Course Title	**Assessment of the Technical Condition of Buildings and Structures (4 ECTS)**
Course/Module Code	BITXB1704
Semester(s) in Which the Course Is Taught	Semesters 4 and 7
Assigned Instructor	Aliyev Mahsrab Rahmonqulovich, Associate Professor
Language of Instruction	Uzbek
Course Type	Compulsory
Study Hours (Including Independent Study)	**Total: 120 hours** **Classroom instruction: 48 hours** Lectures: 24 hours Laboratory classes: — Practical classes: 24 hours **Independent study: 72 hours**
ECTS Credits	4
Course Aim, Objectives and Learning Outcomes	**The aim of the course** is to develop students' theoretical and practical knowledge and skills in assessing the technical condition of buildings and structures, including identifying damage, failures and deformations in structural elements, classifying these conditions, and understanding their causes. **The objectives of the course** are to provide students with knowledge of: - the content and objectives of technical assessment; - deterioration of building structures and the main causes of such deterioration; - factors that adversely affect building structures and their classification; - natural and man-made (anthropogenic) factors; - the design and actual service life of buildings; - the causes of deterioration in steel, timber, concrete and reinforced concrete structures, and preventive measures; - factors determining the deterioration of building structures and methods for assessing physical deterioration; - operational requirements for buildings and their engineering systems; - procedures for carrying out monitoring and inspection of buildings; - technical diagnostics; - defects, damage and emergency conditions; - identification of the causes of structural damage; - preparation of technical reports based on the results of monitoring and inspection. Learning Outcomes: 1. Analyse internal and external factors affecting building and structure components, their classification, and their impact on the technical condition of structures. 2. Identify damage, failures, deformations, deviations and emergency conditions in structures, and assess their causes. 3. Use the fundamental concepts, terminology, regulatory documents and rules for assessing the technical condition of buildings and structures in professional practice. 4. Carry out a comprehensive assessment of the technical condition of buildings and structures in accordance with building codes and standards. 5. Make decisions based on the analysis and assessment of the technical condition, reliability and load-bearing capacity of structures. 6. Carry out visual and instrumental inspections of the technical condition of buildings and structures. 7. Identify existing defects, deformations, damage, failures and emergency conditions in structures. 8. Apply modern methods and tools for assessing the technical condition of buildings and structures in practical work.
Course Content (Topics)	I. MAIN THEORETICAL PART (LECTURES) Topic 1: Aims and objectives of assessing the technical condition of buildings and structures. Topic 2: Physical deterioration of buildings and structures.

Topic 3: Factors affecting building structures.

Topic 4: Operational requirements for buildings and their structural elements.

Topic 5: Deviations of buildings and structures from their design position, settlement, their causes and preventive measures.

Topic 6: Causes of various defects, damage, failures and deformations in building and structure components, and measures to prevent them.

Topic 7: Deterioration of materials used in buildings and structures.

Topic 8: Assessment of the technical condition of buildings and structures.

Topic 9: Detailed inspection.

Topic 10: Defects and damage occurring in the main structural elements of buildings.

Topic 11: Technical report on the condition of buildings and structures.

Topic 12: Rehabilitation of the load-bearing capacity and performance of the main structural elements of buildings.

II. GUIDELINES AND RECOMMENDATIONS FOR LABORATORY CLASSES

Laboratory classes are not included in the curriculum.

III. GUIDELINES AND RECOMMENDATIONS FOR PRACTICAL CLASSES

Preparation for practical classes begins with the instructor's review of the initial documents (curriculum, thematic plan, etc.) and concludes with the preparation of a lesson plan. The instructor should have a clear understanding of the aims and objectives of each practical class and the scope of work to be completed by each student. Methodological guidelines are the instructor's principal methodological document for preparing and conducting practical classes.

The purpose of practical classes is to understand theoretical material, acquire skills, apply them consciously in educational and professional activities, and develop the ability to formulate and justify one's own position.

Recommended practical topics:

1. Terms and concepts used in the course on assessing the technical condition of buildings and structures.

2. Classification, structural systems and schemes of buildings and structures. Determining building and structure dimensions in design in accordance with the requirements of construction norms and regulations (QMQ).

