

Ministry of Science and Higher Education of the Russian Federation
 Federal State Budgetary Educational Institution of Higher Education
Perm National Research Polytechnic University

APPROVED BY

Pro-rector for Academic Affairs

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20 01



ACADEMIC COURSE WORKING PROGRAM

Academic course: Investment project feasibility study
 (Name)

Form of education: Full-time
 (Full-time /full-time – correspondence/correspondence)

Level of higher education: Bachelor's degree
 (Bachelor's program/specialist program/
 Master's program)

Workload in hours (in credits): 108 (3)
 (Hours (CU))

Training program (degree): 21.03.01 Oil and Gas Engineering
 (Code and denomination of degree)

Direction: Oil and Gas Engineering
 (Title of curriculum)

1. GENERAL PROVISIONS

1.1. GOALS AND OBJECTIVES OF THE COURSE

The goal of the discipline is to develop a set of knowledge, skills and abilities in the field of technical and economic justification of investment projects at industrial enterprises.

Objectives of the discipline:

- formation of knowledge: basic terms and procedures for business planning at an industrial enterprise; phases of the project life cycle; methods of financial modeling of an investment project; forms and sources of capital investment; problems and methods of investment project management based on examples of Russian and international practice; project risks;

- formation of skills: to choose the optimal forms and sources of investment project financing based on certain project stage; to identify problems of investment project management related to the financing and management team of the project, as well as the macroeconomic conditions for investment processes implementation;

- formation of skills: complex work with an investment project at all stages of its life cycle: from the business idea to the completion of the project; assessment of the main economic indicators of the project; practical use of the acquired knowledge.

1.2. PRESCRIBED OBJECTS OF THE COURSE

- enterprise business planning system;
- system of indicators for the project feasibility study;
- investment activities of enterprises;
- methods of management of investment projects;
- methods of investment risk management.

1.3. STARTING CONDITIONS

Unstipulated

2. PLANNED RESULTS OF THE COURSE TRAINING

Competence	Indicator's Index	Planned Results of the Course Training (to know, to be able, to master)	Indicator of Attaining Competence which the planned results of training are correlated with	Means of Assessment
1	2	3	4	5
PC-1.4.	IA-1 _{pc-1.4.}	To know how technological processes in the field of O&G engineering affect the organization of the investment project team's work	Knows technological processes in the field of O&G engineering for the organization of the employees' work	Test

1	2	3	4	5
PC-1.4.	IA-2 _{pc-1.4.}	To be able to make performing decisions in case of convergence of opinions and conflict of interests during investment designing, determine work procedure on an investment project	Is able to make performing decisions in case of convergence of opinions and conflict of interests, determine work procedure	Practical review
PC-1.4.	IA-3 _{pc-1.4.}	To master the skills of operational economic maintenance of technological processes in the field of O&G engineering	Masters the skills of operational maintenance of technological processes in the field of O&G engineering	Practical review
PC-2.1	IA-1 _{pc-2.1}	To know the organizational and economic features of the distribution duties among personnel of production units as well as among the personnel of production units and service departments of contractors during realization of O&G production technological processes	Knows the distribution of duties among personnel of production units as well as among the personnel of production units and service departments of contractors during realization of O&G production technological processes	Test
PC-2.1	IA-2 _{pc-2.1}	To be able to provide realization of project decisions by contractors as a part of the oil and gas production investment project	Is able to provide realization of project decisions by contractors according to O&G production technological processes	Practical review
PC-2.1	IA-3 _{pc-2.1}	To master economic and managerial information about the job list to be fulfilled by contractors and service organizations, about drilling, field and accessory equipment and about main pipeline equipment and storage facilities, required for the implementation of industry investment projects	Masters the information about the job list to be fulfilled by contractors and service organizations, about drilling, field and accessory equipment and about main pipeline equipment and storage facilities	Practical review
PC-2.2	IA-1 _{pc-2.2}	To know the arrangement features of processing facilities and accessory equipment, qualifying requirements and functions of personnel in the feasibility study of the investment project	Knows the arrangement of processing facilities and accessory equipment at production site, qualifying requirements and functions of personnel.	Test
PC-2.2	IA-2 _{pc-2.2}	To be able to coordinate and control employees' and service contractors' work at productions site for the implementation of industry investment project	Is able to coordinate and control employees' and service contractors' work at productions site.	Practical review

1	2	3	4	5
PC-2.2	IA-3 _{pc-2.2}	To master the skills of coordinating contractors' work aimed at protection of emergency situations which lead to the failure of the investment project	Masters the skills of coordinating contractors' work aimed at protection of emergency situations	Practical review

