Petroleum and Gas Engineering (ONLINE)

ECTS Credits	4,0
Teaching hours	50
Workplace learning hours	50
Total hours of student learning	144

Pre-requisites	The course is opened for Russian and foreign Bachelor, Master and PhD students with specialized background in Petroleum and Gas Engineering or equivalent skills and knowledge.
Alignment to graduate profiles	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor in Petroleum and Gas Engineering (Mining / Mechanical) • Graduate Diploma in Petroleum and Gas Engineering (Mining / Mechanical) • Diploma in Petroleum and Gas Engineering (Mining / Mechanical)
Core transferable skills	This course contributes towards the development of the following core transferable skills categories: Self/Others - Learning to Learn, Specialist skills, Literacy, Numeracy, Digital Literacy. The course provides a comprehensive overview of the oil and gas industry from upstream exploration and production to downstream refining, pumping, sales and marketing. Participants will learn all the subtleties of the processes and technologies of viscous oil extraction, oil preparation and gas recovery under the supervision of leading Russian and International professors and experts. They will gain an appreciation of industry dynamics and the key issues affecting its development and future. This course will provide a thorough foundation for understanding the changing of "Oil & Gas" industry dynamics. Participants will enjoy a hands-on experience through a variety of individual and team exercises and projects, with the opportunity to exchange views and skills with a diverse group of industry peers.
Course aim	A distinctive feature of the program lies in the combination of two industries - oil and gas business and power engineering, so that the student first considers the main areas of oil and gas development, as well as their relationship with each other, studies in depth the issues of modelling geological processes and modern methods of exploration for oil and gas, and then goes on to the design of power equipment. Thanks to the program, students will be able to gain teamwork skills, learn to make optimal decisions in a short time, discover new areas of technical progress, and work on what is of greatest interest to them in terms of professional growth. The purpose of the program is to study the main directions and technological operations in exploration, drilling, production, primary processing, transportation and processing of oil and gas, as well as to get the basics of the development and operation of power equipment for gas transmission systems.
Indicative content	Content may include but is not limited to: • Petroleum characteristic and origin • Organic matter and source rocks • Maturation and kerogen • Migration of Hydrocarbons • Hydrocarbons traps • Reservoirs • Unconventional Hydrocarbons • Introduction to machine learning. Application in oil and gas industry • Guest Speakers Day • Application of machine learning techniques to geophysical well' log data • Problems of petrophysics engineering regarding fluid filtration and poroelasticity solved with modern computer algebra systems • Introduction to Thermodynamics • Drilling fluids and drilling hydraulics • Casing design • Cementing and cement job design • Management & Safety

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	identify promising areas of research in the field of power engineering (in relation to the oil and gas direction)
2	state the basics of modelling the filtration of liquids in porous media, material balance in relation to oil and gas production
3	analyze gas pumping technologies
4	work with scientific and educational literature in the specialty

ASSESSMENTS

Basis of assessment	Achievement based assessment		
Methods of assessment	**Learning Outcomes**	**Pass criteria (Minimum)**	**% Weightings**
Summative review	1, 4	40%	40%
Portfolio – summative of practices	2, 3, 5	40%	60%

REQUIREMENTS FOR SUCCESSFUL COURSE COMPLETION

Requirements	• Mark of 40% or more in every summative assessment • Gain a course result of C (50%) or higher

RESULTS

Assessment results	• Results for assessments are given in percentage marks
Course results	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-NMIT-06

LEARNING AND TEACHING

Learning and teaching approaches	Lectures, group discussions, tutorials, learner managed activities, laboratories, presentations, research, projects and case studies.
Learning and teaching resources	Textbooks, journals and Library Learning Centre resources; use of Internet; computer laboratory and specialist software.
Learner managed activities	• Completion of course work, set assignments/projects • Reading of course materials • Study group work • Preparation for classes • Homework • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Review application of information to course work • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject