Course title	Seismic Resistance of Unique and Tall Buildings (4 ECTS)
Subject/Module Code	NBBZ2304
Semester(s) in Which the Course Is Taught	Semesters 2/3
Assigned Instructor	Ablayeva O‘g‘iloy Shodiqulovna
Language of Instruction	Uzbek
Course Type	Elective
Study Hours (Including Independent Study)	**Total: 120 hours.** **Contact hours: 36** **Lecture hours: 18** Laboratory hours: – **Practical class hours: 18** **Independent study: 84 hours**
ECTS	4
Course Aim, Objectives and Learning Outcomes	**Course aim** – to teach master's students the theoretical foundations of knowledge concerning the seismic resistance of unique and tall buildings, the fundamental concepts and categories of architecture and construction, and the principles of the Construction Norms and Regulations (QMQ) and Urban Planning Norms and Regulations (ShNQ), and to develop the ability to apply them in practice. **Course objectives:** to develop theoretical knowledge, practical skills, a methodological approach to the design and construction processes that takes into account the seismic resistance of unique and tall buildings, and a scientific outlook; and to explain the content, essence and significance of the Construction Norms and Regulations and Urban Planning Norms and Regulations. **Learning outcomes:** 1. Students should understand the theoretical foundations of earthquake-resistant construction. 2. Students should understand the principles of designing buildings and structures in seismic areas. 3. Students should understand seismic requirements under construction norms and standards (QMQ, ShNQ and international standards).
Course Content (Topics)	**I. Main Theoretical Part (Lectures)** Lecture topics Topic 1. Aim and objectives of the course “Seismic Resistance of Unique and Tall Buildings”. Topic 2. Causes of earthquakes. Assessment of earthquake intensity. Topic 3. Forecasting the time of earthquakes. Consequences of strong ground shaking. Topic 4. History of the development of the theory of seismic resistance of structures. Selection of the structural analysis model for evaluating structures under horizontal inertial forces. Topic 5. Resistance of foundations and substructures to earthquakes and seismic effects. Topic 6. Basic rules for constructing buildings and structures in seismic areas. Analysis under seismic effects. Topic 7. Dynamic characteristics of construction materials. Dynamic stiffness of structures. Determination of the dynamic characteristics of structures through full-scale testing. Topic 8. Measures used to ensure earthquake resistance. Frame buildings and structures. Topic 9. Ensuring the seismic resistance of buildings and structures through the quality of construction works for unique and tall buildings. **Recommended practical topics:** Practical class topics Topic 1. Seismic phenomena. Seismic resistance of buildings. Topic 2. Characteristics of seismic effects. Topic 3. Dynamic behaviour of construction materials. Seismic connections.

	Topic 4. Seismic waves. Earthquake magnitude and energy. Topic 5. Theoretical foundations of earthquake resistance. Topic 6. Basic principles for analysing buildings and structures under earthquake effects. Topic 7. Seismic resistance issues in the construction of architectural monuments. Topic 8. General principles for ensuring the seismic resistance of buildings and structures. Topic 9. Seismic protection devices for buildings. **Independent study of the recommended topics:** Independent study topics Topic 1. Unique and tall buildings. Topic 2. Principles of the seismic resistance of buildings. Topic 3. Earthquake resistance of buildings with walls constructed from local materials. Topic 4. Methods for calculating seismic effects. Topic 5. Seismic resistance of structures. Topic 6. Determination of seismic forces. Topic 7. Design of earthquake-resistant buildings. Topic 8. Experimental methods for investigating tall buildings.
Student Assessment	Students' knowledge is assessed on the basis of ongoing assessment, practical assignments and the final assessment. The assessment takes into account the acquisition of theoretical knowledge, justification of design solutions, accuracy of calculations, preparation of cost-estimate documentation and independent working skills. Recommended 100-point distribution: ongoing assessment and classroom participation – 20 points; practical classes and computational/graphical assignments – 30 points; independent study assignments – 20 points; final assessment – 30 points. Assessment criteria are applied in accordance with the higher education institution's current internal regulations and approved assessment procedures.
Examination Requirements	To be admitted to the final assessment, students must attend the contact classes specified in the course syllabus, complete the practical assignments and submit the required independent study work. In the examination, students must be able to explain design stages and regulatory requirements; justify functional and structural solutions for buildings and structures; calculate construction work quantities; determine resource consumption; understand the content of local, facility-level and consolidated cost estimates; interpret calculation results and compare them economically. All calculations must correctly indicate units of measurement, formulas, intermediate results and final conclusions.
Recommended Literature	**Asosiy adabiyotlar:** 1.Xamraqulov R.J., Sarimsoqov S.SH..Noyob va baland binolarning zilzilabardoshligi. O‘quv qo‘llanma. Jizzax 2022 yil 2. Aliyev M.R. Bino va inshootlar zilzilabardoshligi. O‘quv qo‘llanma. Jizzax: “So‘g‘diyona nashriyot matbaa uyi”, 2023 yil 3. Seysmologiyaga kirish: uchinchi nashr. 1-jild. – Toshkent: Donishmand ziyosi, 2025. – 264-b. 4. Seysmologiyaga kirish: uchinchi nashr. 2-jild. – Toshkent: Donishmand ziyosi, 2025. – 232-b **Qo‘shimcha adabiyotlar** 5. Raxmonov B., Sagdiyev X., Yunusaliyev E. Inshootlar diamikasi va zilzilabardoshligi asoslari. Darslik – Toshkent: Cho‘lpon. 2013 yil. 6. QMQ 2.01.03-19. Seysmik hududlarda qurilish. Toshkent.2019. 7. ShNQ 2.01.03-26. Seysmik hududlarda qurilish. – Toshkent, 2026. **Internet manbaalari** 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