3. FULL TIME AND FORMS OF ACADEMIC WORK

Form of academic work	Hours in all	Distribution in hours according to semesters
		7
1. Holding classes (including results monitoring) in the form:		
1.1. Contact classwork, including:	45	45
– lectures (L)	18	18
– laboratory work (LW)	–	–
– practice, seminars and/or other seminar-type work (PW)	25	25
– control of self-work (CSW)	2	2
– test	–	–
1.2. Students' self-work (SSW)	63	63
2. Interim/midterm assessment	–	–
Exam	–	–
Grading test	–	–
Test (Credit)	9	9
Course Project (CP)	–	–
Course Work (CW)	–	–
Workload in hours	108	108

4. COURSE CONTENTS

Course sections with brief contents	Full time of classroom activity in hours according to the forms			Full time of extracurricular work in hours according to the forms
	L	LW	PW	SSW
1	2	3	4	5
semester				
Feasibility study of design solutions at the enterprise	0	0	18	46
Topic 1. Creation of a business plan: goals, objectives, performers of the business plan; business idea as an innovative basis for business planning and investment design; analysis of the company internal and external environment; product lifecycle; range selection of products and services; market capacity assessment; demand forecasting, market segmentation and product positioning; study methods of competitors, market structure, composition and concentration; description of competition in the business plan; content of business plan's sections; assessment of the company's competitiveness, its strengths and weaknesses.				

1	2	3	4	5
Topic 2. Methods of project feasibility indicators calculation: market research and substantiation of consumer demand for goods; calculation of the enterprise production capacity; calculation of marketing costs; calculation of material costs; calculation of labor costs and personnel numbers; calculation of personnel remuneration; Calculation of product costs; defining project's deadline; choosing the construction site of a production facility; calculation of capital investments; calculation of the working capital rate; calculation of depreciation charges; methods of calculating savings or extra benefits from product and technological innovations.				
Investment design	0	0	7	18
Topic 3. Investments and methods for evaluating their effectiveness: classification of investments and their sources; regulatory framework in investment design; characteristics of the investment project life cycle stages; determination of the project forecast horizon; discount rate and methods for determining it; discounting and modeling of project cash flows; calculation of investment project performance indicators; indicators of project budget efficiency; soft for investment design. Topic 4. Investment design management: features of real, financial and innovative investments; stages of the investment management process; investment management, its tasks and tools; formation of an investment portfolio and methods of managing it; selection of a financing strategy; development and implementation of the investment strategy. Topic 5. Risks in investment design: methods of risk assessment of investment projects; assessment of losses due to risk situations; project risk management.				
Total in 7 semester	0	0	25	64
Total in discipline	0	0	25	64

Topics of exemplary practical work

Sl.No	Topics of practical work (seminars)
1	Analysis of enterprise internal and external environment by case-study method
2	Product life cycle assessment and selection of the optimal product range
3	Estimation of sales market capacity and demand forecast creation
4	Analysis of the competitive environment
5	Assessment of the company's market competitiveness, its strengths and weaknesses
6	Development of project's business plan by case-study method
7	Calculation of enterprise production capacity
8	Calculation of marketing and material costs
9	Calculation of labor costs, number of employees and payroll
10	Calculation of production costs
11	Calculation of savings and extra benefits from product and technological innovations
12	Calculation of working capital required for project implementation

Sl.№	Topics of practical work (seminars)
13	Determination of project capital investment and planned depreciation charges
14	Determination of the project forecast horizon and stages of the investment project life cycle
15	Discount rate calculation
16	Calculation of investment project performance indicators and indicators of project budget efficiency
17	Development of solutions for investment portfolio management and investment strategy development
18	Assessment of investment project risks and losses from their manifestation by case-study method

Topics of exemplary laboratory practice – Unstipulated

Sl.№	Topic of laboratory work

5. ORGANIZATIONAL AND PEDAGOGICAL CONDITIONS

5.1. EDUCATIONAL TECHNOLOGIES USED FOR COMPETENCES FORMATION

Holding lectures in the discipline is based on the active method of training in the process of which students are not passive but active participants of the lesson answering questions of the teacher. Teacher's questions are aimed at activating the process of learning material as well as at the development of logical thinking. The questions stimulating associative thinking and connecting new material with the previous one are formulated by the teacher in advance.

Practical lessons are held by realization of the method based on active training: problem areas are determined, groups are formed. The following aims are pursued in the process of practical education: use of definite disciplines knowledge and creative methods in solving problems and decision-making; students' skill-building of teamwork, interpersonal communication and development of leadership skills; consolidation of the basic theoretical knowledge.

