

**MINISTRY OF EDUCATION AND SCIENCE,
YOUTH AND SPORTS OF UKRAINE**

KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

Syllabus
of the educational discipline
"OPERATIONS MANAGEMENT"
for students of study direction 6.030601 "Management"
for daily form of learning

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Затверджено на засіданні кафедри економіки, організації та планування діяльності підприємств.

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Thematic plan of the educational discipline by modules and themes is given, it contains plans for lectures and practical (seminar) studies, guidelines for independent work on the consolidation of knowledge and evaluation system of students' knowledge.

It is recommended for students of study direction 6.030601 "Management" for daily form of learning.

Подано тематичний план навчальної дисципліни та її зміст за модулями й темами, вміщено плани лекцій і практичних (семінарських) занять, методичні рекомендації для самостійної роботи щодо закріплення знань та систему оцінювання знань студентів.

Рекомендовано для студентів напряму підготовки 6.030601 "Менеджмент" денної форми навчання.

Introduction

Operations management has been a key element in the improvement in productivity in businesses around the world. Creating a competitive advantage through operations requires an understanding of how the operations function contributes to productivity growth.

Organization of the enterprise represents any productive process as in production and in service areas. Operations Management aims to provide an efficient and rational organization of this activity. If the operational functions are carried out efficiently, the organization can never succeed. Qualitative development of operational management can improve the balance of enterprise (organization), its flexibility to be consistently competitive. Therefore, the study of theory and practice of operations management is always relevant in Ukraine as for industrial enterprises and enterprises that provide services.

Training courses "Operations Management" refers to the normative disciplines training for the students of the program "Management". It is a cycle of management disciplines required by managers of organizations regardless of ownership and legal form of management.

The purpose of the discipline "Operations management" is the formation of skills development of operational strategies, establishment and use of operating systems as the basis for the attainment of the mission.

The object of the discipline is the operating system of the enterprise, its functions and purposes.

The subject – is planning, development and effective utilization of resources of the operating system in the market conditions.

The task is mastering the knowledge of the theory of operating systems and planning skills and monitoring their activities to ensure effective management of the enterprise (organization).

The importance of the matters dealt with in the discipline is the need for knowledge of basic principles, methods, the essence of effective operations, methods of operational management operating system, the impact of the operational management of performance and competitiveness of enterprises (organizations).

Table 1

The structure of the educational discipline program

Training course: Bachelor direction	Program, direction of education and qualification level	Characteristics of study subjects
Amount of credits, according ECTS – 6 content: informative modules – 4; independent work course project	Field of knowledge: 0306 "Management"	Obligatory. Year of preparation: 3. Semesters: 5,6
Amount of hours: Total – 216; content module 1 –108; for informative modules: Module 1 – 54 hours; Module 2 – 54 hours. content module 2 –108; for informative modules: Module 3 – 54 hours: Module 4 – 54 hours	Code and name of direction "Management"	Section 1: Lectures: amount of hours – 17. Practice (seminar): amount of hours – 34. Individual work: amount of hours – 51. Consultations: amount of hours – 6. Section 2: Lectures: amount of hours – 24. Practice (seminar): amount of hours – 24. Individual work: amount of hours – 50. Consultations – amount of hours –10.
Number of weeks: 29. Number of hours per week: in section 1 – 4; in section 2 – 5.	Academic degree: bachelor	Type of control: modules, examination

The syllabus of the educational discipline is developed in accordance with industry standard of Higher Education Ministry of Education of Ukraine.

1. Qualification requirements for students

Discipline "Operations Management" for students is referred to as a normative discipline that ensures the formation of skills provided by educational qualification characteristics.

Discipline provides the basic and overall legal training of students and is based on the study subjects "Systems Technology", "Information and computer technology", "Operations Research", "Economy."

Discipline lays the foundation for further study of the disciplines related to industry specifics of each profession and specialization.

The knowledge of this discipline will successfully explore such subjects as "Strategic Management", "Innovation Management", "Personnel Management", and perform course, and final thesis.

During the course students receive the necessary knowledge. The great importance in the study and consolidation of knowledge is self-study of the students.

