



Republic of the Philippines  
**BATANGAS STATE UNIVERSITY**  
**The National Engineering University**

**Alangilan Campus**

Golden Country Homes, Alangilan Batangas City, Batangas, Philippines 4200

Tel Nos.: (+63 43) 425-0139 local 2121

E-mail Address: [coe.alangilan@g.batstate-u.edu.ph](mailto:coe.alangilan@g.batstate-u.edu.ph) | Website Address: <http://www.batstate-u.edu.ph>

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**College of Engineering**

**CURRICULUM**

**Bachelor of Science in Petroleum Engineering (BSPetE)**

Academic Year 2023-2024

Reference CMOs: CMO No. 39, s. 2021, CMO No. 40, s. 2021, CMO No. 4, s.2018,  
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.

**Institutional Graduate Attributes**

The student should achieve at least 75% for each IGA upon graduation.

1. **Knowledge Competence.** Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.
2. **Creativity and Innovation.** Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
3. **Critical and Systems Thinking.** Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
4. **Communication.** Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Pilipino.
5. **Lifelong Learning.** Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.
6. **Leadership, teamwork, and Interpersonal Skills.** Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal; work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture.
7. **Global Outlook.** Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.



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8. **Social and National Responsibility.** Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.

### Student Outcomes

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

1. **Discipline Knowledge.** Ability to apply mathematics, sciences and principles of engineering to solve complex petroleum engineering problems.
2. **Investigation.** Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
3. **Design/Development of Solutions.** Design solution, system, components, processes, exhibiting improvements/innovations, that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues.
4. **Leadership and Teamwork.** Function effectively as a member of a leader on a diverse team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
5. **Problem Analysis.** Identify, formulate, and solve complex petroleum engineering problems by applying principles of engineering, science, and mathematics.
6. **Ethics and Professionalism.** Apply ethical principles and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, environmental, and societal contexts.
7. **Communication.** Communicate effectively on complex engineering activities with the community, and the society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
8. **Environment and Sustainability.** Recognize the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development.
9. **Lifelong Learning.** Recognize the need for, and ability to engage in independent and life-long learning in the broadest context of technological change.
10. **The Engineer and Society.** Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices.
11. **Modern Tool Usage.** Apply appropriate techniques, skills, and modern engineering and IT tools to complex petroleum engineering activities.
12. **Project Management and Finance.** Demonstrate knowledge and understanding of engineering management and financial principles as member or a leader of a team to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship.
13. **Social and National Responsibility.** Apply acquired petroleum engineering knowledge and skills in addressing community problems that contributes to national development.



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**CURRICULUM COMPONENTS**

Classification/ Field / Course	No. 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



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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
<b>Sub-Total</b>	<b>37</b>	<b>18</b>	<b>47</b>
<b>F. Professional Petroleum Engineering Courses</b>			
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
<b>Sub-Total</b>	<b>22</b>	<b>27</b>	<b>31</b>
<b>TOTAL TECHNICAL COURSES</b>	<b>115</b>	<b>81</b>	<b>146</b>
<b>A. General Education Courses</b>			
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
<b>Sub-Total</b>	<b>24</b>	<b>0</b>	<b>24</b>
<b>B. General Education Elective and Mandated Courses</b>			
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
<b>Sub-Total</b>	<b>12</b>	<b>0</b>	<b>12</b>
<b>C. Physical Activity Towards Health and Fitness</b>			
PATHFit 1 - Movement Competency Training	2	0	2
PATHFit 2 - Exercise-based Fitness Activities	2	0	2
PATHFit 3 – Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Traditional and Recreational Games)	2	0	2
PATHFit 4 – Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Team Sports, Basketball and Volleyball)	2	0	2
<b>Sub-Total</b>	<b>8</b>	<b>0</b>	<b>8</b>



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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
<b>I. Technical Courses</b>	
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	31
<b>II. Non-Technical Courses</b>	
A. General Education Courses	24
B. General Education Elective/Mandated Courses	12
C. PATHFit 1-4	8
D. NSTP	6
GRAND TOTAL	196



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**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		
PATHFit 1	Movement Competency Training	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		
PATHFit 2	Exercise-based Fitness Activities	2	0	2	PATHFit 1	
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		



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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	
PATHFit 3	Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Traditional and Recreational Games)	2	0	2	PATHFit 1 and 2	
Fili 101	Kontekstwalisadong Komunikasyon sa Filipino	3	0	3		
MATH 404	Differential Equations	3	0	3	MATH 402	
	<b>Total</b>	<b>24</b>	<b>6</b>	<b>26</b>		

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		
PATHFit 4	Menu of Dance, Sports, Martial Arts, Group Exercise, Outdoor Adventure Activities Menu Offering: (Team Sports, Basketball and Volleyball)	2	0	2	PATHFit 1 and 2	
MATH 403	Engineering Data Analysis	3	0	3	MATH 401	
	<b>Total</b>	<b>20</b>	<b>12</b>	<b>24</b>		





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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
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			
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		





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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	4 <sup>th</sup> 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		