Course Title	Timber Structures (4 ECTS)
Subject/Module Code	**YK2504**
Semester(s) in Which the Course Is Taught	Semesters 3/5
Assigned Instructor	Ablayeva O‘g‘iloy Shodiqulovna, Associate Professor
Language of Instruction	Uzbek
Course Type	Elective
Study Hours (Including Independent Study)	**Total: 120 hours** **Contact hours: 24.** Lecture hours: 24 Laboratory hours: – Practical class hours: 24 **Independent study: 72 hours**
ECTS	4
Faning maqsadi va vazifalari / ta’lim natijalari	The aim of the course is to develop students’ theoretical and practical knowledge of the fundamentals of designing and analysing civil buildings and structures and their structural elements. The objective of the course is to teach students how to use building designs in the construction of buildings and structures and how to identify economically efficient design solutions for building structures in construction practice. Learning outcomes: 1. Understand the principles of analysing timber structural elements in accordance with current regulatory documents and selecting appropriate structural solutions. 2. Understand loads and actions, and reliability factors. 3. Understand building and structure systems, including roof and floor structures. 4. Understand methods for ensuring the strength, stiffness and durability of timber structures.
Kurs mazmuni (mavzular)	**I. Main Theoretical Part (Lectures)** Topic 1. History of the development of timber structures. Topic 2. Study of wood-based materials. Physical and mechanical properties of wood and wood products. Topic 3. Forces acting on timber structures. Design of timber elements using the limit state method. Topic 4. Connections in timber structural elements. Topic 5. Design of timber structural elements subjected to tension and compression. Topic 6. Design of timber structural elements subjected to bending. Topic 7. Analysis and design of roof rafters. Topic 8. Design and analysis of timber columns. Topic 9. Design and analysis of timber beams. Topic 10. Design and analysis of timber arches. Topic 11. Design and analysis of timber frames. Topic 12. Design and analysis of timber trusses. II. Guidelines and Recommendations for Practical Classes The instructor’s preparation for a practical class begins with studying the initial documents (the curriculum, thematic plan, etc.) and concludes with the preparation of the lesson plan. The instructor should have a clear understanding of the aims and objectives of the practical class and the amount of work each student is expected to complete. Methodological guidelines are the principal methodological document used by the instructor when preparing and conducting practical classes. The purpose of practical classes is to understand the theory, acquire skills, develop the ability to apply them consciously in educational and professional activities, and build the capacity to formulate and confidently justify one’s own viewpoint. **Recommended practical topics:** Topic 1. Determining the structural analysis model of an element when analysing timber structures.

	Topic 2. Loads acting on timber structures. Topic 3. Analysis of members subjected to axial compression. Topic 4. Analysis of members subjected to axial tension. Analysis of members subjected to bending. Topic 5. Design of timber structures against bearing failure and splitting. Topic 6. Analysis of solid timber columns. Analysis of built-up timber columns. Topic 7. Analysis of glued-laminated timber columns. Topic 8. Analysis of lattice timber columns. Topic 9. Analysis of bolted connections. Topic 10. Analysis of frame members. Topic 11. Analysis of timber truss members. Topic 12. Structural forms of spatial structures and domes. **III. Independent Study and Independent Work** Independent learning competencies help students develop themselves independently and improve the effectiveness of their professional activities. Students complete independent assignments on their mobile devices, under the instructor's guidance, in traditional or electronic format. Recommended Topics for Independent Study: 1. Brief history of the development and use of timber structures. Aim and objectives of the course on timber structures, their advantages and disadvantages. Timber materials and their types. Methods of protecting timber against decay and fire. 2. Types of loads. Characteristic and design loads and their determination. Characteristic and design strengths of timber and their determination. 3. Brief information on connections in timber structural elements. Types of glued connections and their joining methods. Types and forms of dowel connections, and the advantages and disadvantages of connections. 4. Analysis of timber members subjected to tension and determination of their cross-sections. Analysis of timber members subjected to compression and determination of their cross-sectional areas. 5. Analysis of timber members subjected to bending and determination of their cross-sectional areas. 6. Types of splitting in timber structures; checking the strength of timber elements against splitting. Types of roof beams and purlins, their behaviour under load and design. 7. Types and manufacture of timber panels; load-bearing elements of timber roof/floor systems, their behaviour under load and design. 8. Types of timber columns: solid timber, glued-laminated, built-up and lattice columns. Types and configurations of timber beams: solid timber, glued-laminated timber, laminated veneer lumber and assembled beams. 9. Timber arch structures made of solid timber, glued-laminated timber and laminated veneer lumber. Timber frame structures made of solid timber, glued-laminated timber and laminated veneer lumber. 10. Timber trusses, their fields of application and functions. Forms and advantages of glued-laminated timber trusses (triangular, segmental and pentagonal trusses).
Student Assessment	Students' knowledge is assessed during the semester and in the final assessment on the basis of their mastery of the learning materials, as demonstrated through tests, assignments, and written and oral work. Throughout the course, students are assessed on a 100-point scale. Of the total, 50 points are allocated to ongoing and midterm assessment (60% of these 50 points for ongoing assessment and independent study, and 40% for midterm assessment), while 50 points are allocated to the final assessment. Students whose combined ongoing and midterm score is below 30 points are not admitted to the final examination. A student who scores 30 points or more in the final assessment is considered to have passed the course.
Examination Requirements	The student must have fully mastered the theoretical and practical concepts related to the topics and be able to present the results of analyses accurately. The student must complete the independent work and assignments set for ongoing and midterm assessment. In addition, within the prescribed period, the student must obtain the required scores in ongoing assessment, midterm assessment, independent study and the final assessment for the course. A student who has not submitted the ongoing assessment, midterm assessment and independent study assignments, or who has scored fewer than

	30 points for these assignments and assessment components, is not admitted to the final assessment. 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 scores between 0 and 29.9 points in this examination is considered to have an academic debt.
Recommended Literature	1.Maxmatqulov T. Yog‘och konstruksiyalari darslik –Toshkent: “SAHHOF”, 2022yil 2. Kazakbayev K.K. “Ekologik sof qurilish konstruksiyalari”, O‘quv qo‘llanma. Toshkent. “O‘qituvchi”, 2015yil. 3. Razzoqov S.J. Yog‘och va plastmassa konstruksiyalari. O‘quv qo‘llanma Toshkent, Akademiya. 2015yil 4. Edvard Allen,Jozef Lano «Bino qurilishi asoslari: materiallar va asoslar»1-jild. Toshkent -2026 y. 512 b. 5. SHNQ 2.01.07-21. Yuklamalar va ta'sirlar. Toshkent., 2021 6. www.gow.uz 7. www.ZiyoNet.uz 8. www.mc.uz 9. www.twirpx.com