Competences of "Operations Management"

As a result of learning the discipline, students must

know:

essence of operational management and its components as one of the main functions of effective management of the organization;

bases and categorical devices of operational management;

structure of operating systems, their classification;

essence and basic principles of operational processes;

basis of operational processes in space and time;

characteristics of the infrastructure company (organization);

forms of organization of the production process;

essence, stages and phases of technical training;

composition and characteristics of business units for the production stage;

basis of comprehensive services in the operating system;

problems of the operating strategy of the organization;

Basics of operating systems;

content and objectives for operational planning and its role in increasing the efficiency of the operating system;

elements of operational planning operational activities of the various types of operating systems;
methods of the current functioning of the operating system;
bases of quality management and performance management operations;

be able to:

create the operating strategy of the organization;
develop a specific operating system of the organization;
evaluate the effectiveness of the operating system;
determine the type of operating system;
justify production of the enterprise;
efficiently organize production process according to scientific principles;
economically justify the feasibility of implementing new techniques and technologies in the enterprise;
use the tools of creation and reconstruction of production units;
choose a system of operational planning of the specific operating system;
count calendar and plan specifications for different types of operating systems;
use project management techniques in specific contexts;
evaluating and planning quality in the operating system;
count the efficiency rates of operating systems.

2. Thematic plan of the discipline

Since the beginning of the discipline, each student should be acquainted with the program as a form of discipline and training, and with the structure, content and scope of each module, and with all types of control and evaluation of methodology training.

Courses according to the program of the discipline "Operations Management" are in the following forms: lectures, seminars and workshops, the individual tasks, students' individual work, and control measures.

Thematic plan of the discipline is shown in Tab. 2.

Table 2

Structure of a test credit of the educational discipline

Theme	Number of hours devoted to:			
	Lectures	Practical studies, seminars	Individual studies	Consultations
Module 1. Operations strategy and managing change				
Theme 1. Introduction to the field	2	2	6	2
Theme 2. Operations strategy and competitiveness	2	4	6	2
Theme 3. Project management	2	4	6	2
Theme 4. Product design	3	4	7	
Module 2. Process selection and design				
Theme 5. Process analysis	2	6	6	
Theme 6. Manufacturing process selection and design	2	4	7	—
Theme 7. Service process selection and design	2	4	6	—
Theme 8. Quality management	2	6	7	—
Module 3. Supply chain design				
Theme 1. Supply chain strategy	2	-	8	—
Theme 2. Strategic capacity management	4	4	8	—
Theme 3. Lean production	4	4	8	—
Theme 4. Operations consulting and reengineering	2	4	6	—
Module 4. Planning and controlling the supply chain				
Theme 5. Aggregate sales and operations planning	4	4	10	4
Theme 6. Inventory control	4	4	4	4
Theme 7. Material requirements planning	4	4	6	2
Total for the modules 3 and 4	24	24	50	10

3. Contents of the discipline in the modules and themes

Module 1. Operations strategy and managing change

Theme 1. Introduction to the field

Operations management: A critical responsibility of every manager. What is operations management. Transformation processes. Differences between services and goods. OM in the organizational chart. Operations as service. Historical development of OM. Manufacturing strategy paradigm. Service quality and productivity. Total quality management and quality certification. Business process reengineering. Supply chain management. Electronic commerce. Current issues in operations management.

Theme 2. Operations Strategy and Competitiveness.

Operations strategy. Operations competitive dimension. Competitive dimensions. Order winners and qualifiers: The marketing-operations link. The corporate strategy. Design process. The financial perspective. The customer perspective. The internal perspective. The learning and growth perspective. Strategic fit: Fitting operational activities to strategy.

Developing a manufacturing strategy. Operations strategy in services .

Theme 3. Project management

Project management. Structuring projects. Pure project. Functional project. Matrix project. Work breakdown structure. Project control charts. Network-planning models. Time-cost models. Managing resources.

Theme 4. Product design

The Product design process. The product development process. Economic analysis of product development projects. Sensitivity analysis to understand project trade-offs. Designing for the customer. Quality function deployment. Designing products for manufacture and assembly. Measuring product development performance.

Module 2. Process Selection and Design

Theme 5. Process analysis

Process analysis. Process flowcharting. Types of processes. Measuring process performance. Process analysis examples. Process throughput time reduction.

Theme 6. Manufacturing process selection and design

Manufacturing process selection and design. Process selection. Types of processes. Process flow structures. Product-process matrix. Specific process equipment selection. Manufacturing process flow design.

Theme 7. Service process selection and design

A Customer-centered view of service management. An operational classification of services. Designing service organizations. Service strategy: Focus and advantage. Three contrasting the production-line approach. The self-service approach. The personal-attention approaches. Applying behavioral science to service encounters. New service development process.

