# Undergraduate Program of Petroleum Engineering (in English) – 2017 Version (Enrolled in Fall semester)

(Specialty Code: 081502)

## I. Educational Objectives

The educational aim of Petroleum Engineering specialty is to cultivate qualified personnel with advanced technology and engineering knowledge. To develop all-round morality, intellectuality and physical fitness, they can adapt to the needs of modern petroleum industrial development. They don't gain just the basic training on petroleum engineering, but also can be engaged in petroleum engineering design, operation and construction, production and management, scientific development and applied research etc. when they graduate from the university.

### **II**. Requirements

Graduates should acquire the following knowledge and capabilities.

1. Graduates will have solid foundation on math, physics, chemistry, mechanics and geology etc. They are able to use the basic Chinese to read Chinese books and magazines of their own specialty and have some skills such as listening, speaking, reading, writing and translation etc.

2. Graduates will grasp the basic theory and professional knowledge of engineering science required in their own specialty. They will possess preliminary capability to use basic applied theory and knowledge to go on oil and gas well drilling and recovering engineering design and oil and gas well development project design, to analyze and solve practical problems on petroleum engineering, and to make technological improvement, scientific development and applied research.

3. Graduates will have fairly strong experiment test, calculation and expression abilities and master document retrieval and other method to acquire scientific and technological information.

4. Graduates will have a better self-study and work adaptation capability, computer operation and application ability and innovative consciousness.

5. Graduates will have insight and ability to use systematic engineering ideas and modern operational knowledge to go on production and organizational management.

## III . Graduate Requirements and Distribution of Course Credits and Credit Hours

Cate	egory	Course Credits	Credit Hours	Remarks
Compulsory	Theory studies	111	1844	Including 74 CHs of experiment and 8 (56) CHs of Computer lab
modules	Experiment	4.0	96	
	Practice	28.0		
Selective	e modules	37.0		
Graduation requirements	<ol> <li>Students s         <ul> <li>(2 credits respective</li> <li>Those who Engineering</li> </ul> </li> </ol>	hall obtair must from ly) require o meet the ng.	the above social pra d in the se graduation	e required 180 credits together with 10 credits ctice and innovation and entrepreneurship, elf-development plan. n requirements will be awarded a Bachelor of

## IV . Curriculum

#### Part 1: Compulsory course setting and guiding study plan for petroleum engineering major

Cou					ours					S	Semes	sters/0	Credi	its							
rse Typ	Cours e	Course Name	Cre dits	Credit Hours	Lect	Experi	Comp	Practi	Extracurr icular	1	st ye	ar	21	nd ye	ar	3	rd ye	ar	4 V	th ear	Remarks
e	Code		uns	nouis	ure	ment	uter lab	ce	hours	1	2	S 1	3	4	S 2	5	6	S 3	7	8	
	02000	Freshmen Seminar	1.0	16	16					1. 0											
	07137	Program Design	3.0	48	48		(40)			3. 0											
	10114	College English (4-1)	3.0	48	48				48	3. 0											
	11201	Moral Education and Law	3.0	48	32			16		3. 0											
	11302	The Brief Introduction of Chinese Modern History	3.0	48	32			16		3. 0											
	12101	Physical training (4-1)	1.0	32	32					1. 0											
se	20201	Military training	2.0	3.0We ek				3.0We ek		2. 0											
Course	20202	Military theories	2.0	36	36					2. 0											
ation 6	07136	Fundamentals of Computer	1.0	16	16		(16)				1. 0										
Educ	10114	College English (4-2)	3.0	48	48				48		3. 0										
eneral	12101	Physical training (4-2)	1.0	32	32						1. 0										
Ŭ	10114	College English (4-3)	3.0	48	48				48				3. 0								
	11101	Introduction to the basic principles of Marxism	3.0	48	32			16					3. 0								
	12101	Physical training (4-3)	1.0	32	32								1. 0								
	08003	Enterpreneurship Basics	2.0	32	16	8		8						2. 0							
	10114	College English (4-4)	3.0	48	48				48					3. 0							
	11301	Introduction to Mao Zedong Thought	5.0	80	48			32						5. 0							
	12101	Physical training (4-4)	1.0	32	32									1. 0							
tar Cour ses	09101	Advanced mathematics (2-1)	5.5	88	88				88	5. 5											

