CURRICULUM

Bachelor of Science in Petroleum Engineering (BSPetE)

Academic Year 2018-2019

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

Curriculum Description

Petroleum Engineering is a field of engineering concerned with the activities related to the production of hydrocarbons, which can be either crude oil or natural gas. Exploration and production are deemed to fall within the upstream sector of the oil and gas industry.

Program Educational Objectives of Petroleum Engineering

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

1. Successfully practice in upstream and downstream petroleum industry and academe.
2. Promote professionalism in petroleum engineering practice.

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 Per 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
Engineering Data Analysis	3	0	3
Numerical Methods and Analysis	2	3	3
Sub-Total	**14**	**3**	**15**
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			
Engineering Drawing	0	3	1
Computer Programming 1	0	3	1
Engineering Mechanics	3	0	3
Fundamentals of Deformable Bodies	3	0	3
Engineering Economics	3	0	3
Technopreneurship	3	0	3
Introduction to Engineering	0	3	1
Environmental Science and Engineering	3	0	3
Sub-Total	**15**	**9**	**18**
D. Allied Courses			
Basic Electrical Engineering	2	3	3
Instrumentation and Control Engineering	2	3	3
Basic Organic Chemistry	2	3	3
DC and AC Machinery	2	3	3
Physical Chemistry	2	3	3
Introduction to Unit Operation	3	0	3
Thermodynamics	3	0	3
Fluid Mechanics	3	0	3
Sub-Total	**19**	**15**	**24**
E. Fundamental Petroleum Engineering Courses			
Introduction to Oil and Gas Industry and Sustainable Development	3	0	3
Reservoir Geosciences	3	0	3
Petroleum Geology	2	3	3
Reservoir Petrophysics with Hydrocarbon Phase Analysis	3	3	4
Advance Mathematics for PetE	3	0	3
Formation Evaluation	2	3	3
Reservoir Geomechanics	2	3	3
Fuels and Combustion	3	0	3
Basic Occupational Safety and Health	3	0	3
Project Management for PetE	3	0	3
Reservoir Modelling and Simulation	2	3	3
Qualitative and Quantitative Chemistry	2	3	3
Process Plant Engineering	3	0	3
Material Science and Engineering	3	0	3
On the-Job-Training	320 hrs		4
Sub-Total	**37**	**18**	**47**

F. Professional Petroleum Engineering Courses			
Reservoir Engineering 1	2	3	3
Reservoir Engineering 2	2	3	3
Production Engineering 1	2	3	3
Production Engineering 2	2	3	3
Well Test Analysis	3	0	3
Drilling Engineering	2	3	3
Drilling Technology	2	3	3
PetE Project Study 1	0	3	1
PetE Project Study 2	0	3	1
Plant Design	2	3	3
Petroleum Economics	2	0	2
Research Methods	3	0	3
Sub-Total	**22**	**27**	**31**
TOTAL TECHNICAL COURSES	**115**	**81**	**146**
A. General Education Courses			
Purposive Communication	3	0	3
Mathematics in the Modern World	3	0	3
Understanding the Self	3	0	3
Art Appreciation	3	0	3
Ethics	3	0	3
Readings in Philippine History	3	0	3
Contemporary World	3	0	3
Science, Technology and Society	3	0	3
Sub-Total	**24**	**0**	**24**
B. General Education Elective and 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
Sub-Total	**12**	**0**	**12**
C. Physical Education			
PE 1,2,3,4 (2 units each)	8	0	8
Sub-Total	**8**	**0**	**8**
D. National Service Training Program			
NSTP 1&2	6	0	6
Sub-Total	**6**	**0**	**6**
TOTAL NON-TECHNICAL COURSES	**50**	**0**	**50**
GRAND TOTAL	**165**	**81**	**196**

SUMMARY	
Courses	**Number of Units**
I. Technical Courses	
A. Mathematics	15
B. Natural and Physical Sciences	11
C. Basic Engineering Sciences	18
D. Allied Courses	24
E. Fundamental Courses	47
F. Professional Petroleum Engineering Courses	28
II. Non-Technical Courses	
A. General Education Courses	24
B. General Education Elective/Mandated Courses	12
C. Physical Education and NSTP	14
GRAND TOTAL	**193**

