MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION OF THE REPUBLIC OF UZBEKISTAN
TASHKENT STATE UNIVERSITY OF ECONOMICS

"APPROVED"
Dean of the Faculty of Management
D.ISMAILOV
June 30, 2026

PRODUCTION TECHNOLOGIES

CURRICULUM SYLLABUS OF THE DISCIPLINE

Bachelor's degree (full-time mode of study)

Field of knowledge:	400 000	Business, management and law
Field of education:	410 000	Business and management
Direction of education:	60410800	Management

Dean
(Approved)
D.ISMAILOV

Tashkent – 2026

This syllabus was approved by the decision of the Council of the Faculty of Management (Minutes No. T-10 dated “30” June 2026).

This syllabus is presented by the Department of "Innovation Management" of Tashkent State University of Economics (Minutes of the Department Meeting No. 44 dated “26” June 2026).

Developers:

B.N. Urinov — Professor, Head of Innovative management department, TSUE

N.G. Safarova — Assistant teacher of Innovative management department, TSUE

Reviewers:

I. Yaxyayeva – TSUE, Associate Professor of the "Innovative Management" department, PhD

S. Yuldashev – TTESI, Associate Professor of the "Economics and Management" department, PhD in Economics



Head of Department
(Approved)
B.URINOV

1. Subject Information

Subject/Module Code	**Academic Year** 2026-2027	**Semester** 6	**ECTS – Credits** 5.00
Subject/Module Type Compulsory	**Language of Instruction** English	**Curriculum Sequence Number**	**Weekly Lesson Hours**

Subject Name	Total Workload (hours)	Total Classroom Activities – 60 hours, of which:			Independent Study (hours)	Course Paper
		Lecture	Practical	Lab		
Production Technologies	**150**	30	30	0	**90**	-

2. Subject Content

Subject Goal – The purpose of the Production Technologies course is to provide students with a comprehensive understanding of modern production technologies, manufacturing systems, and technological processes. The course aims to develop students' abilities to analyze, design, organize, and improve production processes while ensuring efficiency, quality, sustainability, and competitiveness. It also equips students with the knowledge and practical skills necessary to apply innovative technologies, automation, digitalization, and Industry 4.0 solutions in modern manufacturing environments.

Subject Tasks – Upon successful completion of this discipline, students will acquire the following skills: Upon successful completion of the course, students will be able to: Understand the fundamental concepts, principles, and classifications of production technologies. Explain the structure and operation of manufacturing systems and technological processes. Analyze production workflows and identify opportunities for process improvement. Apply methods for efficient utilization of materials, labor, energy, and other production resources. Evaluate production technologies in terms of productivity, quality, and cost-effectiveness. Plan, organize, and control manufacturing operations and production activities. Implement quality management principles in production

environments. Apply automation and digital technologies in manufacturing processes. Understand the role of Industry 4.0, smart manufacturing, and advanced production systems. Develop strategies for improving production efficiency and reducing operational costs.

3. Prerequisites for the subject	
1.	Management

4. Learning Outcomes (LO)	
Professional Competencies:	
TN1	the ability to understand and apply modern production technologies, technological processes, equipment, and production methods to ensure efficient and high-quality manufacturing.
TN2	the ability to plan, organize, and control production processes effectively by managing production schedules, resources, materials, equipment, and labor in accordance with established requirements.
TN3	the ability to analyze technological processes, identify production problems, evaluate technical information, and make appropriate decisions to improve production efficiency and product quality.
TN4	the ability to apply quality control principles and standards throughout the production process, identify defects, prevent quality problems, and ensure that finished products meet established technical requirements.
TN5	the ability to follow occupational health and safety requirements, identify potential hazards in production environments, use equipment safely, and take appropriate measures to prevent accidents and workplace injuries.
TN6	the ability to understand and apply innovative technologies, automation systems, digital tools, and modern production solutions to increase productivity, reduce costs, and improve the competitiveness of manufacturing enterprises.
Skills:	
TN7	the ability to correctly operate, adjust, and monitor modern production machinery and technological equipment in accordance with technical instructions and safety requirements.
TN8	the ability to organize and control individual stages of the production process, maintain technological parameters, and ensure the continuous and efficient operation of production systems.

