

Identification	Subject	Introduction to Petroleum Engineering - PETE 201 - 6 ECTS
	Department	Petroleum Engineering
	Program	Undergraduate
	Term	Fall, 2026
	Instructor	Leyla Alimuradova
	E-mail:	leyla.alimuradova@gmail.com leyla.alimuradova@khazar.org
	Phone:	
	Classroom/hours	41 Mehseti str.(Neftchilar campus), <i>Friday</i>
	Office hours	Saturday, 11:00 - 17:00
Prerequisites		
Language		English
Compulsory/Elective		Elective
Required textbooks and course materials		1. <i>Advanced Reservoir Engineering</i>. Tarek Ahmed and Paul D. McKinney, Gulf Professional Publishing is an imprint of Elsevier 2005 2. <i>Nnaemeka Ezekwe, 2011, "Petroleum reservoir engineering practice", Prentice Hall</i> 3. <i>Ahmed, T. 2025 "Reservoir Engineering Handbook" Gulf Professional Publishing.</i> 4. <i>Craft, B. C., Hawkins, M. F., and Terry, R. E. – Applied Petroleum Reservoir Engineering.</i> 5. <i>Frank Jahn, Mark Cook, Mark Graham "Hydrocarbon Exploration and Production" 2nd Edition, 2008</i>
Course description		This course provides a comprehensive introduction to the petroleum industry and the fundamental principles of petroleum engineering. It introduces students to the origin and occurrence of hydrocarbons, petroleum exploration, drilling, reservoir engineering, production operations, transportation, processing, economics, and environmental and safety considerations. The course provides an overview of the petroleum industry value chain and the role of petroleum engineers in the exploration and development of oil and gas resources.
Course objectives		Upon completion of this course, students will be able to: ▪ Understand the structure and key sectors of the petroleum industry. ▪ Explain the origin, occurrence, and accumulation of hydrocarbons. ▪ Describe the basic stages of oil and gas exploration and development. ▪ Understand fundamental drilling operations and well construction processes. ▪ Explain the basic principles of reservoir engineering and hydrocarbon production. ▪ Identify major methods used for oil and gas transportation and processing. ▪ Recognize the importance of health, safety, environmental, and sustainability considerations in petroleum operations. ▪ Understand the role and responsibilities of petroleum engineers across the oil and gas value chain.
Learning outcomes		By the end of the course the students should be able: ▪ Describe the main components of the upstream, midstream, and downstream petroleum industry. ▪ Explain the geological processes involved in the formation and accumulation of petroleum. ▪ Identify the main stages of hydrocarbon exploration and field development. ▪ Describe the basic principles and equipment used in drilling operations. ▪ Explain fundamental concepts related to reservoirs, rock properties, and fluid properties. ▪ Describe basic oil and gas production methods and surface facilities. ▪ Understand the principles of hydrocarbon transportation, refining, and processing. ▪ Discuss the economic, environmental, and safety challenges associated with petroleum operations.

	▪ Demonstrate a general understanding of career opportunities and professional roles within the petroleum industry.		
Teaching methods	Lecture		x
	Group discussion		x
	Practical exercises		x
	Simulation		
	Case analysis		x
	Course paper		
	Others		
Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Class Participation		5
	Assignments		10
	Quizzes		5
	Projects		10
	Final Exam		40
	Total		100
Class Policy	▪ Quiz Each quiz will consist of 5 questions, and each question will be marked with 1 point. One quiz will be organized in the middle of the first semester and the midterm exam. The second quiz will be organized between the midterm exam and the final exam. ▪ Mini project The mini project must consist of an abstract, introduction, objectives, methodology, results, discussion, conclusion, and references. The report must be no longer than 7-10 pages of A4 in portrait orientation, with a title and text size set to Arial 12. The mini project must be presented. The mini-project report and presentation marks will be summarized and divided by 2 to obtain an average mark. ▪ Activity The students should participate in seminars, conferences, and other events related to their courses to build new connections between academic and non-academic institutions. By 10 May 2027, a one-page report on the students' activities will be required. ▪ Cheating/plagiarism Any form of plagiarism or cheating on a proposal, work plan, bibliography, presentation of literature review, final report will result in the cancellation of the work. In this case, the student will receive a mark of nought without any further consideration. ▪ After identification cheating or plagiarism, any chance will NOT be given for correction and rewrite report. ▪ Professional Behavior Guidelines During class hours, students are expected to conduct themselves in a manner that fosters a positive academic and professional atmosphere. Unauthorized discussions and unethical conduct are strictly forbidden. ▪ Ethics Students must NOT be late to class. All mobile phones must be turned off and put away during the class. ▪ Email Use your Khazar University email account ONLY when contacting your professor. ▪ Student should include "Environmental Science Project" in the subject of any emails that he/she sends, at least for the first few emails. ▪ Generally, all emails will be responded to within 72 hours during weekdays (not including holidays).		

		▪ Illness Students with an illness may miss a quiz or presentation. This might be because the student needs 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 do not inform the instructor in advance will not be given a chance to retake the quiz or give a presentation.	
Tentative Schedule			
Week	Date/Day (tentative)	Topics	Textbook/ Assignments
1		Introduction to Reservoir Engineering: role of reservoir engineering in field development, data integration, and decision making.	Ch.1. p.1-19 [3]
2		Origin and Occurrence of Petroleum. Origin of hydrocarbons. Organic matter and source rocks. Petroleum systems	
3		Petroleum Geology and Exploration	Ch.1-3. p.1-50 [5]
4		Reservoir Rock Properties and PVT: porosity, permeability, saturation.	Ch.1.1. p.2-4 [1] Ch.3.p.87-202 [4]
5		Reservoir Rock Properties: heterogeneity, anisotropy, and their impact on flow behavior.	Ch.4.p.203-250 [4]
6		Rock–Fluid Interaction; wettability, capillary pressure, relative permeability. Quiz 1.	Ch.10.p.671-740 [4]
7		Petroleum Reservoir Engineering. Reservoir Drive Mechanisms.	Ch.4.1. p.292-299 [1]
	TBA	Mid-term Exam	
8		Fluid Flow in porous medium: flow in fractured media, piston-like displacement	Ch.1.2. p.5-44 [1] Ch.8.p.227-266 [2]
9		Petroleum Production Engineering. Well productivity. Reservoir Performance Forecasting.	Ch.5. p.327-361 [1]
10		Enhanced Oil Recovery. Primary recovery	Ch.11.p.405-433 [2]
11		Enhanced Oil Recovery. Secondary recovery	Ch.11.p.405-433 [2]
12		Reservoir Management and Optimization: field development planning, surveillance, optimization strategies.	Ch.6. p.365-371 [1] Ch.16. p.385- 410[5]
13		Reserves Definitions and Classifications: hydrocarbon reserves evaluation. Quiz 2.	Ch.6. p.372-396 [1]
14		Health, Safety, Environment, and Sustainability	Ch.1. p.1-19 [2]
15		Petroleum Economics and Future of the Industry	Lecture Notes
	TBA	Final Exam	

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