5.2. STUDENTS' MANUAL FOR THE COURSE STUDY

Learning the course, it is advisable for students to implement the following recommendations:

1. Learning of the discipline should be done systematically.
2. After learning one of the course units with the help of the text-book or lecture notes it is recommended to reproduce the basic terms, definitions, notions of the unit from memory.
3. Special attention should be paid to the reports on practical studies, laboratory works and individual complex tasks for self-work.

4. The topics list for individual study is given by the teacher at the lectures. The teacher also provides students with literary sources (first of all, new ones in the periodical scientific literature) for a more detailed understanding of the issues presented at the lectures.

6. LIST OF TEACHING MATERIALS AND INFORMATION SUPPLY FOR STUDENTS' SELF WORK IN THE DISCIPLINE

6.1. PAPER-BASED COURSEWARE

Sl.№	Bibliographic entry (author, title, mode of publication, place, publishing house, year of publication, number of pages)	Number of copies in the library
1. Basic literature		
1	Campbell S. English for the Energy Industry Oxford : Oxford Univ. Press, 2009.	11
2. Additional literature		
2.1. Educational and scientific literature		
1	Dean C. The Inspired Retail Space attract Customers, build Branding, Increase Volume. Gloucester, Massachusetts : Rockport Publ., 2003. 166 p.	1
2	Sheveleva S. English on Economics. M.: Unity-Diana, 2014. 437 p.	9
3	Rozanova N. English for Economics : Basic Points of Economic English. Macroeconomics: Language and Landscape. M.: Unity, 2009. 503 p.	11
2.2. Standardized and Technical literature		
3. Students' manual in mastering discipline		
4. Teaching and learning materials for students' self work		

6.2. ELECTRONIC COURSEWARE

Kind of literature	Name of training tool	Reference to information resource	Accessibility of EBN (Internet/local net; authorized free access)
Additional literature	Economics and Management in the Modern World	URL: https://elib.pstu.ru/Record/iprbooks93308	authorized access
Additional literature	Financial trading and investing. New York : Elsevier, 2013.	URL: https://elib.pstu.ru/Record/RUPNRPuelib4267	authorized access

6.3. LICENSE AND FREE DISTRIBUTED SOFTWARE USED IN THE COURSE EDUCATIONAL PROCESS

Type of Software	Software branding
OS	Windows 10 (Azure Dev Tools for Teaching)
Office Applications	Adobe Acrobat Reader DC
Image processing software	Corel CorelDRAW Suite X4
General purpose application software	Mathematica Professional Version (license L3263-7820*)
General purpose application software	Microsoft Office Visio Professional 2016 (Azure Dev Tools for Teaching)
General purpose application software	WinRAR (license №879261.1493674)
Management systems for projects, research, development, design, modeling and implementation	Autodesk AutoCAD 2019 Education Multi-seat Stand-alone

6.4. MODERN PROFESSIONAL DATA BASES AND INQUIRY SYSTEMS USED IN THE COURSE EDUCATIONAL PROCESS

Branding	Reference to information resource
Scopus database	https://www.scopus.com/
Web of Science Database	https://www.webofscience.com/
Scientific electronic library database (eLIBRARY.RU)	https://elibrary.ru/
Scientific Library of the Perm National Research Polytechnic University	https://lib.pstu/
Lan Electronic Library System	https://e.lanbook.com/
Electronic library system IPRbooks	https://www.iprbookshop.ru/
Information resources of the Network ConsultantPlus	https://www.consultant.ru/
Company database EBSCO	https://www.ebsco.com/

7. LOGISTICS OF THE COURSE EDUCATIONAL PROCESS

Type of classes	Name of the necessary basic equipment	Number of units
Practice	projector apparatus	1

8. FUND OF THE COURSE EVALUATING TOOLS

Described in a separate document

Ministry of Science and Higher Education of the Russian Federation
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FUND OF ESTIMATING TOOLS

For students' midterm assessment in the discipline
“Investment project feasibility study”
Supplement to the Academic Course Working Program

Training program	21.03.01 Oil and Gas Engineering
Direction (specialization) of educational program	Oil and Gas Engineering
Graduate qualification	Bachelor's degree
Graduate academic chair	Oil and Gas Technology
Form of study	Full-time studies

Year: 4

Semester: 7

Workload:

in credits: 3 CU

in hours: 108 h

The form of midterm assessment:

Test 7 semester

Fund of estimating tools for midterm assessment of students' learning the subject "Investment project feasibility study" is the part (supplement) of the academic course working program. Fund of estimating tools for midterm assessment of students' learning the discipline has been developed in accordance with the general part of the fund of estimating tools for midterm assessment of the basic educational program which determines the system of the midterm assessment results and criteria of putting marks. Fund of estimating tools for midterm assessment of students' learning the subject determines the forms and procedures of monitoring results and midterm assessment of the subject leaning by the students.