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		
GEd 106	Purposive Communication	3	0	3		
MATH 401	Differential Calculus	3	0	3		
ENGG 401	Introduction to Engineering	0	3	1		
SCI 401	General Chemistry	3	3	4		
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		
PE 102	Rhythmic Activities	2	0	2	PE 101	
NSTP 121	National Service Training Program 2	3	0	3	NSTP 1	
ENGG 402	Engineering Drawing	0	3	1		
	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 107	Ethics	3	0	3		
GEd 103	Life and Works of Rizal	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**			
PetE 401	Introduction to Oil and Gas Industry and Sustainable Development	3	0	3	ENGG 401	
PetE 402	Reservoir Geosciences	3	0	3		PetE 401
ENGG 409	Engineering Mechanics	3	0	3	SCI 403	
ME 431	Thermodynamics	3	0	3	SCI 403, MATH 402	
EE 419	Basic Electrical Engineering	2	3	3	SCI 403, MATH 402	
ChE 420	Qualitative and Quantitative Chemistry	2	3	3	SCI 401	
PE 103	Individual and Dual Sports	2	0	2	PE 101	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	0	3		
MATH 404	Differential Equations	3	0	3	MATH 402	
	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**			
PetE 403	Petroleum Geology	2	3	3	PetE 402	
PetE 404	Reservoir Petrophysics with Hydrocarbon Phase Analysis	3	3	4		PetE 403
PetE 405	Advanced Mathematics for PetE	3	0	3	MATH 404	
EE 422	DC and AC Machinery	2	3	3	EE 419	
ChE 432	Basic Organic Chemistry	2	3	3	SCI 401	
Fili 102	Filipino sa Iba't Ibang Disiplina	3	0	3		
PE 104	Team Sports	2	0	2	PE 101	
MATH 403	Engineering Data Analysis	3	0	3	MATH 401	
	Total	**20**	**12**	**24**		

THIRD YEAR						
First Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
ENGG 410	Fundamentals of Deformable Bodies	3	0	3	ENGG 409	
ENGG 416	Research Methods	3	0	3	MATH 403	
ENGG 412	Material Science and Engineering	3	0	3	SCI 401	
ME 406	Fluid Mechanics	3	0	3	ME 431	
Litr 102	ASEAN Literature	3	0	3		
ChE 431	Physical Chemistry	2	3	3	ChE 420	
PetE 406	Reservoir Engineering 1	2	3	3	PetE 404	
PetE 407	Formation Evaluation	2	3	3	PetE 404	PetE 408
PetE 408	Drilling Technology	2	3	3	PetE 403	ENGG 410
		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**			
PetE 409	Reservoir Geomechanics	2	3	3	PetE 403	
PetE 410	Reservoir Engineering 2	2	3	3	PetE 406, PetE 407	
PetE 411	Production Engineering 1	2	3	3	PetE 404	
PetE 412	Fuels and Combustion	3	0	3	ME 431	
PetE 413	PetE Project Study 1	0	3	1	ENGG 416	
ENGG 415	Numerical Method and Analysis	2	3	3	MATH 404, CpE 401	
ICE 420	Instrumentation and Control Engineering	2	3	3	EE 419	
ChE 436	Introduction to Unit Operation	3	0	3	ChE 431	
	Total	**16**	**18**	**22**		
THIRD YEAR						
Midterm						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
ENGG 411	Basic Occupational Safety and Health	3	0	3		
ENGG 413	Environmental Science and Engineering	3	0	3	SCI 401	
ENGG 404	Engineering Economics	3	0	3	MATH 402	
	Total	**9**	**0**	**9**		
FOURTH YEAR						
First Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
PetE 421	Well Test Analysis	3	0	3	4th year Standing	
PetE 415	Project Management for PetE	3	0	3	4th year Standing	
PetE 416	Reservoir Modelling and Simulation	2	3	3	PetE 410, ENGG 415, CpE 401	
PetE 417	Process Plant Engineering	3	0	3	ICE 420, ChE 436	
PetE 418	Production Engineering 2	2	3	3	PetE 411	
PetE 419	Drilling Engineering	2	3	3	PetE 407, PetE 408	
PetE 422	Petroleum Economics	2	0	2	4th year Standing	
	Total	**17**	**9**	**20**		
FOURTH YEAR						
Second Semester						
Course Code	**Course Title**	**No. of Hour/s**		**Unit/s**	**Pre-requisite/s**	**Co-requisite/s**
		Lec	**Lab**			
PetE 420	Plant Design	2	3	3	PetE 415, PetE 417, PetE 418, PetE 419	
ENGG 405	Technopreneurship	3	0	3	4th year Standing	
ENGG 417	On-the-Job Training	320		4	4th year Standing	
PetE 414	PetE Project Study 2	0	3	1	Graduating	
	Total	**5**	**6**	**11**		
GRAND TOTAL UNITS		**165**	**81**	**196**		