

Ministry of Science and Higher Education of the Russian Federation

Federal State Autonomous Educational Institution of Higher Education
Perm National Research Polytechnic University



APPROVED BY

Pro-rector for Academic Affairs

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ACADEMIC COURSE WORKING PROGRAM

Academic course: Economics and business
(Name)

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

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

Workload in hours (in credits): 216 (6)
(Hours (CU))

Training program (degree): 15.03.06 Mechatronics and Robotics
(Code and denomination of degree)

Direction: Mechatronics and Robotics
(Title of curriculum)

1. General Provisions

1.1. Goals and Objectives of the Course

The purpose of the course is to form a system of knowledge and develop skills in the fields of industrial production management and commercialization of industrial innovations; technological entrepreneurship and business implementation in the industrial market.

1.2. Studied Objects of the Course

fixed and working capital; labour; investments and sources of economic effects at an industrial enterprise; economic processes in the industrial market.

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 know how, to master)	Indicator of Attaining Competence which the planned results of training are correlated with	Means of Assessment
UC-1	IA-1 _{uc-1}	To know the methods of searching information and making critical analysis and synthesis of industry technical and economic information for feasibility study aimed at solution of the given professional tasks	Knows how to search, to make critical analysis and synthesis of information aimed at solution of the given professional tasks	Test
	IA-2 _{uc-1}	To be able to apply systemic approach on the basis of search, critical analysis and synthesis of industry technical and economic information aimed at solution of science-oriented problems of professional field.	Is able to apply systemic approach on the basis of search, critical analysis and synthesis of information aimed at solution of science-oriented problems of professional field.	Practical review
	IA-3 _{uc-1}	To master the skills of search, synthesis and critical analysis of technical and economic	Masters the skills of search, synthesis and critical analysis of information in	Test

		information in professional field; systemic approach aimed at solution of the given tasks at an industrial enterprise from an economic point of view.	professional field; systemic approach aimed at solution of the given tasks.	
UC-2	IA-1 _{uc-2}	To know economic, managerial and market approaches to solve stated enterprises problems, that serves to achieve the given target; how to find optimal ways of problems solution; the basic principles of economy operation as well as the economic development	Knows the economic and managerial approaches to the problems statement aimed at the achievement of the given target, possesses knowledge in choice of optimal ways of their solution; realizes the basic principles of economy operation as well as the economic development, the aims and forms of the state interest in the economy	Test
	IA-2 _{uc-2}	To be able to choose economically optimal ways of solution of science-oriented tasks in professional field aimed at achievement of the given target; use the methods of individual economic and financial planning aimed at achievement of the current and long-term financial goals in the current market environment.	Is able to choose optimal ways of solution of science-oriented tasks in professional field aimed at achievement of the given target; uses the methods of individual economic and financial planning aimed at achievement of the current and long-term financial goals in the current market environment.	Practical review
	IA-3 _{uc-2}	To master the skills of determining economically justified scope of professional tasks in the frames of the given target aimed at commercialization of innovations; finding economically optimal ways of problem solution considering the current legal regulations and available resources and market conditions; using financial instruments for managing	Masters the skills of determining the scope of professional tasks in the frames of the given target; the skills of the choice of optimal ways of their solution considering the current legal regulations and available resources; the skills to use financial instruments for managing personal finances (personal budget), to control personal economic	Grading test

		personal finances (personal budget); personal economic financial risks control.	financial risks.	
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3. Full time and forms of academic work

Form of academic work	Hours in all	Distribution in hours according to semesters	
		Number of semester	
		1	2
1. Holding classes (including results monitoring) in the form:	72	36	36
1.1. Contact classwork, including:			
- lectures (L)	-	-	-
- laboratory work (LW)	-	-	-
- practice, seminars and/or other seminar-type work (PW)	64	32	32
- control of self-work (CSW)	8	4	4
- test	-	-	-
1.2. Students' self-work (SSW)	144	72	72
2. Intermediate attestation	-	-	-
Exam	-	-	-
Grading test	9	-	9
Test (Credit)	9	9	-
Course Project (CP)	-	-	-
Course Work (CW)	-	-	-
Workload in hours	216	108	108

4. Course outline

Name of the units with the course outline	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
5 semester				
Rationing and evaluating the efficiency of using industrial enterprise resources.	0	0	16	36
Fixed capital of industrial enterprise:				
<i>basic terms and definitions;</i>				
<i>specificity of classification;</i>				
<i>assessment of fixed capital requirements;</i>				
<i>depreciation of fixed capital;</i>				
<i>indexes of fixed capital consumption;</i>				
<i>production capacity and its efficiency indicators.</i>				
Working capital of an industrial enterprise:				
<i>basic terms definitions and elements;</i>				
<i>methods of classification and working capital regulation;</i>				
<i>types of inventories and it's costing;</i>				