TN9	the ability to inspect raw materials, intermediate products, and finished products, identify technical defects, and determine whether products comply with established quality standards and specifications.
TN10	the ability to evaluate the productivity of production processes, identify factors that cause delays or resource losses, and develop practical solutions to improve efficiency and reduce production costs.
TN11	the ability to work with automated, computerized, and digital production systems and effectively apply modern technological methods in accordance with current industrial requirements.
TN12	the ability to identify technological problems during production, analyze their causes, select appropriate technical solutions, and implement corrective measures to ensure stable and efficient production.

5. Subject Content and Forms of Study:		**Hours**
Lecture (L)		**30**
M1	**Production Technologies: Subject Matter, Importance and Objectives.** 1. Course objectives and tasks. The role of science and technology in meeting society's needs. 2. The role of modern technologies in the production of consumer goods. 3. The importance of production technologies in economic modernization.	2
M2	**Scientific and Technological Progress and the Evolution of Technical Development in Industry.** 1. Scientific and technological progress: essence, importance, and main directions. 2. Economic implications of scientific and technological progress. 3. Labor tools, production methods, automation, and robotics in industry. 4. Scientific and technological progress and environmental challenges.	2
M3	**Industrial Raw Materials and Their Classification.** 1. Raw materials in modern production technology, their role and types. 2. Methods of enriching and processing raw materials. 3. Efficient use of raw materials in the national economy. 4. The role and significance of energy in technological processes. 5. Types of energy and rational energy use in industry.	2
M4	**Optimization of Production Processes.** 1. General principles and concepts of optimizing technological processes. 2. Active and passive methods of process optimization. 3. Automated control systems for technological processes.	2
M5	**Fundamentals of Mechanical Engineering Technology.** 1. Subject and objectives of mechanical engineering technology. 2. Fundamental technical and economic characteristics of machines and equipment. 3. Concepts of manufacturability. 4. Interchangeability and technical-economic significance.	2

5. Subject Content and Forms of Study:		Hours
	5. Quality and its importance in industry. 6. Analysis and improvement of electromechanical equipment designs using physics and mathematics.	
M6	**Fundamentals of Food Production Technology.** 1. The role and importance of the food industry in economic development. 2. Food production as the primary source of the food industry. 3. Processing technologies of agricultural products. 4. Grain and flour product manufacturing technologies. 5. Vegetable oil production technology.	4
M7	**Technology of Confectionery Production.** 1. Technology of flour-based confectionery production. 2. Caramel production technology. 3. Chocolate production technology. 4. Candy and confectionery production technology.	2
M8	**Technology of Milk and Dairy Product Production.** 1. Technology of dairy product manufacturing. 2. Fermented milk products technology. Cheese and butter production technology. 3. Dairy processing technologies and development prospects. 4. Technology of sausage and meat product production.	2
M9	**Textile Industry Technology.** 1. Main raw materials used in the textile industry. 2. Textile fibers and primary processing of cotton raw materials. 3. Fiber production technologies. 4. Spinning technologies and yarn preparation. 5. Production of nonwoven materials. 6. Technologies for manufacturing nonwoven textile materials.	4
M10	**Technology of Polymer and Plastic Product Manufacturing.** 1. Polymers and monomers. 2. Plastic materials. 3. Main properties of polymers and plastics.	2
M11	**Technology of Construction Materials Production.** 1. The role of the construction industry in accelerating economic and technical development. 2. Classification and main properties of construction materials. 3. Scientific and technological progress indicators in the construction materials industry. 4. State standards and technical specifications for construction materials. 5. Technical and economic principles of organizing construction activities.	4
M12	**Digital and Innovative Technologies.** 1. Digital manufacturing technologies in enterprises. 2. CNC systems and automated control systems. 3. Robotics and mechatronic elements in enterprises. 4. CAD/CAM/CAE technologies. 5. Innovative and energy-efficient technologies in enterprises.	2
Practical Session (P)		**30**