Theme 8. Quality management

Total quality management. Quality specification and quality costs. Developing quality specifications. Cost of quality. Six-sigma Quality. ISO 90 certification.

Module 3. Supply Chain Design

Theme 1. Supply chain strategy

Supply chain strategy. Measuring supply chain performance. Supply chain design strategy. Outsourcing. Design for logistics. Value density . Global sourcing. Mass customization.

Theme 2. Strategic capacity management

Capacity management in operations. Capacity planning concepts. Economies and diseconomies of scale. The experience curve. Where economies of scale meet the experience curve. Capacity focus. Capacity flexibility. Capacity planning. Considerations in adding capacity. Determining capacity requirements. Using decision trees to evaluate capacity alternatives. Planning service capacity. Capacity planning in service versus manufacturing.

Theme 3. Lean production

Lean logic. The Toyota production system. Elimination of waste. Respect for people. Lean implementation requirements. Lean layouts and design flows. Lean applications for line flows. Lean applications for job shops. TQC (Total Quality Control). A stable schedule. Work with suppliers.

Theme 4. Operations Consulting and Reengineering

Operations consulting. The nature of the management consulting industry. Economics of consulting firms. When operations consulting is needed. The operations consulting process. Operations consulting tool. Business process reengineering (BPR). Principles of reengineering. Guidelines for implementation.

Module 4. Planning and controlling the supply chain

Theme 5. Aggregate sales and operations planning

Sales and operations planning. Overview of sales and operations planning activities. The aggregate operations plan. Production planning environment. Relevant costs. Aggregate planning techniques. Yield management.

Theme 6. Inventory control

Definition of inventory. Purposes of inventory. Inventory costs. Independent versus dependent demand. Inventory systems. A single-period inventory model. Multiperiod inventory systems. Establishing safety stock

levels. Fixed-order quantity Model with safety stock. Inventory control and supply chain management. Price-break models. Miscellaneous systems and issues. Inventory planning.

Theme 7. Material requirements planning

Material requirements planning (MRP) systems. Purposes of MRP. Material requirements planning system structure. Demand for products. forecasting Demand. Developing a master production schedule.

4. Plans of lectures

Module 1. Operations strategy and managing chance

Theme 1. Introduction to the field

1. Operations management.
2. Production system defined.
3. Operations as a service.
4. Historical development of OM.
5. Current issues in OM.

References: main [1; 3]; ancillary [7; 11; 13; 15; 18; 20].

Theme 2. Operations strategy and competitiveness

1. Operations strategy.
2. Competitive dimensions.
3. Order qualifiers and winners.
4. Strategy design process.
5. A framework for manufacturing strategy.
6. Service strategy capacity capabilities.
7. Productivity measures.

References: main [1; 3; 4]; ancillary [6; 7; 20; 23].

Theme 3. Project management

1. Definition of project management.
2. Work breakdown structure.

3. Project control charts.
4. Structuring projects.
5. Critical path scheduling.

References: main [1 – 3]; ancillary [7; 13 – 16; 20; 23].

Theme 4. Product design

1. Typical phases of product design development.
2. Designing for the customer.
3. Design for manufacturability.
4. Types of processes.
5. Process flow structures.
6. Process flow design.
7. Global product design and manufacturing.

References: main [2 – 4]; ancillary [5; 11; 16; 21].

Module 2. Process selection and design

Theme 5. Process analysis

1. Process analysis.
2. Process flowcharting.
3. Types of processes.
4. Process performance metrics.

References: main [2; 3; 4]; ancillary [5; 11; 16; 21].

Theme 6. Manufacturing process selection and design

1. Service generalizations.
2. Service strategy: focus & advantage.
3. Service-system design matrix.
4. Service blueprinting .
5. Service fail-saving.
6. Characteristics of a well-designed service delivery system.

References: main [1 – 3]; ancillary [7; 12 – 15; 19; 22].

Theme 7. Service process selection and design

1. Characteristics of a well-designed service delivery system

References: main [1]; ancillary [7; 19; 22].

Theme 8. Quality management

1. Total quality management defined.

2. Quality specifications and costs.

3. Six sigma quality and tools.

4. External benchmarking.

5. ISO 9000.

6. Service quality measurement.

References: main [2 – 3]; ancillary [5; 8; 14; 17; 21].