1. LIST OF CONTROLLED RESULTS OF STUDYING DISCIPLINE, OBJECTS OF ASSESSMENT AND FORMS OF CONTROL

According to the Academic Course Working Program mastering course content is planned during two semesters (the fifth and sixth semesters of curriculum) and is divided into two educational modules. Classroom activities, lectures and practical work as well as students' self-work are provided for every module. In the frames of mastering course content such competences as *to know*, *to be able*, *to master* pointed out in the ACWP are formed. These competences act as the controlled results of learning the discipline "Investment project feasibility study" (Table 1.1).

Monitoring of the acquired knowledge, abilities and skills is made in the frames of continuous assessment, progress check and formative assessment in the process of studying theoretical material, reports on practical works and during examination. Types of control is given in Table 1.1

Table 1.1 – List of controlled results of learning the discipline

Controlled results of learning the discipline KAS)	Type of control				
	Continuous assessment		Progress check		Formative assessment
	D	AC	LWR/PWR	T/CW	Test
1	2	3	4	5	6
Acquired knowledge					
K.1 Knows how technological processes in the field of O&G engineering affect the organization of the investment project team's work	D1			CW1	TQ
K.2 Knows the organizational and economic features of the distribution duties among personnel of production units as well as among the personnel of production units and service departments of contractors during realization of O&G production technological processes	D1 D2			CW1 CW2	TQ
K.3 Knows the arrangement features of processing facilities and accessory equipment qualifying requirements and functions of personnel in the feasibility study of the investment project	D2			CW2	TQ

1	2	3	4	5	6
Acquired abilities					
A.1 Can make performing decisions in case of convergence of opinions and conflict of interests during investment designing, determine work procedure on an investment project			PWR 1-13		PT
A.2 Is able to provide realization of project decisions by contractors as part of the oil and gas production investment project			PWR 1-18		PT
A.3 Can coordinate and control employees' and service contractors' work at production site for the implementation of industry investment project			PWR 14-18		PT
Mastered skills					
S.1 Has the skill of operational economic maintenance of technological processes in the field of O&G engineering			PWR 1-13		PT
S.2 Masters economic and managerial information about the job list of to be fulfilled by contractors and service organizations, about drilling, field and accessory equipment and about main pipeline equipment and storage facilities, required for the implementation of industry investment projects			PWR 1-18		PT
S.3 Has the ability of coordinating contractors' work aimed at protection of emergency situations that lead to the failure of the investment project			PWR 14-18		PT

D – topic discussion; AC – colloquium (discussion of theoretical material, academic conference); CT – case-task (individual task); LWR – report on laboratory work; PWR – report on practical work; T/CW – progress check (control work); TQ – theoretical question; PT – practical task; CT – complex task of grading test.

Final assessment of the learned discipline results is the midterm assessment which is made in the form of test taking into consideration the results of the running and progress check.

2. TYPES OF CONTROL, STANDARD CONTROL TASKS AND SCALES OF LEARNING RESULTS ASSESSMENT

Continuous assessment of the academic performance is aimed at maximum effectiveness of the educational process, at monitoring students' specified competencies formation process, at increase of learning motivation and provides the assessment of mastering the discipline. In accordance with the regulations concerning the continuous assessment of the academic performance and midterm assessment of students taught by the educational programs of Higher education – programs of the Bachelor's Course, Specialists' and Master's Course the next types of students' academic performance continuous assessment and its periodicity is stipulated in PNRPU:

- acceptance test, check of the student's original preparedness and his correspondence with the demands for the given discipline learning;

- continuous assessment of mastering the material (the level of mastering the component “to know” defined by the competence) at every group studies and monitoring of lectures attendance;

- interim and progress check of students' mastering the components “to know” and “to be able” of the defined competences by computer-based or written testing, control discussions, control works (individual home tasks), reports on laboratory works, reviews, essays, etc.

Discipline progress check is conducted on the next week after learning the discipline module, while the interim control is made at every monitoring during the discipline module study;

- interim assessment, summarizing of the current students' performance at least once a semester in all disciplines for every training program (specialty), course, group;

- retained knowledge control.