5. Subject Content and Forms of Study:		Hours
A1	**Production Technologies: Subject Matter, Importance and Objectives.** 1. Course objectives and tasks. The role of science and technology in meeting society's needs. 2. The role of modern technologies in the production of consumer goods. 3. The importance of production technologies in economic modernization.	2
A2	**Scientific and Technological Progress and the Evolution of Technical Development in Industry.** 1. Scientific and technological progress: essence, importance, and main directions. 2. Economic implications of scientific and technological progress. 3. Labor tools, production methods, automation, and robotics in industry. 4. Scientific and technological progress and environmental challenges.	2
A3	**Industrial Raw Materials and Their Classification.** 1. Raw materials in modern production technology, their role and types. 2. Methods of enriching and processing raw materials. 3. Efficient use of raw materials in the national economy. 4. The role and significance of energy in technological processes. 5. Types of energy and rational energy use in industry.	2
A4	**Optimization of Production Processes.** 1. General principles and concepts of optimizing technological processes. 2. Active and passive methods of process optimization. 3. Automated control systems for technological processes.	2
A5	**Fundamentals of Mechanical Engineering Technology.** 1. Subject and objectives of mechanical engineering technology. 2. Fundamental technical and economic characteristics of machines and equipment. 3. Concepts of manufacturability. 4. Interchangeability and technical-economic significance. 5. Quality and its importance in industry. 6. Analysis and improvement of electromechanical equipment designs using physics and mathematics.	2
A6	**Fundamentals of Food Production Technology.** 1. The role and importance of the food industry in economic development. 2. Food production as the primary source of the food industry. 3. Processing technologies of agricultural products. 4. Grain and flour product manufacturing technologies. 5. Vegetable oil production technology.	4
A7	**Technology of Confectionery Production.** 1. Technology of flour-based confectionery production. 2. Caramel production technology. 3. Chocolate production technology. 4. Candy and confectionery production technology.	2
A8	**Technology of Milk and Dairy Product Production.** 1. Technology of dairy product manufacturing. 2. Fermented milk products technology. Cheese and butter production technology. 3. Dairy processing technologies and development prospects. 4. Technology of sausage and meat product production.	2

5. Subject Content and Forms of Study:		Hours
A9	**Textile Industry Technology.** 1. Main raw materials used in the textile industry. 2. Textile fibers and primary processing of cotton raw materials. 3. Fiber production technologies. 4. Spinning technologies and yarn preparation. 5. Production of nonwoven materials. 6. Technologies for manufacturing nonwoven textile materials.	4
A10	**Technology of Polymer and Plastic Product Manufacturing.** 1. Polymers and monomers. 2. Plastic materials. 3. Main properties of polymers and plastics.	2
A11	**Technology of Construction Materials Production.** 1. The role of the construction industry in accelerating economic and technical development. 2. Classification and main properties of construction materials. 3. Scientific and technological progress indicators in the construction materials industry. 4. State standards and technical specifications for construction materials. 5. Technical and economic principles of organizing construction activities.	4
A12	**Digital and Innovative Technologies.** 1. Digital manufacturing technologies in enterprises. 2. CNC systems and automated control systems. 3. Robotics and mechatronic elements in enterprises. 4. CAD/CAM/CAE technologies. 5. Innovative and energy-efficient technologies in enterprises.	2

6. Independent Study Assignments

№	Topic / Assignment Name	Hours
1	Technology of manufacturing furniture goods.	3
2	Technology of manufacturing household chemical goods.	3
3	Technology of manufacturing perfumery and cosmetics goods.	3
4	Technology of manufacturing construction goods.	3
5	Technologies of manufacturing knitwear and ready-made clothing.	3
6	Manufacturing of textile goods.	3
7	Types of traditional and modern technologies used in the manufacture of pottery and ceramic goods.	3
8	Technologies for manufacturing dairy products.	3
9	Technologies for processing vegetables, fruits, and other agricultural products.	3
10	Methods for assessing the ecological properties and quality of construction materials.	3

№	Topic / Assignment Name	Hours
11	Technology of manufacturing meat products.	3
12	Technology of manufacturing confectionery products.	3
13	Subject and tasks of mechanical engineering technology.	3
14	Main technical and economic characteristics of machines and products.	3
15	The essence and significance of the foundry industry.	3
16	Fabric production, processing. Fabric finishing.	3
17	Production of non-woven materials.	3
18	Main technical-economic indicators and scientific-technical progress of the non-woven materials manufacturing industry.	3
19	Main properties of polymers and plastics.	3
20	Types of energy, rational use of energy in industry.	3
21	Waste-free and low-waste technologies.	3
22	Recycling technologies and their economic effectiveness.	3
23	Manufacturing technologies in the food industry.	3
24	Manufacturing technologies in the textile industry.	3
25	Technologies for manufacturing construction materials.	3
26	Modern technologies in the mechanical engineering industry.	3
27	Manufacturing technologies in the chemical industry.	3
28	Manufacturing technologies in the pharmaceutical industry.	3
29	Technologies for processing agricultural products.	3
30	Project management technologies in manufacturing.	3
	Total:	**90**

Note: *Independent assignments for this course (module) should be variable in nature, allowing students to choose from different types of tasks and learning activities. At least one-third of the independent assignments should be designed for collaborative work in small groups (cooperative learning), encouraging teamwork, communication, and joint problem-solving among students.*

7. Educational Technologies and Methods

Lectures; performing and summarizing practical tasks based on real-life situations; solving situational tasks (case studies); writing essays, theses, and articles; blitz survey; working in small groups; giving presentations; completing and defending project work; simulation and interactive methods; studying real management processes through participation as an observer in enterprises and organizations.

