Course Title	Structural Analysis of Buildings (ECTS 4)
Topic/Module Code	BTT 1304
Semesters Taught	Semesters 2/3
Assigned Instructor	Janizaqov Abduvahob Esirgapovich, Associate Professor
Language of Instruction	Uzbek
Course Type	Compulsory
Academic Hours (including independent study)	**Total hours:** 120 **Classroom hours:** 48 • Lecture hours: 24 • Laboratory hours: — • Practical hours: 24 **Independent study:** 72 hours
ECTS	4
Course Objectives, Tasks, and Learning Outcomes	**Course Objective:** The main goal of teaching the "Structural Analysis of Buildings" course is to develop students' knowledge of the theoretical foundations of architecture, the formation of indoor microclimates, reliability, and long-term durability, as well as designing residential, public, and industrial buildings based on current Building Codes and Rules, along with the ability to apply this knowledge in practice. **Course Tasks:** To achieve this goal, the course aims to form students' theoretical knowledge, practical skills, a methodological approach to the building design process, and a scientific outlook according to course requirements. **Learning Outcomes:** 1. Ability to apply the fundamentals of designing various types of buildings and structures; 2. Consideration of fire protection and seismic requirements when designing different types of buildings and structures; 3. Ability to describe and explain the differences between building design codes and regulations; 4. Ability to apply methods for determining design and structural solutions for residential, public, and industrial buildings and structures.
Course Content (Topics)	**I. Main Theoretical Part (Lectures)** Topic 1: Introduction to the course "Analysis of Building Structures". Topic 2: General design criteria. Topic 3: Civil buildings. Topic 4: Structural design Topic 5: Ground and foundations.

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	Topic 6: Exterior walls and their structural elements. Topic 7: Inter-floor slabs (floors). Topic 8: Curtain/partition walls. Windows and doors. Topic 9: Roof structures and basic requirements. Topic 10: Stairs and elevators. Types and main elements of stairs and elevators. Topic 11: Large-block buildings. Large-panel buildings. Prefabricated volumetric block buildings. Topic 12: Design of single-story and multi-story industrial buildings. **II. Instructions and Recommendations for Laboratory Classes** Laboratory classes are not provided for in the model curriculum of the subject. **III. Instructions and Recommendations for Practical Classes** The teacher's preparation for practical classes begins with studying preliminary documents (curriculum, topical plan, etc.) and ends with drafting the lesson plan. The teacher must have a clear understanding of the goals and tasks of the practical class, as well as the workload to be completed by each student. Methodological guidelines serve as the primary document for the teacher when preparing and conducting practical sessions. The goal of practical classes is to understand theory, acquire skills, apply them consciously in academic and professional activities, and develop the ability to form a well-founded perspective. **Recommended Practical Topics:** 1. Introduction to normative and technical documentation. Determining the climatic classification of construction areas. 2. Typology of residential buildings. Study of architectural layout rules. 3. Composition of structural sections. Facades of residential buildings. Methodology for selecting primary structural elements. 4. Familiarization with construction structure catalogs. Structural solutions for foundations. 5. Structural solutions for beamed inter-floor floorings. 6. Structural solutions for rafter roofs. Construction of floors and roofing. 7. Design notes on construction phases: analysis of transition situations and their impact on safety checks. 8. Public buildings. 9. Constructing functional-technological building layouts and floor plan arrangement schemes. 10. Study of structural elements of framed buildings. Development of assembly layout drawings for structural elements. 11. Wall-connecting details and joints in frame-panel buildings. Translucent windows and doors. Floor design. Roofs. 12. Notable examples of modern architectural building design and digital modeling.

