Name of subject	APPLICATION OF HIGHWAY STANDARDS AND REGULATIONS (4 ECTS)
Subject/module code	**AYSMHUF2103**
Science taught semester (s).	5th semester
Module leader	D. G‘ulomov, PhD, Acting Associate Professor, Department of Road Engineering
Education language	Uzbek
Connection to the curriculum	Elective
Training hours (this including independent education)	**Total hours – 120 hours** **Contact hours – 48 hours** Lecture training hours – 24 hours Practical training hours – 24 hours **Independent education – 72 hours**
Course work	No
ECTS	4
The purpose and tasks of subject / learning outcomes	**The purpose of teaching the subject is** to find the sources that govern highway design, construction, acceptance and operation. Verify their status and scope, link each applicable requirement to design or inspection evidence, and document the resulting engineering judgement. **The objectives of teaching the subject** are to distinguish legislation, technical documents and contract requirements. Check official publications, effective dates, amendments and repeals. Extract conditions, exceptions and cross-references from clauses, and record them in a requirements register and compliance matrix. Link the sampling and test method to the units, acceptance criterion and test report. Document conflicts or departures for clarification by the competent authority. Establish the basis for using a foreign document on a local project. **Learning outcomes:** 1. Distinguish the status, scope and basis of application of legislation, construction codes, standards, guidance and contract requirements. 2. Use an official publication to verify a document's title, identifier, adoption and effective dates, applicable revision, amendments and repeal status. 3. Identify mandatory requirements, voluntary provisions, conditions, exceptions and references. Explain why compliance with a specified standard is required in a particular case. 4. Produce a requirements register and compliance matrix linking each clause and revision to the asset, parameter, unit, verification method and evidence. 5. Check a proposed highway design against the relevant requirement, taking account of its conditions and exceptions. 6. Convert requirements for materials, sampling, testing, quality control and acceptance into a verification plan with clause references. 7. Distinguish the scope of construction requirements from that of operational requirements and assess whether work records or inspection evidence are sufficient. 8. Record conflicts, ambiguities and departures, draft a request for clarification by the competent authority and keep a change-impact log. 9. Compare the methods, conditions, units and criteria in national and foreign documents and explain the limits of treating them as equivalent.

	10. Compile a project compliance dossier with a document register, a requirement-to-evidence matrix and a reasoned conclusion. Defend the individual decision.
Course content (topics)	**I. Main Theoretical Part (Lecture Sessions).** Topics: 1. Highway regulatory documents. 2. Searching official publications. 3. Legal framework for highways. 4. Standardisation and technical regulation. 5. Highway design and construction sources. 6. Extracting requirements from a clause. 7. Highway design compliance. 8. Materials and acceptance. 9. Construction documentation. 10. Operational, safety and environmental requirements. 11. International standards and specifications. 12. Managing compliance. **II. Instructions and recommendations for organizing laboratory exercises** Laboratory work is not included in the curriculum **III. Practical training instructions and recommendations** The instructor's preparation for a practical session begins with the study of initial documents (such as the curriculum, topic schedule, etc.) and concludes with the development of a detailed lesson plan. The instructor must have a clear understanding of the objectives and tasks of the practical session, as well as the amount of work each student is expected to perform. Methodological guidelines serve as the primary instructional document for instructors in preparing and conducting practical sessions. The purpose of the practical session is to facilitate the comprehension of theoretical material, the acquisition of practical skills, the ability to consciously apply knowledge in academic and professional activities, and the development of critical thinking and confidence in forming personal viewpoints. *Recommended Practical Topics:* 1. Map the documents for one highway project. Record each document's type, issuing authority, scope and basis of application. 2. Compare the official records of O‘RQ-1162 and O‘RQ-117. Document the revisions, effective dates and evidence of repeal relevant to the case date. 3. Examine a reference to a standard. Identify the basis for voluntary use, a mandatory reference or a declaration of conformity. 4. Compare the official SHNQ and QR texts. Prepare a register of titles, identifiers, editions, superseded documents and references. 5. Build a matrix for selected clauses. Link each requirement to its source, conditions, check and evidence, and identify missing evidence. 6. Check the supplied highway geometry against the relevant SHNQ clause and table. Justify the use of the criterion under the stated conditions. 7. Use the relevant QR clauses to produce a construction inspection plan specifying the checks and records needed. 8. Review a materials test report. Check the method, specimen, conditions, units and criterion, and identify any invalid comparison. 9. Select sources for safety, environmental protection and user comfort. Link the applicable clauses to design drawings or field observations. 10. Compare a national clause with FP-24. Record differences in scope, testing and corrections and explain the limits of contractual application.