	09101	Advanced mathematics (2-2)	5.0	80	80				80	5. 0								
	04341	Engineering Drawing	3.0	48	44		4		48	3. 0								
	09601	General Chemistry	2.5	40	36	4			40	2. 5								
	09301	College Physics (2-1)	4.0	64	64				64	4. 0								
	02991	Cognition Practice	2.0	2.0We ek				2.0We ek			2. 0							
	09401	Physics Experiments (2-1)	1.0	24		24						1. 0						
	09103	Linear Algebra	2.0	32	32				32			2. 0						
	06401	Engineering Mechanics	4.0	64	60	4			64			4. 0						
	09612	Organic Chemistry	2.0	32	28	4			32			2. 0						
	09301	College Physics (2-2)	3.0	48	48				48			3. 0						
	09401	Physics Experiments (2-2)	1.0	24		24							1. 0					
	02314	Applied physical chemistry	2.5	40	40				40				2. 5					
	01106	Fundamentals of Geology	2.0	32	28	4			32				2. 0					
	02220	Fluid Mechanics	3.0	48	40	8			48				3. 0					First half semester
	06311	Heat transfer	2.0	32	28	4			32				2. 0					Second half semester
	01912	Geology Practice	2.0	2.0We ek				2.0We ek						2. 0				
	01114	Geology of Oilfield Exploitation	2.5	40	32	8			40						2. 5			
	02108	Fluid Flow in Porous Medium	3.0	48	48				48						3. 0			
	02109	Petrophysics	2.5	40	40				40						2. 5			First half semester
	02148	Experiments of filtration mechanics and petrophysics	1.0	24		24									1. 0			
	02112	Rock Mechanics	2.0	32	28	4			32	 					2. 0			
	05402	Electric Electronics I	3.0	48	38	10			48						3. 0			
	01229	Well Logging and Comprehensive Interpretation	2.0	32	32				32							2. 0		
r Cour	02301	Oilfield Chemistry	2.0	32	32				32						2. 0			Second half semester

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02801	Practical Experiments of Oilfield Chemistry	1.0	24		24						1. 0				
02102	Drilling Engineering	3.5	56	50	6			56				3. 5			
02103	Production Engineering	3.5	56	50	6			56				3. 5			
02104	Reservoir Engineering	3.5	56	52		4		56				3. 5			
02993	Oilfield Practice	4.0	4.0We ek				4.0We ek					4. 0			
02004	English for Petroleum Engineering	2.0	32	32				32					2. 0		
02166	Gas Production and Safety	2.0	32	28	4			32					2. 0		
02902	Petroleum Engineering Design	5.0	5.0We ek				5.0We ek						5. 0		
02999	Graduation Design (thesis)	13.0	13.0 Week				13.0W eek							13 .0	

### Part 2: Selective course setting and guiding study plan for petroleum engineering major

Cou	ou Profess				Credi	Al	location of	f credit ho	ours				S	Semes	ters/C	Credits					
rse Typ	ional directio	Course Code	Course Name	Cre dits	t Hour	Lect	Experi	Comp	Practi	1	st yea	r	21	nd yea	r	31	d year	r	4th	year	Rem arks
e	n	coue		uns	s	ure	ment	uter lab	ce	1	2	S 1	3	4	S 2	5	6	S 3	7	8	und
		09806	Mathematical experiment	2.0	48		48						2. 0								
ct	tics	09105	Functions of Complex Variables	2.0	32	32							2. 0								
Subje	thema	09108	Probability theory and mathematical statistics	2.0	32	32							2. 0								
es for	Mat	09236	Mathematical modeling	3.0	48	48								3. 0							•
Cours		09234	Calculation Method	2.0	32	24		8						2. 0							•
ental	~	07939	Programming training	2.0	40	16		24			2. 0			2. 0							
Indam	basics	04346	Mechanical CAD Basics	2.0	32	32		(32)					2. 0								
F	Major	02013	Visual Basic Programming	2.0	32	24		8					2. 0								
	L	06312	Engineering Thermodynamics	2.0	32	32								2. 0							

	02217	Fluid Mechanics Numerical Simulations and Experiments	2.0	32	10	4	18					2. 0				•
	05941	Electrical and electronic engineering internship	2.0	2.0W eek				2.0W eek				2. 0				
	08105	Technical economics	2.0	32	32							2. 0				$\bigtriangleup$
	04353	Machine Design Basics	3.0	48	46	2						3. 0				
	04170	Oil drilling & Production machinery	2.0	32	30	2							2. 0			
	05403	Electric Electronics II	2.0	32	32								2. 0			
	20304	Petroleum instrument technology	2.0	32	32									2. 0		
	20305	Oil drilling & Production equipment industry training	3.0	3.0W eek				3.0W eek						3. 0		
	02149	Scientific and Technical Paper Searching and Writing	1.0	16	12		4							1. 0		
	02001	Subject frontier knowledge lectures	1.0	16	16										1. 0	•
	02303	Principles of Enhanced Oil Recovery	2.0	32	32								2. 0			•
nistry	02304	Oil-gas Reservoir Protection Technology	2.0	32	32									2. 0		$\bigtriangleup$
l Cher	02305	Principles of Drilling Fluid Techniques	2.0	32	28	4								2. 0		
ilfield	02311	Oilfield Wastewater Treatment	2.0	32	32									2. 0		
A: 0	02003	Environment Protection in Oil & Gas Fields	2.0	32	32						 				2. 0	$\triangle$
	02315	Oilfield Chemicals	2.0	32	32										2. 0	
50	02127	Drilling Geology Environment Description	2.0	32	32								2. 0			
leerin	02116	Modern Drilling Technology	2.0	32	32									2. 0		$\bigtriangleup$
Engir	02137	Well completion engineering	2.0	32	32									2. 0		•
illing	02143	Theory and technology of well cementing	2.0	32	32									2. 0		$\bigtriangleup$
3: Dr	02113	Fluid Jet Technology-Fundamentals and Applications	2.0	32	32										2. 0	
Γ	02123	Theory and Technology of Directional Drilling	2.0	32	32										2. 0	
action reerin	02111	Multiphase Flow Theory and Calculation	2.0	32	32							2. 0				•
Produ Engir	02167	Oilfield informatization and big data application	2.0	32	32						 		2. 0			$\bigtriangleup$

