

# TECHNOLOGICAL PROCESSES OF PIPELINE TRANSPORTATION OF HYDROCARBONS

SUBJECT



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## WORKLOAD OF THE SUBJECT

5 term  
**72**

credit

5 term  
**2**



6 term  
**108**

exam



6 term  
**3**

- Turbine unit
- Operation of oil depots



**LINKS WITH OTHER  
SUBJECTS**

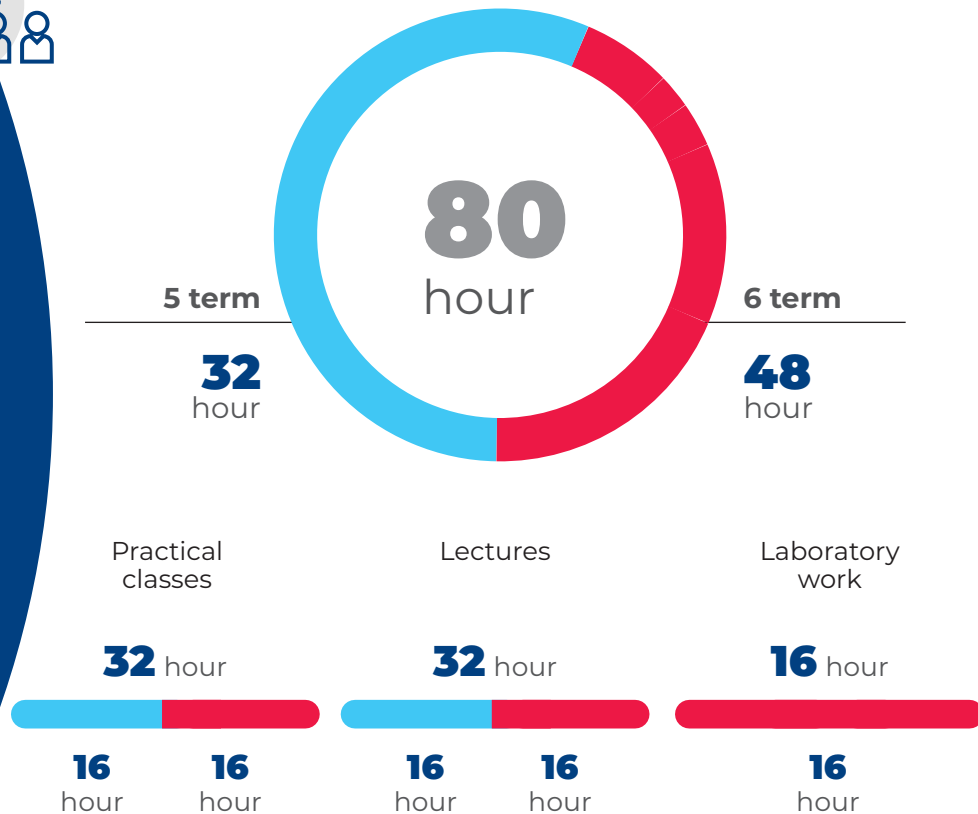


- Industry ecology
- Transportation and storage of liquefied gases



## WORKLOAD

### CLASSROOM WORK





## GOALS

To give students detailed ideas about oil and gas pipeline transportation in design, construction and operation of gas and oil pipelines and gas and oil storage facilities



## TASKS

- To do research work in the field of calculation and design of pipeline transportation of oil and gas
- To improve and develop methods for calculation and design of oil and gas pipeline transportation
- To solve research and applied problems arising in the design of oil and gas main pipelines, including the implementation of interdisciplinary projects



**5** TERM

## LECTURES

**6** TERM

- Basic laws of hydrostatics and hydrodynamics in application to pipeline transportation
- Hydraulic suit «pump-pipeline»
- Special features for calculating pipelines at pumping of high-

viscosity oils with heating

- Thermodynamic bases of compressor cycles
- Hydraulic calculation of the main gas pipeline

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- Technological modes of operation of main oil pipelines

- Non-stationary modes of operation of main oil pipelines

- Operating mode regulation

- Technological calculations of gas pipeline transport

- Scheduling

- Regulation and optimization of the main gas pipeline operation modes

- Dispatching control and control over the operation of oil trunk pipelines

- Features of technological modes of the main gas pipeline





## 5 TERM PRACTICAL CLASSES

## 6 TERM



- Hydrostatics. Basic laws and equations
  - Basic equations of hydrodynamics used in hydraulic calculations of pipelines
  - Determination of flow and pressure in simple pipelines
  - Centrifugal pumps. Principle of operation. Main characteristics of the pump
  - Equation of pressure balance in the operation of the main pipeline. Line hydraulic gradient for a given section of the pipeline
  - Pumping of high-viscosity oils with heating
  - Determination of physical characteristics of natural gas
  - Compression processes and their thermodynamic characteristics
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- Analysis of stationary technological modes of operation of the technological section of main oil pipelines
  - Technological calculations in the design of oil trunk pipelines
  - Arrangement of pumping stations along the route of main oil pipelines
  - Calculation of operating modes
  - Analysis of power consumption during operation
  - Analysis of stationary technological modes of gas transportation
  - Technological calculation of the section of main oil pipelines
  - Regulation of the operation of oil trunk pipelines



## LABORATORY WORK

**6** TERM

- Technological control of the pumping station of the main oil pipeline
- Study and analysis of the modes of joint operation of the pumping station and the main oil pipeline
- Determination of power consumption and specific costs for pumping oil through the main oil pipeline
- Operation of the tank farm pumping station of the main oil pipeline
- Operation of oil quantity and quality measurement systems
- Organization and analysis of the main oil pipeline operation mode





## EQUIPMENT AND LABORATORIES





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