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	IV. Independent Learning and Independent Work The independent study competency serves to help students with self-development and to increase the efficiency of professional activities. Students complete independent assignments on their mobile devices under the guidance of the teacher, either in traditional or electronic form. **Independent Study Topics:** 1. Energy efficiency and climate change. 2. Ecofriendly, sustainable, and smart architecture. 3. Climatic and physical-geological data for design. 4. Determining the climatic classification of the construction region. 5. Analysis of space-planning solutions for residential buildings. 6. Floor plan development. 7. Stairs and elevators. Drawing a section through the staircase. Fire safety requirements in stair design. 8. Constructing and drawing facades. 9. Analysis and drafting of foundation plans. 10. Analysis of structural solutions for residential buildings. Selection of structural elements. 11. Wall types and key requirements. Comparative characteristics of load-bearing and enclosing structures. 12. Construction in seismic zones. Analysis and drafting of inter-floor slabs. 13. Roof analysis and drafting. Rafter roofs and roof coverings. Combined flat roofs and roofing membranes. Fire protection requirements in roof design. 14. Drafting structural details/nodes. Master plan development. Calculation of technical and economic indicators. 15. Smart home management capabilities.
Student Assessment	Student assessment is based on mastery of instructional materials (tests, assignments, written and oral work results) during the semester and final examination. Students are evaluated on a 100-point system. Of this total, 50 points are allocated to continuous and midterm assessments (60% for continuous assessment/independent study, and 40% for midterm assessment), while 50 points are allocated to the final exam. Students whose total continuous and midterm assessment score is below 30 points are not admitted to the final exam. A student who scores 30 or more points on the final exam is considered to have passed the course.
Exam Requirements	The student must fully master the theoretical and practical concepts of the topic and accurately reflect analysis results. The student must have completed assignments given for independent work, continuous, and midterm assessments. Additionally, within the specified period, the student must obtain the required minimum score across continuous assessment, midterm assessment, independent study, and final examination. Students who have not submitted continuous assessment, midterm assessment, or independent study assignments, or who score fewer than 30

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	points across these assessment types, will not be admitted to the final exam. Furthermore, a student who misses 25% or more of the allocated classroom hours without a valid excuse will be excluded from the subject, barred from the final exam, and deemed not to have earned the relevant credits for this subject. A student who fails the final exam or scores within the range of "0–29.9" on final evaluations is considered academically indebted.
Recommended Literature	**Core Literature:** 1.Janizaqov A.E. Binolar tuzilishi tahlili. Darslik. Jizzax, JizPI nashriyoti 2026 y. –243 bet. 2.Janizaqov A.E. Arxitekturaviy konstruksiya. Darslik. Jizzax, JizPI nashriyoti 2024 y. –277 bet. 3. Miralimov M. M., Sayfiddinov S. — Bino va inshootlar arxitekturasi. Darslik. Toshkent: TAQI nashriyoti, 2021. – 356 b. 4. Qodirova S. A., Raximov L. Sh. — Arxitekturaviy bionika (Binolar tuzilishi va tabiiy konstruktiv shakllar tahlili). Darslik. Toshkent: O‘qituvchi, 2021. – 173 b. 5. Ching, Francis D. K. — Building Construction Illustrated. Hoboken: John Wiley & Sons, 2020. – 496 p. **Supplementary Literature:** 4.Mirzayev Sh.R., Voxitov M.M. Me’morchilik. I, II, III–qism. Darslik. Toshkent, 2010 y. –256 b. 5.Janizaqov A.E. Turar-joy binolari arxitekturasi. O'quv qo'llanma. Jizzax, JizPI nashriyoti 2025 y. –185 bet. 6.Setmamatov M. B., Abdullayeva Sh. I. — Yashil arxitektura va energiya tejamkorlik. Darslik. Toshkent: Fan va texnologiyalar nashriyoti, 2022. – 180 b. 7. O‘rolov A. S., Mamatmusayev T. Sh. — Arxitektura shakllarini uyg‘unlashtirish va bezash. Darslik. Samarqand: SamDAQI, 2020. – 195 b. 8. Schodek, Daniel & Bechthold, Martin — Structures Boston: Pearson, 2019. – 640 p. **Internet Resources:** 9. www.gov.uz – Government portal of the Republic of Uzbekistan. 10. www.lex.uz – National database of legislation of the Republic of Uzbekistan. 11. https://t.me/archbookuz 12. www.ZiyoNet.uz