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Major Courses

C: Production

	02144	Foam Theory and Oil Production Technology	2.0	32	32													2. 0		
	02120	The Sucker Rod Pumping System	2.0	32	32													2. 0		
	02134	Theory and Technology of Sand Control of Oil/gas well	2.0	32	28	4												2. 0		$\triangle$
	02126	Well Stimulation Technology	2.0	32	32														2. 0	•
	02125	Displacement Mechanism in Petroleum Reservoir	2.0	32	32											2. 0				•
aring	02105	Gas reservoir engineering	2.0	32	32													2. 0		•
Iginee	02124	Steam assisted thermal production	2.0	32	26		6											2. 0		
/oir Er	02115	Principles of Modern Well Testing Interpretation	2.0	32	28		4											2. 0		
Reserv	02155	Reservoir numerical simulation methods and applications	2.0	32	28		4											2. 0		
D: I	02139	Development theories and methods of typical oil and gas fields	2.0	32	32														2. 0	$\bigtriangleup$
	02138	Reservoir Management	2.0	32	32														2. 0	$\bigtriangleup$
	02208	Oceanography	2.0	32	32										2. 0					
	08106	Project management	2.0	32	32										2. 0					$\bigtriangleup$
	10002	Technological innovation and management	2.0	32	32											2. 0				
urses	02203	Offshore Platform Engineering	2.0	32	32											2. 0				
ary co	02205	Marine law and marine environmental protection	2.0	32	32											2. 0				
sciplin	01210	Introduction to Geophysical Exploration	2.0	32	32													2. 0		
terdis	02210	Offshore Petroleum Engineering	2.0	32	32													2. 0		
E: In	02168	Unconventional Oil and Gas Exploitation	2.0	32	32														2. 0	
	01128	Reservoir description	2.0	32	32														2. 0	
	01227	Production logging	2.0	32	32								+						2. 0	
	02006	Petroleum Engineering HSE	2.0	32	32														2. 0	$\bigtriangleup$
	Recon	mended credits	Compulsory						23 .5	19 .5	2. 0	19 .0	21 .5	2. 0	17 .0	12 .5	4. 0	9. 0	13 .0	143
	10000				Sel	lective					-	2.	2.		6.	8.		11	8.	37

				0	0		0	0		.0	0	
Total	23 .5	19 .5	2. 0	21 .0	23 .5	2. 0	23 .0	20 .5	4. 0	20 .0	21 .0	180

Elective instructions:

1. Elective credit requirements:

(1) The elective course requires 37 credits.

(2) Require at least 27 credits from the elective course of the petroleum engineering major, including at least 16 elective credits from the subject-based course, including at least 8 credits for the mathematics foundation class and at least 8 credits for the major foundation class; At least 11 elective credits are earned in Groups A, B, C, and D. It is recommended to take a bilingual course and two research courses. Students are required to select a group from the four groups A, B, C, and D as the main training group, and obtain at least 6 credits from the group.
(3) Require at least 10 general education elective credits, of which at least 6 credits are obtained from the core courses of humanities and arts literacy, management wisdom and international vision, physical and mental health and career development, and 6 credits cannot all belong to the same module.

2. Elective guidance:

(1) The course with the 
number in the remarks is a professional core elective course, which is recommended for electives; the employment students are recommended to take the course

with  $\triangle$  in the remarks, and the potential postgraduate students are recommended to take the course with  $\blacktriangle$ .

(2) It is recommended that students who intend to study in oilfield chemistry and enhanced oil recovery mainly take the elective course of "Group A"; students who intend to study in oil and gas drilling engineering mainly take elective courses in the direction of "Group B"; The students who intend to study in production projects mainly take elective courses in the direction of "C group"; the students who intend to study in the reservoir engineering mainly take elective courses in the direction of "D group".