

Identification	Subject	PETE318, Well Completion, 6 ECTS
	Department	Petroleum Engineering
	Program	Undergraduate
	Term	Spring 2026
	Instructor	Kanan Mammadov
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Prerequisites		
Language	English	
Compulsory/Elective	Compulsory	
Required textbooks and course materials	<p>Textbook:</p> <ul style="list-style-type: none"> - <i>Well Completion Design: Jonathan Bellarby, 2009</i> - <i>Well Engineering and Construction: Hussain Rabia, Entrac Consulting, 2002</i> - <i>Advanced Well Completion Engineering, Wan Renpu, 2008 (2011 English Translation)</i> 	
Course outline	<p>This course provides an in-depth exploration of well completion engineering, focusing on the design, implementation, and optimization of completion strategies to enhance well performance and productivity. Students will gain a comprehensive understanding of completion systems, including types of completions, key components, and operational considerations. The course covers critical topics such as formation damage, sand control, perforation design, artificial lift selection, and tubing stress analysis. Additionally, students will analyze well stimulation techniques and life-of-well operations to develop a holistic approach to well completion engineering. Through theoretical instruction, case studies, and project-based learning, students will acquire the technical expertise required to design and evaluate completion strategies for various reservoir conditions.</p>	
Course objectives	<p>The objective of this course is to equip students with a comprehensive understanding of well completion engineering principles and practices. The course aims to develop the theoretical foundation and practical insight required to design, evaluate, and optimize completion systems for safe, efficient, and sustainable hydrocarbon production. It seeks to integrate reservoir, mechanical, and operational considerations into a coherent completion design philosophy aligned with industry standards and field applications.</p>	
Learning outcomes	<p>This course aims to equip students with the knowledge and skills necessary to design, analyze, and optimize well completion systems for efficient hydrocarbon production. Students will develop a strong foundation in completion engineering principles, enabling them to:</p> <ul style="list-style-type: none"> • Understand the role of well completion in maximizing reservoir performance and production efficiency. • Explore various completion types, components, and selection criteria based on reservoir conditions. • Evaluate formation damage mechanisms and implement effective prevention and remediation strategies. 	

	<ul style="list-style-type: none"> • Design sand control, perforation, and stimulation techniques to enhance well productivity. • Assess artificial lift methods and tubing stress considerations for long-term well integrity. • Apply industry best practices in life-of-well operations, maintenance, and intervention planning. 		
Teaching methods	Lecture		x
	Group assignment		x
	Simulation		x
	Case analysis		x
Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Quizzes		15
	Project		15
	Final Exam		40
	Others		
	Total		100
Policy	<ul style="list-style-type: none"> • Quizzes will be provided during the classes, and they are to be based on the topic covered during the classes. Random quizzes during semester are for the instructor to decide the eligibility of student for the semester project. • Group based practical project is going to be given in order to illustrate the practical significance of the theory taught in the classes. The project represents a collective endeavor undertaken by students within the realm of scientific inquiry. The incorporation of this project into the curriculum serves the dual purpose of showcasing the subject's research endeavors to potential students and illuminating the ongoing scholarly activities within the field. • Midterm will be carried out in the week announced by the university. Time allocated will be announced close to the midterm. Its primary objective is to provide students with a clearer assessment of their progress within the course, enabling them to gauge their performance and understanding up to that point. • Final exam date and time will be defined by the University. A final examination is an evaluative assessment presented to students at the conclusion of an academic term or course of study. This assessment typically consists of a predefined set of questions or exercises designed to gauge students' proficiency and comprehension of the subject matter. • NO CELL PHONES are allowed during lecture. PLEASE turn them off before lecture! (Not silent or vibrating mode). This is a university policy and accepted by the department of PE, and violators will be reprimanded accordingly. • Participation and interaction in classes are more important than 		

just attendance.

- No late tasks/homework will be accepted. Homework is to be completed on an individual basis. Students may discuss homework with classmates, but students are responsible for their own work. If students have consulted classmates, please note the individuals name on the top of students' assignment.
- No late assignments will be accepted without prior arrangement with the instructor for acceptable excuses. Medical and family emergency will be considered on case-by-case basis. Note that inability to participate in quiz or presentations will not be accepted, and YOU WILL NOT HAVE A SECOND CHANCE TO PRESENT YOUR RESULTS OR PARTICIPATE IN QUIZZES. IN CASE OF ABSENCE, YOU WILL HAVE TO PRESENT "ARAYIŞ" TO THE INSTRUCTOR.
- Quizzes may be given unannounced throughout the term.
- There will be no make-up quizzes.
- No make-up exams. If students miss an exam, a zero score will be assigned to the missed exam.
- If students should miss class due to personal emergency or medical reasons, please notify the instructor by email immediately. A doctor's note will be required for make-up work.
- Students are responsible for completing the reading assigned from the textbook related to the covered topics and for checking email regularly for important information and announcements related to the course.
- 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 0 without any further consideration. After identification cheating or plagiarism, NO CHANCE will be given for correction and rewrite report.
- University policy on academic honesty concerning exams and individual work will be strictly enforced.

Tentative Schedule

Week	Date/Day (tentative)	Topics	Textbook/Assignments
1		Field Development Concepts and Introduction to Completions	Completion Design, Ch1
2		Overview of Well Performance	Completion Design, Ch2
3		Types of Completion	Advanced Well Completion Engineering, Ch2
4		Completion Components	Completion Design, Ch1,2

5		Completion Fluids and Production Chemistry	Completion Design Ch,7
6		Formation Damage	Advanced Well Completion Engineering, Ch7
7		Sand Control	Completion Design Ch.3
8		Mid-term Exam	
9		Introduction to Well Stimulation	Completion Design Ch.3
10		Perforating Design	Completion Design, Ch2
11		Selection and Design of Artificial Lift	Completion Design, Ch6
12		Tubing Stress Analysis	Completion Design, Ch9
13		Life of Well Operations	Completion Design, Ch4
14		Project Presentations	
15		Overall Revision, Mock Exam	
	TBC	Final Exam	

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