

OILFIELD CHEMISTRY.

Development paths and application of oilfield chemistry for production, processing, transportation of oil and enhanced oil recovery

The Program “Enhanced oil recovery methods. Production and treatment. Theory and practice”

№	Name of study units and subjects of the Program “Enhanced oil recovery methods. Production and treatment. Theory and practice”	Total hours	Including		
			lectures	Practical sessions	Lab practicum
1.	World oil-and-gas resources.	4	4		
1.1	Importance of hydrocarbon resources. Fuel and energy balance of Russia and the World.	2	2		
1.2	Conventional and unconventional hydrocarbon resources. Offshore oil and gas resources.	2	2		
2.	Oil field treatment	32	28		4
2.1	Mechanisms of oil-water emulsions building. Formation of interlayer oil-water emulsions. Effect of chemical reagents used for oil production stimulation on the formation and stability of oil-water emulsions.	2	2		
2.2	Mechanisms of oil-water emulsion destruction and demulsifying reagents.	4	4		
2.3	Theoretical framework for application of surfactants in oilfield experience	2	2		
2.4	Oil production problems: paraffin deposits. Methods to remove and prevent.	2	2		
2.5	Oil production problems: scale buildup. Methods to remove and prevent.	2	2		
2.6	Types of oilfield equipment corrosion and means of its minimizing.	2	2		
2.7	Oil field bacterial flora. Negative consequences of the sulfur reducing bacterial activity and methods to control them.	2	2		
2.8	Oil and gas hydrogen sulfide stripping. Hydrogen sulfide and oxygen scavengers.	2	2		
2.9	Stimulation technique for operating procedure of oil and gas treatment.	2	2		
2.10	Methods for determining the effectiveness of reagents, used in oil production and oil treatment.	2			2

2.11	Laboratory Practicum “Selection of the effective reagent for oil production and treatment” on the basis of research laboratories of JSC "NIIneftpromchim" and Federal State Budgetary Educational Institution of Higher Education Kazan State Technical University.	4			4
2.12	Metrological assurance for crude oil and oil products quantity and quality control systems.	4	4		
2.13	Basic principles for creating 3D models of oil treatment plants.	2	2		
3	Modern methods of oil and gas production stimulation and enhanced oil recovery.	20	16		4
3.1	Classification of enhanced oil recovery methods	2	2		
	Operating procedures for enhanced oil recovery methods	2	2		
3.2	Surfactants used in operating procedures for enhanced oil recovery.	4	2		2
3.3	Thermal methods, microbiological methods for enhance oil recovery.	2	2		
3.4	Well bottom zone stimulation methods. Water suppression, hydrophobization. Examples of effective operating procedures.	2	2		
3.5	Workover fluid. Cementing slurry. Impact assessment of invert emulsion solutions on filtration properties of reservoirs during well killing operation.	2	2		
3.6	Stimulation of oil and gas production by method of formation hydraulic fracturing. Fracking fluids.	2	2		
3.7	Acid treatment as a means of well performance stimulation.	2	2		
3.8	Operating procedures and compositions for treatment of bottomhole formation zones with hard to recover reserves.	2	2		
4	Technical regulation in the oil and gas industry at the present stage.	4	4		
5	Quality Management System. Experience in implementation of International standards (evidence from JSC “NIIneftpromchim”)	2	2		
6	Examination of an application for an invention. Criterion for registration. Arrangement of specification and formula of invention.	2	2		
7	Economic value of innovation.	4	2		2

8	The Round Table “Development paths and application of oilfield chemistry for production, treatment, transportation of oil and enhanced oil recovery”	4	4		
	In total:	72			