8. Requirements for acquiring credits by students

For this course (module), student assessment is based on the completion of course-related learning activities, including tests and written assignments, throughout the semester. Students are evaluated using a 100-point grading system. Of the total score, 20 points are allocated for class participation, independent study assignments, and continuous assessment activities; 30 points are allocated for the midterm assessment; and 50 points are allocated for the final assessment. The final grade is determined based on the student’s overall performance in these assessment components during the semester.

PROCEDURE OF ASSESSMENT OF STUDENTS' KNOWLEDGE

Types of Rating Assessment	Max. score	Assignments to be completed	Deadline for completing tasks
Current control, of which	**20**	**According to the schedule of the educational process.**	
Participation in class sessions	10	Depending on the specifics of the subject, oral questioning, testing, interviews, written tests, colloquiums, case studies, case or fabula-based situational tasks, projects, coursework, and completion of homework assignments during seminars, laboratory and practical classes.	In accordance with the scheduled classroom hours for the course.
Independent study, of which	10	Students’ independent work is organized in two directions – in the classroom and outside the classroom.	
1-independent study	5	Writing an essay or thesis on one of the topics of independent learning (not less than 1,000–1,200 words).	Before the start of the midterm assessment

Types of Rating Assessment	Max. score	Assignments to be completed	Deadline for completing tasks
2-independent study	5	Preparing and defending a project work on one of the topics of independent learning.	Before the start of the midterm assessment
Midterm control	**30**	**in the form of a presentation (work in small groups)**	**According to the academic year schedule.**
Final control	**50**	**Multiple choice questions**	**According to the academic calendar.**
Total	**100**		

The student's total score accumulated in the subject during the semester is calculated according to the established rules for each type of assessment using the following formula:

FS = CA + IA + FA

where: CA– current assessment; IA – interim assessment; FA– final assessment.

Note:A student who fails to obtain at least 60% of the total 50 points allocated for attendance in classes, current assessment, and interim assessment is not allowed to take the final assessment. In addition, a student who fails to obtain at least 60% of the total 50 points allocated for the final assessment is considered to have an academic debt.

9. Criteria for assessment of students' knowledge

a) For a grade of 5 (excellent), the student's level of knowledge must meet the following:
– fully explains the essence and content of the subject;
– demonstrates scientific rigor and logical consistency when presenting topics related to systematic management, without making errors or causing confusion;
– is able to apply theoretical knowledge to various management situations;
– provides clear and concise answers to the questions asked;
– has fully mastered independent assignments and practical skills;

b) For a grade of 4 (good), the student's level of knowledge must meet the following:
– understands the essence and content of the subject and does not make serious errors or

confusion when presenting the topics;
– understands the practical significance of the subject;
– has completed the assigned tasks and assignments within the scope of the curriculum;
– is able to answer the questions correctly and has fully completed the independent assignments;
– has made an effort to acquire practical skills and competencies;

c) For a grade of 3 (satisfactory), the student's level of knowledge must meet the following:
– has a general understanding of the subject;
– covers the topics within a limited scope and makes some inaccuracies or confusion;
– has completed the independent assignments, but the presentation is not fluent;
– provides vague or ambiguous answers to the questions;

d) Under the following cases, the student's level of knowledge may be graded with an unsatisfactory grade of 2:
– has not prepared for the classes;
– has no knowledge or understanding of the subject;
– has not completed the independent assignments;
– shows evidence of copying texts from others;
– is unable to answer questions related to the subject;

Note: Student performance is assessed using a 100-point grading system, consisting of 20 points for continuous assessment, 30 points for midterm assessment, and 50 points for final assessment. The student’s total score is calculated according to the following formula: TS = CA + MA + FA, where CA stands for Continuous Assessment, MA for Midterm Assessment, and FA for Final Assessment. A student who fails to achieve at least 60% of the allocated points in the continuous and midterm assessments, as well as 60% of the points allocated for the final assessment, will be considered to have an academic deficiency (academic debt).

