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Federal State Autonomous Educational Institution for Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA NAMED AFTER PATRICE
LUMUMBA
(RUDN University)

Higher School of Management

(faculty/institute/academy - the higher education program developer)

COURSE SYLLABUS

Production Management and Control

(name of the discipline/module)

Recommended by the Didactic Council for the Education Field of:

38.04.02 Management

(field of studies / speciality code and title)

The study of the discipline is conducted as part of the professional program of higher education.

Engineering Management

(name (track/specialization) of professional program of higher education)

1. THE GOAL OF THE DISCIPLINE

The goal of mastering the *Production Management and Control* discipline to build in students theoretical knowledge and practical skills in the area of managerial decision-making regarding the production activities of the enterprise and necessary for successful work in the complex modern environment.

2. REQUIREMENTS FOR DISCIPLINE OUTCOMES

The mastering of the *Production Management and Control* discipline envisages building the following competencies (parts of competencies) in students:

Table 2.1. The list of competencies acquired by students in the course of the discipline (outcomes of the discipline)

Competence Code	Competence Descriptor	Competence Formation Indicators (within this discipline)
GC-3	Ability to perform critical analysis of problematic situations based on the systemic approach and develop a plan of action.	GC-3.1. Know: - economic and mathematical models of the modern market economy; - methods of analysis, synthesis and generalization;
		GC-3.2. Be able to: - gather and systematize the necessary economic information efficiently; - analyze economic phenomena and processes in their correlation; - to make logical thoughts necessary for effective management decision-making;
		GC-3.3. Master: - modern methods of economic analysis; - computer technologies for data collection, systematization and processing; - the ability of self-knowledge, self-actualization, self-reflection;
GC-7	Capability to use digital technologies and methods of searching, processing, analyzing, storing and presenting information (in the professional field) in the context of digital economy and modern corporate information culture	GC-7.1. Searches the necessary sources of information and data, perceives, analyzes, consolidates and transfers information using digital tools, as well as using algorithms when working with data obtained from various sources in order to use efficiently the information received for problem solving; GC-7.2. Assesses information, its reliability, makes logical thoughts based on incoming information and data; GC-7.3. Follows and promotes the norms of a healthy lifestyle in various life situations and in professional work.
GPC-3	Capability to make reasonable organizational and managerial decisions independently, evaluate their operational and organizational efficiency, and social significance, ensure their implementation in terms of a complex (cross-cultural) and dynamic environment.	GPC-3.1 Masters the methods of making the best possible management decisions in a dynamic business environment GPC-3.2 Makes reasonable organizational and managerial decisions GPC-3.3 Evaluates the operational and organizational efficiency and social significance of organizational and managerial decisions GPC-3.4 Ensures the implementation of organizational and managerial decisions in a complex (cross-cultural) and dynamic environment

Competence Code	Competence Descriptor	Competence Formation Indicators (within this discipline)
PC-3	Ability to manage organizations, departments, groups (teams) of employees, projects and networks	PC-3.1 Applies various organization management techniques existing in Russia and abroad PC-3.2 Applies generally accepted standards for effective interaction within the organization

3. THE PLACE OF DISCIPLINE IN HIGHER EDUCATION PROGRAM STRUCTURE

The *Production Management and Control* discipline is an elective block formed by students.

Within the higher education program students also take other disciplines and / or internships that contribute to the achievement of the expected learning outcomes as results of mastering the *Production Management and Control* discipline.

Table 3.1. The list of the higher education program components that contribute to the achievement of the expected learning outcomes as the disciplines results.

Competence Code	Competence Descriptor	Previous Disciplines/Modules, Practices*	Subsequent Disciplines/Modules, Practices*
GC-3	Ability to perform critical analysis of problematic situations based on the systemic approach and develop a plan of action.	Managerial Economics Methodology of Management Problems Research	Accounting in Engineering Management Master's Degree R&D Pre-graduation Practice
GC-7	Capability to use digital technologies and methods of searching, processing, analyzing, storing and presenting information (in the professional field) in the context of digital economy and modern corporate information culture	Managerial Economics Management Organization Theory	Master's Degree R&D Pre-graduation Practice Preparing for defense and defense of the degree thesis
GPC-3.	Capability to make reasonable organizational and managerial decisions independently, evaluate their operational and organizational efficiency, and social significance, ensure their implementation in terms of a complex (cross-cultural) and dynamic environment.	Modern Strategic Analysis	Master's Degree R&D Pre-graduation Practice Preparing for defense and defense of the degree thesis
PC-3	Ability to manage organizations, departments, groups	Managerial Economics	Pre-graduation Practice

	(teams) of employees, projects and networks		Preparing for defense and defense of the degree thesis
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4. SCOPE OF DISCIPLINE AND TYPES OF SCHOLASTIC WORK

The total workload of the discipline is 5 credits.