2.1. Continuous assessment of education

Continuous assessment of learning is made in the form of discussion or selective recitation on every topic. According to the four-point system the results of assessment are put into the teachers' note-book and are considered in the form of integral marks in the process of the midterm assessment.

2.2. Progress check

For the complex assessment of the acquired knowledge, abilities and skills (Table 1.1) progress check is carried out in the form of report on practical works and midterm control works (after learning every discipline module).

2.2.1. Presentation of practical work

It is planned 18 reports on practical work all in all. Standard topics of practical work are given in ACWP.

Presentation of practical work is made by the student individually or by the group of students. Standard scale and criteria of assessment are given in the general part of FET of the educational program.

2.2.2. Midterm control work

According to ACWP 2 midterm control works (CW) is planned to be realized after learning the educational modules of the discipline by the students.

The first CW is realized with respect to the module 1 “Feasibility study of design solutions at the enterprise”, the second CW – with respect to the module 2 “Investment design”.

Standard tasks of the first CW:

1. Business idea as an innovative basis for business planning
2. Market research and justification of consumer demand for the product

Standard tasks of the second CW:

1. Classification of investments and their sources.
2. Stages of the investment management process.

Standard scale and criteria of the results of the midterm control work assessment are given in the general part of FET of the educational program.

2.3. FULFILLMENT OF THE COMPLEX INDIVIDUAL SELF-WORK TASK

Individual complex tasks for the students are used for assessment of their skills and abilities acquired in the process of learning the discipline in which the course project or course paper is not stipulated.

Standard scale and criteria of assessment of the individual complex task presentation are given in the general part of FET of the educational program.

2.4. MIDTERM ASSESSMENT (FINAL CONTROL)

Admission for midterm assessment is made according to the results of continuous assessment and progress check. Preconditions for admittance are successful presentation of all practical works and positive integral estimation with respect to the results of continuous assessment and progress check.

2.4.1. Midterm assessment procedure without additional evaluation testing

Midterm assessment is made in the form of a test. Credit on the discipline is based on the results of the previously fulfilled by the student individual tasks on the given discipline.

Criteria of putting the final mark for the components of competences in the process of midterm assessment made in the form of test are given in the general part of FET of the educational program.

2.4.2. Midterm assessment procedure followed by evaluation testing

In definite cases (for example, in case of re-attestation of the discipline) midterm assessment in the form of the test on this discipline can be made as the card-based evaluation test. Every exam card includes theoretical questions(TQ) aimed at control of the acquired knowledge, practical tasks (PT) aimed at mastered abilities, and complex tasks (CT) aimed at control of the acquired skills of all declared competences.

The exam card is formed so that the included questions and practical tasks could estimate the level of maturity of **all** declared competences.

2.4.2.1. Standard questions and tasks the discipline testing

Standard questions for the acquired knowledge control:

1. Product life cycle
2. Calculation of enterprise production capacity
3. Regulatory framework in investment design
4. Investment management, its problems and tools
5. Methods of investment project risk assessment
6. Assessment of losses due to risk situations

Standard questions and practical tasks for the mastered abilities control:

1. Conduct a SWOT analysis of the company's strengths and weaknesses in the market.
2. Evaluate the economic effect of the introduction of innovative technology in production activities.
3. Calculate the performance indicators of the investment project.

Standard complex tasks for the acquired skills control:

1. Conduct market research and make demand predictions for the company's products.
2. Resolve the conflict of interests of the investment project participants.
3. Create a business plan for the production activities development.

2.4.2.2. Scales of test assessment of educational achievements

Evaluation of discipline achievements in the form of maturity level of the components *to know, to be able, to master the* declared competences is made according to the four-point assessment scale.

Standard scale and criteria of estimating educational achievements in the process of testing for the components *to know, to be able, to master* are given in the general part of FET of educational program.

3. ASSESSMENT CRITERIA FOR COMPONENTS AND COMPETENCES LEVEL OF MATURITY

3.1. ASSESSMENT OF COMPETENCES COMPONENTS LEVEL OF MATURITY

While estimating the level of competences maturity by selective control in the process of testing it is considered that *the mark obtained for the components of the examined competence is combined with the corresponding component of all competences formed in the frames of the given academic course.*

General assessment of maturity level of all competences is made by aggregation of marks obtained by the student for each component of the formed competences taking into account the results of continuous assessment and progress check in the form of integral mark according to the four-point scale. All control results are put into the assessment sheet by the teacher according to the results of midterm attestation.

The form of the assessment sheet and requirements for its completion are given in the general part of FET of the educational program.

While making the final assessment of the midterm attestation in the form of test standard criteria given in the general part of FET of the educational program are used.