10. References

Basic References:

1.	Uzair Khaleeq uz Zaman, Ali Siadat Aamer “Handbook of Manufacturing Systems and Design”. [Study guide] – "Innovative Development Publishing-Printing House",, 2023. – 323 p.
2.	I.K.Yaxyayeva Ishlab chiqarish menejmenti.. [Textbook] – “Innovatsion rivojlanish nashriyot-matbaa uyi”, 2023. – 316 p.
3.	Г.Ш. Джураева Производсвенный менеджмент. [Textbook] – Инновацион ривожланиш нашриёт-матбаа уйи, 2023. – 320 p.

Additional References:	
1.	N.Q.Yo‘ldoshev, N.R. Kadirxodjaeva “Ishlab chiqarish texnologiyalari”. Darslik. O‘zbekiston faylasuflar milliy jamiyati nashriyoti. T.: 2014 yil. (Ushbu kitob universitet ARMda PDF variantda mavjud).
2.	Djurayeva G. Sh. Qurilish tarmog‘i korxonalarida inson resurslarini boshqarish tizimini takomillashtirish. PhD Dissertatsiya ishi. Toshkent 2025y-174 bet.
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5.	I.K. Yaxyayeva “Sanoatda tejamkor strategiyalar asosida resurs samaradorligi va innovatsion rivojlanish mexanizmlarini takomillashtirish”. Monografiya./“JAHONA NASHR” nashriyoti, 2026-y. – 124 b. (Ushbu monografiya universitet ARMda PDF variantda mavjud).
6.	Г.Ш.Джураева. Монография. Совершенствование механизма системы управления человеческими ресурсами на предприятиях строительной отрасли. Издательство “JAHON NASHR”, 2026г. - 172 стр. (Ushbu kitob universitet ARMda PDF variantda mavjud).
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8.	Food and raw materials. Kemeraovo institute of food science and texnology. 2015, p. 145. (Ushbu kitob universitet ARMda PDF variantda mavjud). 10. Adizov R.T., G‘afforov A.X. Xusenov S.Y. Donni tozalash va maydalash texnologiyasi. –T.: ”TURON-IQBOL” nashriyoti, 2006. -184 b. (Ushbu kitob universitet ARMda PDF variantda mavjud).
9.	Amonova Z.M. Sut va sut mahsulotlari texnologiyasi. –T.: Cho‘lpon, 2004. -132 b. (Ushbu kitob universitet ARMda PDF variantda mavjud).
Internet resources:	
1.	www.gov.uz - O‘zbekiston Respublikasining davlat portali.
2.	www.lex.uz - O‘zbekiston Respublikasi qonun hujjatlari milliy ma’lumotlar bazasi.

3.	http://ima.uz - O‘zbekiston Respublikasi Adliya vazirligi huzuridagi Intellektual mulk agentligi
4.	https://mininnovation.uz - O‘zbekiston Respublikasi Innovatsion rivojlanish vazirligi.
5.	https://www.imv.uz/sf - O‘zbekiston Respublikasi Iqtisodiyot va moliya vazirligi.
6.	https://stat.uz/uz/ - O‘zbekiston Respublikasi Davlat statistika qo‘mitasi.
7.	https://new.openinfo.uz/ - O‘zbekiston Respublikasining Yagona interaktiv davlat xizmatlari portali

11. Academic Requirements

The interaction between the teacher and the student should be sincere and impartial. The student submits independently completed assignments via email or the educational platform in accordance with the established procedure and receives feedback in the same manner. Assignments not completed within the specified deadline will not be accepted for resubmission. The teacher checks the assignments completed by the student using anti-plagiarism software, and works with an originality rate below 70% will not be accepted for assessment. The student is allowed to have the completed assignment checked by the anti-plagiarism software up to two times; if the result does not meet the required standard, the work will not be accepted.

12. Application of the program to other study modes

The interaction between the teacher and the student should be sincere, respectful, and impartial. The student shall submit independently completed assignments via email or the educational platform in accordance with the established procedure and shall receive feedback in the same manner. Assignments not completed within the specified deadline shall not be accepted for resubmission. The teacher shall check the assignments completed by the student using anti-plagiarism software, and works with an originality rate below 70% shall not be accepted for assessment. The student shall be allowed to have the completed assignment checked by the anti-plagiarism software up to two times; if the result does not meet the required standard, the work shall not be accepted.