3. Physical deterioration of buildings and structures. Reversible and irreversible physical deterioration. Methods for determining physical deterioration.

4. Identifying factors that affect building structures.

5. Operational requirements for buildings and their structural elements.

6. Defects, damage, failures, deformations and emergency conditions.

7. Methods for determining the deterioration of materials used in buildings and structures.

8. Preliminary inspection when assessing the technical condition of buildings and structures.

9. Application of destructive and non-destructive methods to determine the physical deterioration of buildings.

10. Equipment and instruments used during inspection work.

11. Technical report on the condition of buildings and structures.

12. Technical assessment of the load-bearing structures of buildings. Identification of damage and deformations in walls and methods for restoring their performance.

IV. INDEPENDENT STUDY AND SELF-DIRECTED WORK

Independent learning helps students develop the ability to improve themselves independently and contributes to increasing the effectiveness

	of their professional activities. Students complete independent assignments on their mobile devices, under the instructor's guidance, either in traditional or electronic format. Recommended topics for independent study: 1. Classification of factors that adversely affect buildings and structures. 2. Study of the causes that lead buildings and structures to emergency conditions. 3. Defects, damage and deformations characteristic of the functional components of buildings and structures. 4. Assessment of the technical condition of individual structural elements in buildings and structure. 5. Determining the deterioration of reinforced concrete structures. 6. Determining the deterioration of steel structures. 7. Determining the deterioration of timber structures. 8. Rehabilitation of the performance of reinforced concrete structures. 9. Rehabilitation of the performance of steel structures. 10. Rehabilitation of the performance of timber structures.
Student Assessment	Student assessment is based on the level of mastery of the learning materials during the semester and final assessment, as demonstrated through tests, assignments, and written and oral work. Throughout the course "Assessment of the Technical Condition of Buildings and Structures," students are assessed on a 100-point scale. Of these, 50 points are allocated to current and midterm assessment (60% of these 50 points for ongoing assessment and independent study, and 40% for midterm assessment), while the remaining 50 points are allocated to the final assessment. Students whose combined current and midterm assessment 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 successfully completed the course.
Examination Requirements	Students must fully master the theoretical and practical concepts covered in the topics and be able to present the results of their analyses accurately. Students must complete the assignments given for independent work and the current and midterm assessment components. They must also obtain the required number of points in current assessment, midterm assessment, independent study and final assessment for the course within the specified period. A student who fails to submit current assessment, midterm assessment or independent study assignments, or who scores fewer than 30 points for these assignments and assessment components, is not admitted to the final assessment. Furthermore, a student who is absent without a valid reason for 25% or more of the classroom hours allocated to the course will be withdrawn from the course, will not be admitted to the final examination, and will be 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" in this examination is considered to have an academic debt.
Recommended Literature	*1. Aliyev M.R.* Bino va inshootlarning texnik holatini baholash. Darslik – Jizzax 2021-y. *2.* To'ychiyev N.J. Bino va inshootlar konstruksiyalari. Darslik – Voris nashtiyoti. 2010 -y. *3. Yusupxodjayev S.A.* "Qurilish konstruksiyalari" Darslik Toshkent . "O'zbekiston faylasuflari milliy jamiyati" 2019-yil, 376 bet *4. Aliyev M.R.* Bino va inshootlar zilzilabardoshligi. Jizzax: "So'g'diyona nashriyot matbaa uyi", 2023 - 108 b. *5. Qosimova S.T.* Binolarni texnik ekspluatatsiyaga xos xususiyatlari. O'quv qo'llanma. Toshkent -2003-y. 6. SHNQ 2.01.16-21 "Turar joy ob'yektlarining jismoniy eskirishini

	aniqlash”. Toshkent, 2021. 7. SHNQ 1.04.01-21. Bino va inshootlarning texnik holatini tekshirish va monitoring qilish. Toshkent, 2020 y. *8.* www.mc.uz *9.* https://gov.uz/oz/mc/sections/shaharsozlik-normalari-qurilish-va-texnik-reglamentlar *10.* www.ZiyoNet.uz 11. www.twirpx.com