Table 4.1. Types of educational work according to the periods of mastering the higher education program for FULL-TIME students

Type of Educational Work	TOTAL, academic hours.	Semester(s)			
		1	2	3	4
<i>Contact Work, academic hours.</i>	63	36	36		
Lectures (LC)	27	18	18		
Laboratory Work (LR)					
Practical/seminar classes (PC)	36	18	18		
<i>Autonomous Work of students, academic hours.</i>	99	36	54		
<i>Control (exam /graded credit), academic hours.</i>	18		18		
Total Workload of the Discipline	academic hours	180	72	108	
	credits	5	2	3	

5. DISCIPLINE CONTENT

Table 5.1. The content of the discipline (module) by type of academic work

Name of the sections (subjects) of the discipline	Summary of the sections (subjects) of the discipline:	Type of Educational Work*
An Industrial Enterprise as a Complex Production System	The main areas of improving the production organization at enterprises in modern environment. The role, goals and objectives of the production organization in ensuring the integrated development of the enterprise in the service sector.	Lecture, self study
Fundamentals of Production Organization	Organizational and production structure. The production organization as a system of scientific knowledge and an area of practical activity. The essence of the production organization: the basic concepts and categories of the production organization. The laws of organization in statics (structures) and dynamics (processes). Classification of structures' connections and links. Classification of structures. General principles of structures and processes organization.	Lecture, self study

Production Systems	Features of production systems. Principles of production systems organization. Principles of production systems development.	Lecture, self study
Building an Enterprise's Production Structure	The enterprise's production structure. Specialization of the main shops of the enterprise. The production structure of the main shops of the enterprise.	Lecture, self study
Economic Basis of Managerial Decision-Making in Production Organization	The essence and role of solutions in production management. Classification of solutions. Scientific approaches to the solutions development. Requirements for the quality of solutions. Risk assessment in decision-making. Economic basis of decisions. Technology and organization of solution development.	Lecture, self study
Organization of Production Processes	Principles of process rationalization. The essence of the production process organization: types of production processes; organization of production processes in time and space. Characteristics of production organization types. Forms of production organization.	Lecture, self study
Organization of Flow-Production	The essence of flow-production. The structure of flow-production. Types and forms of production lines. Calculation of the main parameters of production lines. Organization of machine-aided manufacturing. Types and organizational and technical features of the creation and operation of automatic lines. Organizational and technical features of the creation and operation of rotary lines. Organizational and technical features of the creation and operation of robotic complexes. Organizational and technical features of the creation and operation of flexible production systems. Assessment of the economic effect of the use of production automation tools.	Lecture, self study

<p>Organization of Production Maintenance</p>	<p>Tool department organization. The designation, challenges and structure of the tool department. Equipment classification and indexation. Maintenance service organization. The designation, challenges and structure of the maintenance service. Organization of transportation facilities. The designation, challenges and structure of the transportation facilities. Organization of storage facilities. Organization of a central tool warehouse and tool-distributing storerooms. Challenges and structure of storage facilities. Storage facilities organization. Organization of material and technical supply of the enterprise. Organization of the energy utilities. The role, challenges and structure of the energy utilities.</p>	<p>Lecture, self study</p>
<p>Organization of Work Flows and Workplaces. Performance Standards</p>	<p>Performance standards. Classification of work time expenditures. Methods of studying the work time expenditures. Methods of performance standards.</p>	<p>Lecture, self study</p>
<p>Organizational and Production Quality Assurance and Product Competitiveness</p>	<p>Product quality management at the enterprise. Product quality: characteristics, indicators. Quality management of products, works, services. Quality Systems The essence and system of product quality indicators. The Total Quality Management concept. Analysis of the Total Quality Management concept. The system of ensuring competitiveness.</p>	<p>Lecture, self study</p>
<p>Designing a New Product</p>	<p>The project life cycle. Formation of the company's product program. Innovation process: content and features. Typology of innovations and their classification. The research stage of product design. Comprehensive preparation of production for the new products release.</p>	<p>Lecture, self study</p>

Organization of R&D (Research Work)	R&D. Evaluation of the scientific and technological level of a new product. Design preparation of production. Network planning and management.	Lecture, self study
Organization of Technological Production Preparation	The essence of the technology concept. The level of technology. Technological preparation of production. Economic basis of the drafting technological process	Lecture, self study
Integrated Planning Systems	Corporate information systems. Methodology of CIS. Integrated automated production management systems. Other modern approaches to planning.	Lecture, self study
Lean Manufacturing Methodology	General principles of building a "just in time" system. "Push" and "pull" production management systems. Just-in-time system efficiency factors. The Kanban information system. Comparison of the MRP II concept and the just-in-time management system.	Lecture, self study
Economic Effectiveness and Production Efficiency	Profit and profitability. The production cost assessment. Economic production efficiency: criteria, indicators, challenges.	Lecture, self study