Module 3. Supply chain design

Theme 1. Supply chain strategy

1. Supply-chain management.

2. Measuring supply-chain performance.

3. Bullwhip effect.

4. Outsourcing.

5. Value density.

6. Mass customization.

References: main [1 – 6]; ancillary [3; 4; 9; 17; 21].

Theme 2. Strategic capacity management

1. Capacity strategic capacity planning defined.

2. Utilization & best operating level.

3. Economies & diseconomies of scale.

4. The experience curve.

5. Capacity focus, flexibility & planning.

6. Determining capacity requirements.

7. Decision trees.

8. Capacity utilization & service quality.

References: main [1 – 3]; ancillary [5; 7; 14; 19].

Theme 3. Lean production

1. JIT defined.
2. The Toyota production system.
3. JIT implementation requirements.
4. JIT in services.

References: main [1; 4]; ancillary [8; 10; 12].

Theme 4. Operations consulting and reengineering

1. Operations consulting defined.
2. Operations consulting and the 5 P's.
3. Hierarchy within a consulting organization.
4. Stages of operations consulting.
5. Operations consulting tool kit.
6. Reengineering.

References: main [1; 8]; ancillary [3; 6; 15].

Module 4. Planning and controlling the supply chain

Theme 5. Aggregate sales and operations planning

1. Sales and operations planning.
2. The aggregate operations plan.

References: main [2; 5]; ancillary [5; 11; 16].

Theme 6. Inventory control

1. Inventory system defined.
2. Inventory costs.
3. Independent is dependent demand.
4. Single-period inventory model.
5. Multi-period inventory models: Basic fixed-order quantity models.
6. Multi-period inventory models: Basic fixed-time period model.
7. Miscellaneous systems and issues.

References: main [3; 5]; ancillary [5; 17; 21].

Theme 7. Material requirements planning

1. Material requirements planning (MRP).
2. MRP logic and product structure trees.
3. Time fences.
4. MRP example.
5. MRP II and lot sizing.

References: main [1; 6]; ancillary [2; 5; 23].

5. Plans of practices

Practice is a form of instruction where a lecturer organizes students to review some theoretical discipline and forms skills and experience of their practical application by individual student performance of various tasks. Practices include a preliminary control of knowledge, skills and abilities of students, teachers present a common problem and discuss it with students, solving problems with their discussion, solving control tasks, checking, testing.

Module 1. Operations strategy and managing change

Theme 1. Introduction to the field

1. Differences between services and goods.
2. Historical development of OM.
3. Current Issues in operations management.

References: main [1; 3]; ancillary [7; 11; 13; 15; 18; 20].

Theme 2. Operations strategy and competitiveness

1. Competitive dimensions.
2. Manufacturing.
3. Developing a manufacturing in services.

References: main [1, 3, 4]; ancillary [6, 7, 20, 23].

Theme 3. Project management

1. Pure project.
2. Financial project.
3. Matrix project.

References: main [1 – 3]; ancillary [7; 13 – 16; 20; 23].

Theme 4. Product design

1. Quality function deployment.
2. Value analysis.
3. Value engineering.

References: main [2 – 4]; ancillary [5; 11; 16; 21].

Module 2. Process Selection and Design

Theme 5. Process analysis

1. Process analysis.
2. Process throughput time reduction.

References: main [2, 3, 4]; ancillary [5; 11; 16; 21].

Theme 6. Manufacturing process selection and design

1. Types of selection.
2. Process flow structures.
3. Product process-matrix.

References: main [1 – 3]; ancillary [7; 12 – 15; 19; 22].

Theme 7. Service process selection and design

1. Global product design strategy.
2. The global joint venture.

References: main [1]; ancillary [7; 19; 22].

Theme 8. Quality management

1. The ISO 9000 series.
2. ISO 9000 certification.
3. Continuous improvement.

References: main [2 – 3]; ancillary [5; 8; 14; 17; 21].

Module 3. Supply chain design

Theme 1. Supply chain strategy

1. Outsourcing.
2. Value density.

References: main [1 – 6]; ancillary [3; 4; 9; 17; 21].

Theme 2. Strategic capacity management

1. The rhythm.

References: main [1 – 3]; ancillary [5; 7; 14; 19].

Theme 3 Lean production

1. Decisions tree.

References: main [1; 4], ancillary [8; 10; 12].

