BUILDING AND STRUCTURE CONSTRUCTION TECHNOLOGY

Course name	Building and Structure Construction Technology (ECTS 4)
Course/module code	BIBET1504
Semester(s) in which the course is taught	5th semester
Assigned instructor	Rahmonov Navruzbek Ergashevich
Language of instruction	Uzbek
Course type	Compulsory
Academic workload (including independent study)	**Total hours – 120.** Contact hours – 48. Lecture hours – 24. Practical training hours – 24. **Independent study – 72 hours**.
ECTS	4
Course aims and objectives / learning outcomes	The aim of teaching the course is to provide students with theoretical knowledge and practical skills in the construction of buildings and structures. Through the course, students learn to design buildings and structures, select materials and structural systems, organize technological processes, and take occupational safety and environmental requirements into account. Course objectives – to provide students with the knowledge and skills necessary for a comprehensive understanding and practical application of the construction process of buildings and structures. The objectives include teaching the stages of construction of buildings and structures and their technological sequence, proper selection of construction materials and structures, and development of awareness of occupational safety and environmental requirements. The educational process is intended to develop students' professional competencies, independent thinking, problem-solving skills, and project management abilities. **Learning outcomes** 1. Can provide information about the composition of the work execution project in construction and the basic rules for its development. 2. Can explain how to prepare calendar schedules for the execution of construction processes. 3. Can provide information about the rules for quality control and ensuring occupational safety during construction processes. 4. Can provide information about technologies for constructing buildings and structures with different space-planning and structural solutions. 5. Can provide information about the execution of construction and installation works when constructing the underground parts of buildings and structures. 6. Knows how to select lifting mechanisms for the installation of

	building structures by comparing competitive alternatives and can provide information about their use. 7. Has skills in designing and implementing construction processes and technologies for constructing buildings and structures.
Course content (topics)	**I. Main theoretical part (Lectures)** Topic 1: Introduction. Technological design of construction processes. Topic 2: Sequence of work execution and construction of a building. Topic 3: General construction site plan; placement of materials and structures in storage areas. Topic 4: Preparatory-period works. Topic 5: Works in the construction of the zero cycle of industrial and civil buildings. Topic 6: Installation of single-storey industrial buildings with reinforced-concrete frames. Topic 7: Installation of single-storey industrial buildings with steel frames. Topic 8: Installation of multi-storey industrial buildings. Topic 9: Construction of high-rise buildings. Topic 10: Construction of buildings with brick walls. Topic 11: Construction of buildings and structures under extreme conditions. Topic 12: Technology of building reconstruction. **II. Guidelines and recommendations for practical classes** The teacher's preparation for practical classes begins with studying the initial documents (curriculum, thematic plan, and others) and ends with preparing the lesson plan. The teacher should have a clear understanding of the aims and objectives of the practical class and the amount of work that each student is expected to complete. Methodological guidelines are the main methodological document used by the teacher when preparing and conducting practical classes. The purpose of the practical class is to understand theory and acquire skills, consciously apply them in educational and professional activities, and develop the ability to formulate and defend one's own point of view confidently. Recommended practical topics: 1. Calculation of columns for the installation of a single-storey industrial building. 2. Calculation of crane runway beams for the installation of a

	single-storey industrial building. 3. Calculation of the volume of a truss or beam for the installation of a single-storey industrial building. 4. Calculation of the volume of roof slabs for the installation of a single-storey industrial building. 5. Calculation of the volume of installation works. 6. Calculation of the volume of installation works (continued). 7. Selection of installation equipment and cranes. 8. Technical and economic calculation and comparison of crane application alternatives. 9. Preparation of a labor-cost calculation for the installation of prefabricated structures of single-storey industrial buildings. 10. Calculation of the schedule and worker movement chart for the installation of a single-storey industrial building. 11. Calculation of the work volume for the installation of a multi-storey industrial building. 12. Division into work zones and calculation of work volumes in the construction of buildings with brick walls. **III. Independent study and independent work** Independent-learning competence helps students develop themselves independently and contributes to improving the effectiveness of their professional activities. Students complete independent work on their mobile devices under the guidance of the teacher, either in a traditional format or electronically. Recommended topics for independent study: 1. Construction of buildings using the sequential method. 2. Roads within the construction site. 3. Loading and unloading of construction materials. 4. Placement of material elements. 5. Engineering-geological investigations and establishment of the foundations of geodetic setting-out. 6. Lowering and diverting above-ground and underground groundwater. 7. “Diaphragm wall” technology for constructing underground structures. 8. Installation of the underground part of a building. 9. Use of temporary supports and shoring. 10. Selection of installation methods and methods for combining works. 11. Methods of constructing single-storey industrial buildings and installation mechanisms. 12. Conveyor assembly and large-block installation.

