

Identification	Subject	PETE 461 - Petroleum Economics – 3 credits	
	Department	Petroleum Engineering	
	Program	Undergraduate	
	Term	Spring 2024	
	Instructor	Araz Asadov	
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	Classroom/hours		
	Office hours		
Prerequisites			
Language	English		
Compulsory/Elective	Required		
Required textbooks and course materials	1. Fraser H.Allen and Richard D.Seba, Economics of Worldwide Petroleum Production, 1993. Third Edition, 2008. 2. Rognvaldur Hannesson, Petroleum Economics: issues and strategies of oil and natural gas production, 1999		
Course website			
Course outline	This course is designed to provide students with necessary economic knowledge. It will cover general aspects the upstream and the downstream segments. All key topics including Pricing, Market, International Oil Trading, Cash Flow techniques, Time value of money, Risk and Uncertainty, Economic Analysis and others will be considered, some of them with practical details.		
Course objectives	General Objectives of the course: - to meet curriculum requirements of the School of Science and Engineering. Specific Objectives of the course: - to give broad understanding of petroleum economics and prepare students to make economic analysis and evaluations - to encourage students participation and interaction and fostering atmosphere of tolerance and respect - to develop economic sensitivity of engineers		
Learning outcomes	<i>By the end of course the students will:</i> - get an understanding of the petroleum economics in all its aspects: reserves, investments, players, costs, benchmarking and etc. - be able make simplified forecast of oil production - get an understanding of Oil and Gas Market as well as International Trading - using cash flow techniques in economic analysis and evaluations - be able to build a simplified economic model of upstream project - get an understanding of different kind of international agreements and especially Production Sharing Agreements.		
Teaching methods	Lecture		x
	Group discussion		x
	Experiential exercise		
	Case analysis		x
	Simulation		x
	Course paper		
	Others		x
Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Case studies		
	Class Participation		5
	Assignment and quiz		
	Project		15
	Presentation/Group Discussion		10
	Final Exam		40
	Others		
Total		100	

<p>Policy</p>	<ul style="list-style-type: none"> <p>▪ Presentation Topics of presentations are distributed to students at the beginning of the course and must be submitted in .pptx format with a dead line of two to three weeks. Classroom presentations will be reviewed over the course of several weeks.</p> <p>▪ Project Each student after the midterm exam, as soon as the relevant class topics have been passed, must develop an economic model of a hypothetical field based on the case data. As soon as the model will be submitted a face to face discussion should be with each student.</p> <p>▪ Preparation for class The structure of this course makes your individual study and preparation outside the class extremely important. The lecture material will focus on the major points introduced in the text and, as rule, essential points of lecture will be distributed in advance. Reading the supplementary materials from internet sources and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes and lecture presentations to be ready for class discussions and review sessions.</p> <p>▪ Withdrawal (pass/fail) This course strictly follows grading policy of the School of Engineering and Applied Sciences. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year.</p> <p>▪ Cheating/plagiarism Cheating or other plagiarism during the Quizzes, Mid-term and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0), without any considerations.</p> <p>▪ Professional behavior guidelines The students shall behave in the way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited.</p> <p>▪ Ethics Students must NOT be late to class. All mobile phones must be turned off and put away during the class.</p> <p>▪ Illness Student with an illness may miss a quiz or presentation. This might be because the student need to go to the hospital, recover at home, or attend regular medical appointments. In this case, the student must inform the instructor in advance about the illness and must present a document from their doctor. After considering the situation, the instructor may set a new date for the quiz or project presentation. Only one opportunity will be given to the student. The students who does not inform the instructor in advance will not be given a chance to retake the quiz or give a presentation.</p>
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Tentative Schedule			
Week	Date/Day (tentative)	Topics	Textbook/Assignments
1		Petroleum Industry, the main aspects. Midstream and Downstream segments. The modern tendencies and the current condition of the industry	[2] p.15-35 BP Statistical Review of World Energy, June 2023. International Energy Outlook With Projection to 2050, US Energy Information Administration.
2		Reserves and production forecast. Reserves classification. Approaches in production forecast. Decline curve, decline rate. Frequently used exponential decline curve.	[1] p.5-50, [2] p. 61-68
3		World Petroleum Market. Crude oil supply and demand. Main Players	[1] p.71-80, p.444-452 BP Statistical Review of World Energy, June 2023 OPEC Monthly Oil Market Report
4		Crude oil characteristics and pricing. Classification and Comparison. Gas price. Oil price	[1] p.51-70, p.107-114 BP Statistical Review of World Energy, June 2023
5		International oil trading. Benchmarks. Platts quotations. Wet and paper barrel, hedging.	[1] p.81-107
6		Cash flow Capital and operating expenditures. Constructing a project Cash Flow	[1] p.121-143
7		Economic Decision Tools Economic indicators and yardsticks. The time value of money. Discounted Cash Flow.	[1] p.145-182
8		Midterm Exam	
9		Risk and Uncertainties Probability and frequency distribution. Sensitivity and risk analyses. Decision tree analysis. Monte Carlo simulation.	[1] p.191-258
10		Financing and Ownerships Source of financing. Cost of capital	[1] p.267-306
11		Petroleum Industry Accounting. Costs and taxes. Depreciation, Depletion and Amortization. Oil Company's annual report.	[1] p.317-387 [2] p.109-122
12		Budgeting, planning, scheduling. Authorization for expenditure (AFE)	[1] p.389-410
13		Economic Analysis. Rate acceleration projects. Equipment replacement. Leasing	[1] p.411-442
14		International Agreements Production Sharing Agreement	[1] p.452-484
15		Production Sharing Agreements in Azerbaijan Typical Economic model of PSA	
		Final Exam	

This syllabus is a guide for the course and any modifications to it will be announced in advance.