Theme 4. Operations consulting and reengineering

1. Aggregative planning.

References: main [1, 4]; ancillary [3; 11].

Module 4. Planning and controlling the supply Chain

Theme 5. Aggregate sales and operations planning

1. Planning one subject production line.

References: main [2; 5]; ancillary [5; 11; 16].

Theme 6. Inventory control

1. Planning multidisciplinary production line.

References: main [1; 8]; ancillary [3; 6; 15].

Theme 7. Material requirements planning

1. Standard construction plan of the subject-area closed.

References : main [1; 6]; ancillary [2; 5; 23].

6. Independent work of students

An essential element of successful discipline learning is the independent work of students that includes: processing of lectures, work on legislative, regulatory and instructional materials, preparation for seminars and workshops, processing questions submitted to independent work.

The main types of independent work, students are proposed:

1. The study of lecture material.
2. Working with studying the recommended literature.
3. Study of key terms and concepts on the topics of the discipline.
4. Preparation for practical training and testing.

Theme 1. Introduction to the field

1. What is operations management?
2. Historical development of OM.

References : main [1; 6]; ancillary [7, 11, 13, 15, 18, 20].

Theme 2. Operations strategy and competitiveness

1. The corporate strategy.
2. Developing a manufacturing strategy.
3. Operations strategy in services.
4. Types of movements subjects of labor.

References: main [1, 3, 4]; ancillary [6, 7, 20, 23].

Theme 3. Project management

1. Project management.
2. Managing resources.

References: main [1 – 3]; ancillary [7; 13 – 16; 20; 23].

Theme 4. Product design

1. The product development process.
2. Measuring product development performance.

References: main [2 – 4]; ancillary [5; 11, 16; 21].

Theme 5. Process analysis

1. Process analysis.
2. Process throughput time reduction.

References: main [2; 3; 4]; ancillary [5; 11; 16; 21].

Theme 6. Manufacturing process selection and design

1. Specific process equipment selection.
2. Manufacturing process.

References: main [1 – 3]; ancillary [7; 12 – 15; 19; 22].

Theme 7. Service process selection and design

1. Service strategy: focus and advantage.
2. New service development process.

References: main [1]; ancillary [7; 19; 22].

Theme 8. Quality management

1. Service quality measurement.
2. Developing quality specification.

References: main [2 – 3]; ancillary [5; 8; 14; 17; 21].

Theme 1. Supply chain strategy

1. Global sourcing.
2. Mass customization.

References: main [1 – 6]; ancillary [3; 4; 9; 17; 21].

Theme 2. Strategic capacity management

1. Using decision trees to evaluate capacity alternatives.
2. Planning service capacity.

References: main [1 – 3]; ancillary [5; 7; 14; 19].

Theme 3. Lean production

1. The Toyota production system.
2. Lean applications for line flows.

References: main [1; 4]; ancillary [8; 10; 12].

Theme 4. Operations consulting and reengineering

1. Business process reengineering (BPR).
2. The operations consulting process.

References: main [1; 8]; ancillary [3; 6; 15].

Theme 5. Aggregate sales and operations planning

1. Aggregate planning techniques.
2. The aggregate operations plan.

References: main [2; 5]; ancillary [5; 11; 16].

Theme 6. Inventory control

1. Multi period inventory systems.
2. Inventory planning.

References: main [3; 5]; ancillary [5; 17; 21].

Theme 7. Material requirements planning

1. Demand for products.
2. Forecasting demand.

References: main [1; 6]; ancillary [2; 5; 23].

7. Questions for self-control

1. What is operations management?
2. What factors account for resurgence of interest in OM today?
3. Differences between services and goods.
4. OM in the organizational chart.
5. Operations as service.
6. Historical development of OM.
7. Total quality management and quality certification.
8. Current issues in operations management.
9. What is operations strategy?
10. Operations competitive dimension.
11. Attacking through operations.

12. Productivity measurement.
13. Strategic fit-fitting operational activities to strategy.
14. What is project management?
15. Structuring project.
16. Project control chart.
17. Managing resources.
18. Time-cost models.
19. The marketing-operations link.
20. The corporate strategy.
21. Types of processes.
22. Process analysis examples.
23. Measuring process performance.
24. Designing for the customer.
25. Process selection.
26. Break-even analysis.
27. Manufacturing product development performance.
28. Manufacturing process selection and design.
29. An operational classification of services.
30. Designing service organizations.
31. Total quality management.
32. Quality specification and quality costs.
33. ISO 9000 Certification.
34. Basic product layout formats.
35. Group technology.
36. Fixed-position layout.
37. Office- layout.
38. The nature of services.
39. An operational classification of services.
40. Three contrasting service designs.