	13. Methods of building installation. 14. Sequence of building frame installation. 15. Construction of high-rise buildings. 16. Installation of buildings with steel and composite frames. 17. Organization of brick wall construction. 18. Construction of brick structures under winter conditions. 19. Purpose of formwork and main types of formwork. 20. Mechanization of concrete works. 21. Small-panel formwork and large-panel formwork. 22. Small-panel formwork and large-panel formwork. 23. Construction of buildings using horizontally sliding formwork. 24. Construction of buildings using vertically sliding formwork. 25. Organizational and technological aspects of construction under extreme conditions. 26. Execution of construction works at sites with complex soil conditions. 27. Construction of buildings and structures under winter conditions. 28. Composition of works during the reconstruction of facilities. 29. Dismantling and demolition of building structures. 30. Regulatory requirements for carrying out reconstruction works. **IV. Methodological guidelines for organizing the course work** The course work in "Building and Structure Construction Technology" is is intended for the 5th semester. The purpose of the course work is to develop students' ability to work independently, acquire practical skills in applying the theoretical knowledge they have gained, make technical decisions appropriate to real production conditions, and develop skills in using modern equipment and technologies. Course-work topics are determined directly in relation to technological processes in construction production and the conditions of constructing a specific building or structure. Course-work topics are prepared in advance in a quantity 20–30% greater than the total number of students. Each student is given an individual assignment. The object of the course work is a building or structure to be constructed under specified conditions, together with an advanced technology used for its construction. A technology appropriate for specific conditions is selected and calculated on the basis of machines and mechanisms and is evaluated through a technical and economic comparison of alternatives. The calculation and graphic parts of the course project are mainly performed using modern computer software. The graphic part of the course project consists

	of one or two drawings in A2 format, while the explanatory note must contain 20–25 pages, prepared on a computer in 14-point font with 1.5 line spacing. The course work consists of the following topics. Each topic is divided into variants: Topic 1. Technology for installing the reinforced-concrete frame of a single-storey industrial building. Topic 2. Technology for installing the reinforced-concrete frame of a multi-storey industrial building.
Student assessment	Student knowledge is assessed during semester and final assessment on the basis of the level of mastery of the teaching materials (results of tests, assignments, written and oral work). During the Building and Structure Construction Technology course, students are assessed on a 100-point scale. Of these, 50 points are allocated to current and midterm assessment (60% of the 50 points for current assessment, independent study, and 40% for midterm assessment), while 50 points are allocated to the final assessment. Students whose total current and midterm score is below 30 points are not admitted to the final examination. A student who obtains 30 or more points in the final assessment is considered to have successfully mastered the course.
Requirements for admission to examinations	The student must have fully mastered the theoretical and practical concepts related to the topic and must be able to correctly reflect the results of analysis. The student must have completed the assignments given as part of independent work and current and midterm forms of assessment. In addition, within the established period, the student must obtain the required number of points in current assessment, midterm assessment, independent study, and final assessment for the relevant course. A student who has not submitted the current assessment, midterm assessment, or independent-study assignments, or who has obtained fewer than 30 points for these assignments and forms of assessment, is not admitted to the final assessment. In addition, a student who, without a valid reason, misses 25% or more of the contact hours allocated to the course is excluded from the course, is not admitted to the final examination, and is considered not to have earned the relevant credits for the course. A student who fails the final examination or obtains a score in the range of “0–29.9” for this type of examination is considered to have an academic debt.
Recommended literature	**Core literature:** **1.** X.I. Yusupov, R.A. Norov , A.T. Ilyasov, , A.T. Ilyasov, K.U. Tashxodjayeva, Qurilish jarayonlari, Bino va inshootlarni barpo etish texnologiyasi. Darslik Toshkent 2019-yil 296 bet 2. Asatov N. A. Bino va inshootlarni barpo etish texnologiyasi (o‘quv qo‘llanma) Jizzax 2021. Y 165 bet

	Additional literature: 3. N.Bozorboyev, X.I.Yusupov, R.A.Narov, A.M.Ilmuradov, V. Rasulov, B.T.Xushnazarov, F.N.Bozorboyev, I.N.Salimova Bino va inshootlarni barpo etish texnologiyasi. Darslik Toshkent -2018 161 bet **Internet resources:** 4. https://www.ziyonet.uz/ 5. Academia.edu