

## PET 113E INTRODUCTION TO PETROLEUM AND NATURAL GAS ENGINEERING

<b>Course Title</b>		Introduction to Petroleum and Natural Gas Engineering				
		<b>Course Implementation, Hours/Week</b>				
<b>Code</b>	<b>Semester</b>	<b>Local Credits</b>	<b>ECTS Credits</b>	<b>Theoretical</b>	<b>Tutorial</b>	<b>Laboratory</b>
PET 113E	1	1	3	1	0	0
<b>Department</b>		Petroleum and Natural Gas Engineering				
<b>Course Type</b>		Compulsory		<b>Course Language</b>		English
<b>Course Prerequisites</b>						
<b>Course Category By Content, %</b>		Math & Basic Sciences	Engineering Topics; Check if Contains Significant Design (√)			Other
		-	100			-

<b>Course Description</b>	Introduction to petroleum and natural gas engineering, history and industry. Energy, oil and natural gas in Turkey and in the world and energy statistics. Petroleum geology and exploration. Origin, composition and fluid properties of petroleum and natural gas. Types of oil and natural gas reservoirs. Well drilling. Surface production equipment. Enhanced recovery methods. Storage and transportation of oil and natural gas. Health, safety, and environmental issues.				
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. To provide students with basic knowledge of the energy sources and petroleum and natural gas engineering,</li> <li>2. To explain the fields and topics that a petroleum and natural gas engineer is concerned with</li> <li>3. To increase the awareness of students related to sustainability, ethics, professionalism, health and safety</li> <li>4. To introduce students chemical, physical, and thermodynamic properties of oil and natural gas,</li> </ol>				
<b>Course Learning Outcomes</b>	Students who pass the course will be able to: <ol style="list-style-type: none"> <li>1. List and classify different sources of energy</li> <li>2. Explain roles, duties and responsibilities of subdisciplines of petroleum engineering (reservoir, drilling and production)</li> <li>3. Explain how oil, gas, and geothermal industries operate</li> <li>4. Tell when a breach of ethics or professionalism occurs</li> <li>5. Relate industry components with any of the three pillars of sustainability (society, environment and economy)</li> <li>6. Describe basic components of exploration, drilling and production operations</li> <li>7. Define basic processes that control the origin and accumulation of oil and gas</li> <li>8. Define reservoir types and fundamental properties of reservoir rock and fluids</li> </ol>				
<b>Textbook</b>	1. Fanchi, J.R., Christiansen, L.R. (2017) <i>Introduction to Petroleum Engineering</i> , Wiley & Sons.				
<b>Other References</b>	1. Lake, L. (ed.) (2017) <i>Petroleum Engineering Handbook Vol. I-VII</i> , Society of Petroleum Engineers				
<b>Homework &amp; Projects</b>	-				
<b>Laboratory work</b>	-				
<b>Computer Use</b>	-				
<b>Other Activities</b>	-				
<b>Assessment Criteria</b>	<b>Activities</b>	<b>Quantity</b>		<b>Effects on Grading, %</b>	
	Midterms	1		30	
	Quizzes	-		-	
	Homework	5		30	
	Projects	-		-	
	Term Paper/Projects	-		-	
	Laboratory Work	-		-	
	Other Activities	-		-	
	Final Exam	1		40	

<b>Weeks</b>	<b>Course Plan</b>	<b>Course Outcomes</b>
1	Introduction	1
2	Overview of petroleum and natural gas engineering	1
3	Overview of energy statistics: Turkey and the World	2
4	Introduction to energy resources	1
5	Oil, natural gas and geothermal industries	3
6	Ethics, professionalism and sustainability	4, 5
7	Origin, accumulation of and exploration for oil and gas	7
8	Types of reservoirs	8
9	Reservoir rock and fluid properties	8
10	The well	6
11	Well treatment and testing	6
12	Introduction to reservoir and production engineering	6
13	Fluid injection	6
14	Separation and treatment of oil and gas	6

<b>Related Performance Indicators</b>
<p><b>4a.</b> Demonstrate the recognition of the influence of ethical issues in petroleum, natural gas, and geothermal engineering practice on public good</p> <p><b>4b.</b> Recognize the economic, environmental, or global effect of petroleum, natural gas, and geothermal engineering practices.</p>

<b>Relationship of Course Learning Outcomes to the Performance Indicators</b>		
<b>Course Learning Outcome</b>	<b>Performance Indicator</b>	
	<b>(4a)</b>	<b>(4b)</b>
1		
2		
3		
4	x	
5		x
6		
7		
8		