1. Supply chain strategy.
2. Measuring supply chain performance.
3. Outsourcing.
4. Value density.
5. Mass customization.
6. Capacity management in operations.
7. Capacity planning concepts.

8. Planning service capacity.
9. Jit logic.
10. Jit in service.
11. The Japanese approach to productivity.
12. Overview of operations planning activities.
13. Aggregate production planning.
14. Yield management.
15. Definition of inventory.
16. Purpose of inventory.
17. Inventory cost.
18. Inventory system.
19. Special purpose models.
20. JIT in services.
21. The Toyota production system.
22. Capacity focus, flexibility & planning.
23. Decision trees.
24. Independent versus depend demand.
25. Material requirement planning system.
26. Material requirement planning structure.
27. Flow manufacturing.
28. Where can MRP are used?

8. Individual consulting work

Individual and consulting work is in the form of lectures and for students studying according to the individual and consulting activities schedule and has the form of: individual tasks, consultations, tests and the implementation of individual educational and research tasks, testing and security tasks which are made to the current control and more.

Consultation is a form of instruction that includes an explanation of certain theoretical or practical aspects of their application, consideration of typical examples and ways to use the proceeding in the process of learning a discipline of knowledge in practice.

Individual consulting work for complex assessment of learning is conducted in the form of individual self-defense and individual tasks, prepared reports for presentation at the seminars.

9. Methods of the studying process activation

At discipline "Operations Management" to enhance educational and cognitive activity of students provided the use of modern educational technologies, such as distressed lectures, mini-lectures, small group work, seminars, discussions and presentations. The main differences between active and interactive studying methods from traditional defined not only the methodology and techniques of studies, but also the high efficiency of the educational process, which is in the high motivation of students, consolidated theoretical knowledge in practice, raising awareness of students, developing the ability to make independent decisions, the ability to collectively making and social integration, acquiring skills of conflict resolution, developing the ability to compromise.

Problem lecture is based on the development of logical thinking of students. Circle of lecture topics is limited to two or three key points, students' attention is concentrated on material that is not reflected in textbooks, used the experience of foreign educational institutions handing out to students during lectures and printed material highlighting the main conclusions on matters under consideration. At studying lectures students are offered questions for self-control (theme 4, theme 5, theme 7).

Mini-lectures include presentation of educational material in a short period of time and are characterized by large capacity, the complexity of logical constructs, images, proofs and generalizations. At the beginning of a mini-lecture lecturer attracts attention to the need for students to present lecture material set out in the so-called structural and logical form. Lectures are conducted in such a way that wakes up in the student activity and attention in the perception of the material and directs it to use a systematic approach when playing back the information he received from the lecture (theme 3, theme 4, theme 5, and theme 7, theme 1).

Working in small groups enables structured lectures or practical seminars to create opportunities for every student to participate in the work on training, ensuring the formation of personal qualities and experience of social communication. After solving the problem (with the problem of lectures) or short presentation of the material (using a mini-lecture) students are invited to join in groups of 5 – 6 people and present their vision and perception of the material (theme 1, theme 4, theme 8, and theme 6).

Presentations — before an audience are used to represent specific accomplishments of the group, reports on the implementation of individual tasks, instruction. One of the positive features of presentation and its advantages when used in the educational process is the exchange of experiences that students gained while working in a particular small group (theme 1, theme 5, and theme 6).

10. The system of current and final assessment of students knowledge

The system of grading of knowledge and skills students get learning the discipline, "Operations Management" provides lectures and practical classes, as well as independent work.

Control measures include the current and final control.

Testing and evaluation of students, knowledge is conducted in the following forms.

1. Assessment of students, knowledge during the workshops.
2. Performance of individual tasks.
3. Conducting interim testing.
4. Conducting the final exam control.

Assessment of students' knowledge during the workshops aims to test the level of preparedness of students to perform specific work. The objects of this control are:

- a) systematic activity and effectiveness of work during the semester on a study program material of the discipline, attendance;
- b) tasks for independent processing;
- c) the level of modular tasks.