6. EQUIPMENT AND TECHNOLOGICAL SUPPORT OF THE DISCIPLINE

Table 6.1. Equipment and technological support of the discipline

Classroom Type	Equipment of the Classroom	Specialized Educational/Laboratory Equipment, Software and Materials for the Discipline (if necessary)
Lecture Hall	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	no
Laboratory	A classroom for laboratory work, individual consultations, continuous control and midterm certification, equipped with a set of specialized furniture and equipment.	no
Colloquium	A classroom for conducting colloquium-type classes, group and individual consultations, continuous control and midterm certification, equipped with a set of specialized furniture and multimedia presentation equipment.	no
Computer Class	A computer classroom for conducting classes, group and individual consultations, continuous control and midterm assessment, equipped with personal computers (___ pcs.), a	no

Classroom Type	Equipment of the Classroom	Specialized Educational/Laboratory Equipment, Software and Materials for the Discipline (if necessary)
	blackboard (screen) and multimedia presentation technical means.	
Autonomous Work of Students	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to EIEE.	419

* - the room for autonomous work of students **MUST BE** indicated!

Electronic educational materials used in the teaching process, multimedia presentations, a bank of test tasks, etc. are provided on the Web-local portal.

The following equipment is used for conducting classes:

- classroom whiteboard – 1 pc.;
- multimedia projector – 1 pc.;
- screen – 1 pc.;
- personal computers (laptops, tablets) for practical training.

Description of the classrooms where classes are held

No	Actual address of classrooms and facilities	List of main equipment
1.	Miklukho-Maklay st., 6, room 419	multimedia projector, screen, classroom whiteboard

7. INFRASTRUCTURE AND INFORMATIONAL SUPPORT NECESSARY FOR THE DISCIPLINE

a) Main Readings:

1. *Korshunov, V. V.* Ekonomika organizatsii [Economics of an organization] (enterprise) : textbook and workshop for universities / V. V. Korshunov. — 6th ed., reprint. and add. — Moscow : Yurayt Publishing House, 2023. - 363 p. — (Higher education). — ISBN 978-5-534-16408-4. — Text : electronic // Yurayt Educational Platform [website]. — URL: <https://urait.ru/bcode/530955>.

2. *Tertyshnik, M. I.* Ekonomika organizatsii [Economics of an organization]: textbook and workshop for universities / M. I. Tertyshnik. — Moscow : Yurayt Publishing House, 2023. - 473 p. — (Higher education). — ISBN 978-5-534-16119-9. — Text : electronic // Yurayt Educational Platform [website]. — URL: <https://urait.ru/bcode/530455>

b) Additional Readings:

Organizatsiya i planirovanie proizvodstva [Organization and planning of production]: Study guide for students. universities spec. 080502.65 / Edited by A.N.Ilchenko, I.D.Kuznetsova. - M.: Academy, 2010. - 208s.

Medvedeva S.A. Osnovy tehnikskoi podgotovki proizvodstva [Fundamentals of technical preparation of production]/ Study guide. – St. Petersburg: St. Petersburg State University ITMO, 2010. – 69 p. <http://www.aup.ru/books/m920/>

Software and Internet resources

Bookstore <http://www.aup.ru/cgi-bin/search.pl?q=%EE%F0%E3%E0%ED%E8%E7%E0%F6%E8%FF+%EF%F0%EE%E8%E7%E2%EE%E4%F1%F2%E2%E0&stpos=0&s=R&stype=AND>

Source catalog (<http://www.eup.ru/Catalog/33-0.asp>)

Electronic library (<http://elibrary.ru/defaultx.asp>)

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM FOR COMPETENCES LEVEL EVALUATION

The assessment materials and the grading system* to evaluate the graduate's level of competences (part of competences) formation as the results of the Methodology of Management Problems Research discipline are specified in the Appendix to course syllabus.

* - The assessment materials and the grading system are formed on the basis of the requirements of the relevant local regulation of RUDN University.

95-100	Excellent A
86-94	Excellent B
69-85	Good C
61-68	Satisfactory D
51-60	Satisfactory E
31-50	Conditionally unsatisfactory FX
0-30	Unsatisfactory F

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HEAD OF EDUCATIONAL DEPARTMENT:

Deputy Head of the Applied
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A.A. Chursin

Name of the educational department

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position, name of the department



signature

A.A. Ostrovskaya

Name, surname

Methodological guidelines for students on mastering the discipline (module)

The implementation of the course provides interactive lectures, practical classes (colloquiums) using multimedia equipment, preparation of autonomous creative projects and their subsequent presentations, testing, group discussions on the subject of the course, modern knowledge control technologies.

