourth Year Standing	
IE 422	Systems Engineering	3	0	3	Fourth Year Standing	
IE 423	IE Capstone Project	1	6	3	IE 419	
IE 424	IE Practice with Comprehensive Examination	0	6	2	Graduating	
	Total	10	12	14		
GRAND TOTAL UNITS		158	57	181		