The evaluations are conducted by a 12-point scale using the following criteria:

- 1) understanding the degree of assimilation theory and methodology issues to be considered;
- 2) the degree of assimilation of factual discipline material ;
- 3) review of recommended reading, as well as modern literature on the issues under consideration;
- 4) ability to combine theory and practice when considering industrial situations, solving problems, carrying out calculations when performing tasks made for self-processing, and challenges made to the classroom;
- 5) logic, structure, style of presentation in written work, ability to justify their position, to summarize and draw conclusions.

Interim control test is conducted twice per semester. In conducting this test the students' knowledge of theoretical issues of discipline are determined.

Test tasks include key topics that are studied within the discipline. "Operations Management" and consist of tests of different difficulty levels.

Test tasks for the interim test control module will be chosen according to the general list.

For evaluation the students, responses on test tasks, the following criteria are used: "excellent" for 90 – 100 % of correct answers, "good" for 75 – 90 % of correct answers, "satisfactory" for 55 – 75 % of correct answers, "unsatisfactory" for less than 55 % of correct answers.

Module control is carried out and evaluated by two components: a practical and lecture module control. Assessment for practical component of the module control shown by the results of evaluation of students, knowledge during practical part, the individual tasks and intermediate test control according to the schedule of the educational process.

Lecture module control is exercised in writing the relevant tasks, which contains the contents of all those substantive issues of the module.

The theoretical part of the control module task contains either theoretical issues or test tasks.

The practical part of the control module task consists of practical tasks (situations) of varying difficulty (stereotypical, diagnostic, heuristic) and other elements.

12 points is put down for deep learning of the program material, the application to respond not only recommended but also additional literature and creative approach, proficiency in the concepts, methods, techniques and tools of the discipline, the ability to use them for specific practical problems, the solutions of situations. Fulfillment of tasks answers should be neat, logical and consistent.

11 points is put down for deep learning of the program material, absorption readings, and clear knowledge of the concepts, methods, techniques and tools of the discipline, the ability to use them for specific practical problems, solving situations. Fulfillment should be neat, logical and consistent.

10 points is put down for the full assimilation of the program material and recommended reading, clear knowledge of the concepts, methods, techniques and tools of the discipline, the ability to use them for specific

practical problems, solving situations. There may be occasional minor errors that significantly affect the fullness and consistency of the response.

9 points is put down for the full assimilation of the program material available and the ability to navigate in it, conscious application of knowledge to solve practical problems, if all requirements are provided for the evaluation of "excellent" in the presence of small arithmetic errors (methodical approach to solving problem is correct, but admitted to small inaccuracies in the calculation of certain parameters), or not quite full conclusions on the results obtained at solving the task. Execution of a task should be neat.

8 points is put down for the full assimilation of the program material available and the ability to navigate in it, conscious application of knowledge to solve practical problems. Practical tasks are performed on the whole correctly using the default algorithm, but their performance by a student assumes certain errors. Execution of a task should be neat.

7 points is put down, if a student in carrying out practical tasks effectively uses the basic knowledge of educational material provided by the curriculum. Practical tasks are performed on the whole correctly using the default algorithm, but their performance by the student assumes significant errors.

6 points is put down for the lack of ability to apply theoretical knowledge to solve practical problems, if the task is mainly accomplished the goal and objectives achieved, and students in responses showed understanding of the material provisions of the discipline.

5 points is put down for partial ability to apply theoretical knowledge to solve practical problems, if the task is partially completed, and students in responses showed understanding of the material provisions of the discipline.

4 points is put down in cases when a student was carrying out practical tasks without sufficient understanding of the educational material, made substantial errors, faced difficulties in studying the basic material provisions of the discipline.

3 points is put down when a student can not correctly perform the practical tasks facing considerable difficulties in studying the basic provisions of discipline material .

2 points put down when a students who did not understand the program material, can not properly perform practical tasks facing considerable difficulties in studying the basic material provisions of the discipline.

1 point is put down for failure to fulfill the task in general.

Examination task (Example)

Kharkiv National University of Economics
DIRECTION – "MANAGEMENT"
DISCIPLINE – "Operations Management"

TASK 1

Quantity of details in a batch is 12 pieces. The kind of movement of a batch of details is consecutive. Each operation is carried out on one machine tool. The size of a transport batch is 1. Change a consecutive kind of movement into parallel-consecutive. Draw the graph. Write a conclusion.