While studying the discipline, the student must attend a course of lectures, participate in the number of colloquiums provided by the course syllabus, study autonomously some topics of the course and confirm their knowledge during control activities.

The student's work in lectures consists in clarifying the basics of the discipline, briefly taking notes of the material, and clarifying issues that cause difficulties. The lecture notes are the basic educational material along with the textbooks recommended in the main list of readings.

The teaching of the main part of the lecture material involves usage of multimedia tools that facilitate the comprehension and consolidation of the material. Presentations are available for download from the RUDN website and can be freely used by students for educational purposes.

The student must master all the topics provided for by the educational and thematic plan of the discipline. Individual topics and training issues must be mastered autonomously. The student studies the recommended literature, briefly outlines the material, and clarifies the most difficult questions that require clarification during consultations. The same should be done with sections of the course that were skipped due to various circumstances.

For an in-depth study of the issue, the student should study the literature from the additional readings list and specialized websites. It is also recommended that students communicate in professional community forums.

Students study educational, scientific literature and periodicals on an autonomous basis. They have the opportunity to discuss what they have read with the teachers of the discipline during scheduled consultations, with other students at colloquiums, as well as at lectures, asking the professor questions.

The control of autonomous work is carried out by the professor in charge. Depending on the teaching methodology, the following forms of continuous assessment can be used: a short oral or written survey before the start of classes, tests, control papers, written homework, essays, etc.

3, PC-3		The essence of the production organization: the basic concepts and categories of the production organization. The laws of organization in statics (structures) and dynamics (processes).					4							4	
		Classification of structures' connections and links. Classification of structures. General principles of structures and processes organization.	2											2	
GC-3, GC-7, GPC-3, PC-3	Subject 3. Production Systems	The enterprise's production structure. Specialization of the main shops of the enterprise.					2							2	6
		The production structure of the main shops of the enterprise.					4							4	
GC-3, GC-7, GPC-3, PC-3	Subject 4. Building an Enterprise's Production Structure	The essence and role of solutions in production management. Classification of solutions.				6	4							10	12
		Scientific approaches to the solutions development. Requirements for the quality of solutions. Risk assessment in decision-making. Economic basis of decisions. Technology and organization of solution development.	2												
GC-3, GC-7, GPC-3, PC-3	Subject 5. Economic Basis of Management Decision-Making in Production Organization	The Basis of Innovative Management Forms. Intra-organizational innovation process.					2							2	4
		Subjects of the innovation process: innovators, early recipients, early majority, late majority and laggards.					2							2	
GC-3, GC-7, GPC-	Subject 6. Organization of Production Processes	Principles of process rationalization.					2							2	10
		The essence of the production process organization: types of production					4							6	

3, PC-3		processes; organization of production processes in time and space.														
		Characteristics of production organization types. Forms of production organization.				2							2			
GC-3, GC-7, GPC-3, PC-3	Subject 7. Organization of Flow- Production	The essence of flow-production. The structure of flow-production. Types and forms of production lines. Calculation of the main parameters of production lines. Organization of machine-aided manufacturing. Types and organizational and technical features of the creation and operation of automatic lines. Organizational and technical features of the creation and operation of rotary lines. Organizational and technical features of the creation and operation of robotic complexes. Organizational and technical features of the creation and operation of flexible production systems. Assessment of the economic effect of the use of production automation tools.				2										2
GC-3, GC-7, GPC-3, PC-3		Milestone Certification (Control Paper)				20										20
GC-3, GC-7, GPC-3, PC-3		Exam										30				30

		TOTAL	25	10		20	10		15	10			30		100
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Self-examination and certification tests

1. Which of the below listed scientists was engaged in innovation?

1. Drucker
2. Schumpeter
3. Kondratieff
4. All of them

2. What kind of factors do hinder the innovation process?

1. Decentralization, autonomy, formation of target problem groups
2. Normal psychological climate in the workforce
3. Lack of funds to finance innovative projects
4. All of the above

3. Which of the above prerequisites for innovation are internal?

1. Potential demand growth
2. Product quality decrease
3. Staff turnover growth
4. Social environment

4. What are the differences between an innovation project and an investment project?

1. Higher degree of uncertainty
2. Higher probability of gaining a profit
3. Availability of scientific and technical developments
4. Lower degree of uncertainty

5. The qualitative criteria of the innovative project selection include

1. Financial criteria
2. Scientific and technical criteria
3. Assessment of market prospects
4. All of the above

6. The most important areas of project management decision-making process include

1. Project selection for their implementation
2. Project selection based on innovation efficiency criteria
3. Project portfolio formation

4. All of the above

This Program has been developed in line with the requirements of the RUDN University Educational Standards.

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