<i>assessment of working capital consumption.</i>				
Personal rationing, labour productivity and wages at an industrial enterprise:				
<i>Labour structure at an enterprise, basic terms and regulatory documents differentiating the level of qualifications and remuneration;</i>				
<i>labor productivity indicators;</i>				
<i>industrial methods of personnel rationing;</i>				
<i>basic forms and systems of remuneration.</i>				
Fundamentals of economic analysis in an industrial enterprise	0	0	16	36
Product pricing and costing methods in the industry:				
<i>costing methods;</i>				
<i>industrial pricing methods;</i>				
<i>the system of price discounts.</i>				
Financial and economic analysis of a company:				
<i>profitability ratio;</i>				
<i>financial stability ratios;</i>				
<i>liquidity ratios;</i>				
<i>activity analysis ratios;</i>				
<i>factorial analysis.</i>				
Assessment of the economic effect of introducing innovations in an industrial enterprise:				
<i>assessment of the economic effect of applying new technological processes</i>				
<i>economic effect assessment of using new fixed capital items;</i>				
<i>economic effect assessment of using new materials in production process;</i>				
<i>economic effect assessment of using new technology in several areas of consumption;</i>				
<i>specific industry methods for assessing the economic effect of innovation;</i>				
<i>assessment of royalties for innovative development.</i>				
Total	0	0	32	72
6 semester				
<i>Planning of economic activity at an industrial enterprise and technological entrepreneurship</i>	0	0	16	36
Investment effectiveness evaluation at an industrial enterprise:				
<i>basic terms and definitions;</i>				
<i>principles and methods of forming an investment project for industrial production;</i>				
<i>investment project performance indicators;</i>				
<i>methods of accounting for industry risks in investment design;</i>				
Planning at an industrial enterprise:				
<i>basic terms and definitions;</i>				
<i>planning principles and methods;</i>				
<i>system of enterprise plans, calculations of plans and its indicators;</i>				
<i>planning in an industry enterprise;</i>				
<i>calculations of plans and its indicators;</i>				

<i>planning of an enterprise scientific and technical development;</i>				
Features of business planning at an industrial enterprise in the commercialization of scientific and technical innovations:				
<i>basic terms and definitions;</i>				
<i>content of business plan sections in the commercialization of scientific and technical innovations;</i>				
<i>how to fill in sections of the business plan;</i>				
<i>methods for determining the sources of financial resources and the cost of attracting capital for a business plan implementation;</i>				
<i>risk accounting methods in the commercialization of scientific and technical innovations</i>				
Industrial enterprise management	0	0	16	36
Management system at an industry enterprise:				
<i>basic terms and definitions;</i>				
<i>types of organizational and management structures;</i>				
<i>organizational and economic methods of decision-making and management of an industrial enterprise;</i>				
<i>methods of motivation and personnel management, conflict resolution;</i>				
<i>information support system at industry enterprises;</i>				
<i>strategic, tactical and operational planning system at an enterprise;</i>				
Management of the company's sales activities:				
<i>basic terms and definitions;</i>				
<i>methods of market demand research;</i>				
<i>methods of product positioning and promotion on the market;</i>				
<i>trademark and brand policy;</i>				
<i>competitiveness assessment methods of an industrial enterprise and its product on the market, product life cycle;</i>				
<i>organization and management of sales activities at an industrial enterprise;</i>				
<i>organization of wholesale and retail trade, product distribution.</i>				
Total	0	0	32	72
Total	0	0	64	144

Topics of exemplary practical work

Sl. №	Topic of practical (seminar) work
1	Analyze changes in the composition and structure of fixed assets, evaluate the effectiveness of their use
2	Application of depreciation methods
3	Efficiency evaluation of plant capacity
4	Rationing of working capital in an industrial enterprise

5	Assessment of working capital efficiency
6	Rationing the number of employees in an industrial enterprise
7	Assessment of staff productivity in an industrial enterprise
8	Application of remuneration forms, calculation of wages according to the tariff and tariff-free system
9	Production cost calculation in industrial production
10	Application of pricing methods
11	Analysis of financial and economic activities at the enterprise
12	Assessment of economic effects commercialization
13	Calculation of investment project performance indicators
14	Formation of a system of plans at an industrial enterprise
15	Planning of innovative activities
16	Creating a business plan
17	Analyze of the company's competitive position in the market and develop of a strategy to improve it
18	Decision-making management
19	Industrial management
20	Development of management styles and staff motivation
21	Assessment of enterprise competitiveness and its product on the market
22	Marketing research and segmentation
23	Sales management at an industrial enterprise

Topics of exemplary laboratory practice - Unstipulated

Sl. No	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 identified 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.

Laboratory classes are based on an interactive learning method in which students communicate not only with the teacher but also with each other. At the same time, students' activity in the learning process dominates. The teacher's place in interactive classes is reduced to orienting students' activities to achievement of the goals of studies. Interactive lectures, group discussions, role-playing games, training sessions, and analysis of situations and simulation models are used in academic studies.

5.2. Students' Manual for the Course Study

Learning the course students are recommended to fulfill the following positions:

1. Learning of the discipline should be done systematically.
2. After learning one of the course unit with the help of the text-book or lecture notes it is recommended to reproduce in memory the basic terms, definitions, notions of the unit.
3. Special attention should be paid to the reports on practical studies, laboratory works and individual complex tasks for self-work.
4. The topic of questions studied individually is given by the teacher at the lectures. Also the teacher refers to the literary resources (first of all, to the newly published in periodicals) in order the students understand the problems touched on the lectures in detail.

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	Sheveleva S.A. Elementary Economics and Business. M., 2018.	31
2	Sheveleva S.A. English on Economics : M., UNITY, 2005. 405 p.	43
2. Additional literature		
2.1. Educational and scientific literature		
1	Khalilova L. English for Students of Economics. M.: Forum, 2008. 382 p.	2
2	Perlova I. and all. Mr. Berger's Business Tour (from Japan .. to Brazil): Perm: PSTU, 2008. 55 p.	7
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 assess)
Additional literature	Potsepay S., Rezunova M., Vaskina T. ECONOMICS: Briansk, 2018.	URL: https://elib.pstu.ru/Record/lanRU-LAN-BOOK-133083	authorized free assess
Additional literature	Federov B, Nekhaev O., Economics and Management in the Modern World : Voronej, 2019.	URL: https://elib.pstu.ru/Record/iprbooks93308	authorized free assess

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 Corel DRAW Suite X4
General purpose application software	Mathematical 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