Operation number	Rate of time, min
1	4
2	6
3	6
4	2
5	5
6	3

TASK 2

The mechanic shop should deliver 100 complete sets of the equipment a day. Actual release per each day is presented in the table. Write a conclusion after method № 1.

Actual release on each day

Decade	Working days	Actual release	Decade	Working days	Actual release	Decade	Working days,	Actual release		
1	1	110	2			3				
	2	100								
	3	140								
	4	130								
					16		140		26	130
					17		110		27	120
					18		135		28	140
					19		110		29	140
					20		120		30	140

TASK 3

The engineer decides to create or not to create a new line. If a line is to start, it will receive profit – 50 000UAH. If it doesn't start, the loss will constitute – 125 000UAH. Probability of failure is 60 %. It is possible to conduct marketing research which demands costs – 100 000UAH. The probability of successful researches constitutes 50 %. If researches are successful, the probability of that the equipment will work is 90 %. If research is unsuccessful, probability of that the equipment works is 20 %.

TASK 4

The production line was treated with 5 details. The line works 22 days, 3 shifts lasting 8 hours. Time spent on retooling of equipment-5 %. The complexity and release program is in the table.

Detail									
A		B		C		D		F	
N _i	T _i	N _i	T _i	N _i	T _i	N _i	T _i	N _i	T _i
1000	80	1500	60	200	30	200	25	300	20

TASK 5

The marketing department has presented the project of expectation product demand of the enterprise for 8 months.

Expectation demand

Month	1	2	3	4	5	6	7	8
Demand	1400	1600	1800	1800	2200	2200	1800	1400

Losses of sale which are caused by absence of a stock, constitute 100 UAH. Production constantly also answers the minimum demand (1400 pieces). It is necessary additional contract with additional payment for unit (piece) – 75 UAH.

Approved at the meeting of economics, organization and planning enterprises activity department. Minutes № 1 of 25.08.2011

Head of economics,
organization and planning
enterprises activity department

Iastremska O. M.

Examiner

Sigaeva T. E.

Criteria of examination task assessment

Number of tasks	Amount of points	The conditions in which the corresponding amount of points is put
Task 1	3	Full and correct solution of the task
	2	Part of the task algorithm solution is fulfilled
	1	There are only some elements of the correct solution
	0	Wrong solution of the task
Task 2	2	Full and correct solution of the task
	1	Part of the task algorithm solution is fulfilled
	0,5	There are only some elements of the correct solution
	0	Wrong solution of the task
Task 3	3	Full and correct solution of the task
	2	Part of the task algorithm solution is fulfilled
	1	There are only some elements of the correct solution
	0	Wrong solution of the task
Task 4	2	Full and correct solution of the task
	1	Part of the task algorithm solution is fulfilled
	0,5	There are only some elements of the correct solution
	0	Wrong solution of the task
Task 5	2	Full and correct solution of the task
	1	Part of the task algorithm solution is fulfilled
	0,5	There are only some elements of the correct solution
	0	Wrong solution of the task

Summary mark of the discipline is the average of several components, which takes into account marks of each type of control (two marks are the results of the current module control for work in semesters with a coefficient of 0.4 and mark on exam results with a coefficient of 0.6).

Final mark of the discipline according to the methodology of transferring indicators of students success into University assessment, scale is converted to the grade, on the ECTS scale (tab. 5).

Table 5

Transference of University Characteristics of Students, Progress into the system of the ECTS scale

Percentage of students who are usually successful, but reach an appropriate Evaluation rating scale	ECTS assessing scale		Assessment of Kharkiv National University of Economics scale	Assessment due to the national scale
10	excellent performance	A	12 – 11	excellent
25	above average level	B	10	
30	in general the task is right, but with a certain number of errors	C	9 – 7	good
25	not bad, but many drawbacks	D	6	satisfactory
10	quality of knowledge satisfies minimum criteria	E	5 – 4	
–	it is necessary to retake an examination	FX	3	unsatisfactory
–	repeated study of the discipline	F	2 – 1	

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Contents

Introduction	3
1. Qualification requirements for students	5
2. Thematic plan of the discipline	6
3. Contents of the discipline in modules and themes	8
4. Plans of lectures	11
5. Plans of practices	15
6. Independent work of students	18
7. Questions for self-control	20
8. Individual consulting work	22
9. Methods of studying process activation	23
10. The system of current and final assessment of student's	24
11. Recommended references	31

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