

Identification	Subject	PETE 532 Mineralogy 8 ECTS credits	
	Department	Petroleum Engineering	
	Program	Graduate	
	Term	Fall, 2023	
	Instructor	Dr. rer. nat. Elshan Abdullayev	
	E-mail:	elshan.abdullayev@khazar.org	
	Phone:	+994 12 421 10 93 (ext. 243)	
	Classroom/hours	Wednesday/6:40 p.m.-9:00 p.m.	
	Office hours	Wednesday/5:00-6:00 p.m.	
Language	English		
Compulsory/Elective	Elective		
Required textbooks and course materials	<ul style="list-style-type: none"> • S.K. Haldar. Introduction to Mineralogy and petrology, Second edition, Elsevier 2020 • Roser, B.P. and Korsch, R.J. (1988) Provenance signatures of sandstone-mudstone suites determined using discriminant function analysis of major-element data. Chem. Geol.,67,119–139 • Galán, E., Ferrell, R.E., 2013. Genesis of Clay Minerals, in: Developments in Clay Science. Elsevier B.V., pp. 83–126. • Duane and Reynolds Jr., X-Ray Diffraction and the Identification and Analysis of Clay Minerals 2nd Edition, 1997 		
Course outline	The course is designed for master's degree students and covers the study of minerals, including their formation, properties, identification, and geological significance. In addition, students in the course will learn about the role of clay minerals in the formation of oil in the basin.		
Course objectives	The objective of the course is to teach students distribution of minerals and their formation in different geological environment. In addition, to show students to identify the minerals by using different tools like XRD and SEM-EDS.		
Learning outcomes	<p>On completion of the course, the student should be able to:</p> <ul style="list-style-type: none"> • Understand the formation of minerals at different geological condition. • Reconstruct province based on mineralogical composition of sediments. • Identify paleo-weathering condition in the continent. • Reconstruct paleo-redox condition in the basin. • Understand the role of minerals surfaces in preservation organic matter in the sediments. • Identify diagenetic alteration in the sediments 		
Teaching methods	Lecture		x
	Group discussion		x
	Practical exercises		x
	Case analysis		x
Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Class Participation		5
	Assignments	15 December 2023	10
	Project	7 December 2023	15
	Final Exam		40
	Total		100
Policy	<ul style="list-style-type: none"> • Quizzes will be provided during the Mineralogy course. • Project will be given to students that must be present at the end of the semester. • Class participation and activity during the class will be evaluated based on the question will be given by professor. • Midterm will be carried out in the week announced by the university. Time allocated will be announced close to the midterm. 		

		<ul style="list-style-type: none"> Two assignments will be given to students: identify provinces based oxide composition of sediments and paleoclimate condition based on minerlas. Projects will be conducted close to the end of semester on 7 December 2023. The project presentation date, time and structure will be announced during the semester. The project will be oral or poster presentation. It will be announced after submitting reports that should be 5 pages. Final exam date and time will be defined by the University. 	
		<ul style="list-style-type: none"> 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. Reading the assigned chapters and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes, assign chapters and get ready for class assignments. Throughout the semester students will also have practical exercises and quizzes. Withdrawal (pass/fail) This course strictly follows grading policy of Graduate School of Science, Art and Technology. Thus, a student is normally expected to achieve a mark of at least 65% to pass. In case of failure, he/she will be required to repeat the course the following term or year. 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. 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. Expected behavior. Includes attending all class activities; meeting deadlines; observing common courtesies to fellow students, teachers, and staff; being honest; making a diligent effort to learn; and does not engage in any disruptive irresponsible manner. Legitimate collaboration is encouraged but academic collusion or dishonesty will not be tolerated. ▪ Class attendance Attendance is required! Please be in class on time. Attendance will be taken at the beginning of each class period. In case you are not present when attendance sheet is passed on, you will be marked absent. If students who are late for lessons for more than 10 minutes to class will be marked absent, despite this, the student can still attend the class. You shall receive 5 bonus points at the end of the semester if you attend all classes and follow all course policies and procedures. Class discussion Feel free to voice your opinions and ask questions anytime during a class period. Practice your right and freedom to learn. Remember you are here to learn, and we are here to teach and that teaching and learning are forever intertwined. You can help me teach you as much as I can help you learn. Be an active participant in the learning process! 	
Week	Date/Day (tentative)	Topics	Textbook/Assignments

1	20.09.23	Introduction of mineralogy and its significance in petroleum engineering	
2	27.09.23	Basic mineralogy	Haldar, 2020
3	4.10.23	The main rock forming minerals	Haldar, 2020
4	11.10.23	Mineralogy of sediments: formation and their significance	Presentation
5	18.10.23	Major oxides assemblages of the sediments and their application for provenance identification	Roser & Korsch, 1988
6	25.10.23	Clay minerals	Galán & Ferrell, 2013
7	01.11.23	Clay minerals	Galán & Ferrell, 2013
8	08.11.23	Clay minerals	Galán & Ferrell, 2013
9	15.11.23	Midterm exams	
10	22.11.23	Methodology of investigation of minerals	Duane & Reynolds Jr., 1997
11	29.11.23	Methodology of investigation of minerals	Duane & Reynolds Jr., 1997
12	6.12.23	Methodology of investigation of minerals	Duane & Reynolds Jr., 1997
13	13.12.23	Diagenetic alteration of minerals in the sedimentary basin	Galán & Ferrell, 2013
14	20.12.23	Diagenetic alteration of minerals in the sedimentary basin	Galán & Ferrell, 2013
15	27.12.23	The role of minerals in formation oil and gas	Presentation
16		Final Exam	

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