	11. Draft a request to clarify an ambiguous requirement and a change-impact log. Explain which decision requires authorisation. 12. Audit and individually defend the project compliance dossier. Trace each requirement from its source clause to the evidence supporting the conclusion. **IV. Independent learning and independent work** Independent learning competency helps students to develop self-improvement skills and increase the efficiency of their professional activities. Students perform independent tasks on their mobile devices under the guidance of a teacher, either in traditional or electronic form. Recommended topics for independent work: 1. Map the legislation, construction codes, standards and contract requirements for a highway case. Prepare document records and explain the basis for using each source. 2. Audit revisions in official publications. Distinguish new, repealed and future provisions, and compile a register of references and changes. 3. Build a compliance matrix for one design section. Identify requirements, conditions, criteria and evidence, and justify both findings of compliance and findings of insufficient evidence. 4. Review a construction or materials control case. Relate the test method, sample and conditions to acceptance evidence and explain any mismatch in the method or report. 5. Analyse Mogawer et al. (2025) [9]. Compare how requirements, tests and quality evidence relate during asphalt mixture design and production, and describe the study's limits. 6. Complete and individually defend the project compliance dossier. Submit the document register, clause references, evidence, a request for clarification and the version log.
Exam form	Written
Teaching/learning and examination requirements	Complete mastery of theoretical and methodological concepts and practical knowledge of the discipline, the ability to correctly reflect the results of analysis, independently reason about the processes being studied and carry out tasks in the current, intermediate forms of control and independent work, pass written work on the final control. When drawing up final exam questions, deviations from the content of the discipline program are not allowed. The bank of final exam questions for each discipline is discussed at the meeting and approved by the head of the department. No later than 1 week before the start of the final control, tickets signed by the head of the department, enclosed in an envelope, are sealed by the Dean’s office and opened 5 minutes before the start of the exam in the presence of students. Final exam duration is 80 minutes. Answers to final exam questions are recorded in copybooks with the seal of the Dean’s office. After completion of the final work, the work is immediately encrypted by a representative of the Dean’s office, and the copybooks are handed over to the commission for verification. From the moment of completion of the final exam, a period of 72 hours is allotted for checking and posting the results on the electronic platform. The teacher who taught the students in this discipline is not involved in the process of conducting the exam and checking the students' answers. Student(s) who are dissatisfied with the final exam results may submit a written or oral appeal within 24 hours of the publication of the final exam results. Complaints submitted after 24 hours from the publication of the final exam results will not be accepted.
Scope of assessment criteria and procedure	CURRENT CONTROL

	Purpose: Determining and assessing the student's level of knowledge, practical skills, and competencies on course topics. Instructions: The student's activity in daily classes is assessed through the student's mastery of course topics, as well as constructively interpreting and analyzing the educational material, developing module specific skills, acquiring practical skills (in terms of quality and the specified number) and competencies, solving problem situations aimed at applying professional practical skills, working in a team, preparing presentations, etc. Current control form: Activity in lessons; Preparing educational materials; Working with sources within the subject; Using educational technologies; Working in a team Preparing presentations; Working with projects. MIDTERM CONTROL Purpose: Assessing the student's knowledge and practical skills and level of mastery of lecture material after completing the relevant section of the course. Form and procedure of intermediate control: Midterm examination is held during the semester during the training sessions after the completion of the relevant module of the curriculum of the subject. Midterm examination is held once in written form within the framework of this subject. Midterm examination questions cover all topics of the subject. INDEPENDENT LEARNING Purpose: Independent learning is aimed at fully covering the content of this course, expanding the theoretical knowledge acquired, and establishing independent learning activities for students. Form and procedure of independent education: independent work assignments are completed in the form of an educational project, presentation, case study, problem solving, information search, digest, colloquium, essay, article, abstract, etc. Completed assignments for independent study are placed in the electronic system and checked based on the anti-plagiarism program and evaluated by the subject teacher. In this case, the uniqueness of the completed assignment should not be less than 60%, otherwise the assignment will not be accepted for assessment. The number of independent work assignments, depending on the nature of the subject, should not be less than 3 for one subject (module). Independent work assignments account for 60% of the points allocated for current and intermediate control. FINAL CONTROL Purpose: The final examination is held at the end of the semester to determine the level of mastery of the student's theoretical knowledge and practical skills in the relevant subject. The final examination is held at a specified time according to the examination schedule created by the Registrar's Office on the electronic platform. Requirements: The student must have passed the current control, intermediate control and independent learning assignments by the deadline for the final control type in the relevant subject. A student who has not passed the current control, intermediate control and independent learning assignments, as well as who has received a score in the range of “0-29,9” for these assignments and control types, is not included in the final control type. Also, a student who has missed 25 percent or more of the classroom hours allocated to a subject without a reason is excluded from this subject and is not included in the final control type and is considered not to have mastered the relevant credits in this subject. A student who has not passed or was not included in the final control type and has received a score in the range of “0-29.9” for this type of control is considered to be an academic debtor.

	Final control form: The final examination in this subject will be conducted in written form. If the final examination is conducted in written form, the requirements for assessment must also be reflected.

Criteria for assessing student knowledge

5 grade	100 points		Assessment criteria
5	90-10	Excellent	When a student is considered to be able to make independent conclusions and decisions, think creatively, observe independently, apply the knowledge he has gained in practice, understand, know, express, and narrate the essence of the subject, and have an idea about the subject.
4	70-89,9	Good	When the student is considered to be able to observe independently, apply the knowledge he has gained in practice, understand, know, express, and narrate the essence of the subject, and has an idea about the subject
3	60-69,9	Satisfactory	When the student is found to be able to apply the knowledge he has gained in practice, understands, knows, can express, and narrate the essence of the subject, and has an idea about the subject.
2	0-59,9	Unsatisfactory	When it is determined that the student has not mastered the science program, does not understand the essence of the subject, and does not have an idea about the science.

Course assessment criteria and procedure

Assessment type	Total points allocated	Control (task) form	Distribution of points	Qualifying score
Current assessment	30 points	System tasks	20 points (divided by number of tasks)	18 points
		Student activity (in seminars,	10 points	

<table>
<tr><td></td><td>
<table>
<tr><td></td><td></td><td>practical, laboratory classes)</td><td></td><td></td></tr>
<tr><td rowspan="2">Midterm assessment</td><td rowspan="2">20 points</td><td>Supervision: writing work</td><td>10 points</td><td rowspan="2">12 points</td></tr>
<tr><td>System tasks</td><td>10 points (divided by number of tasks)</td></tr>
<tr><td>Final assessment</td><td>50 points</td><td>Written assignment (5 questions)</td><td>50 points (10 points per question)</td><td>30 points</td></tr>
</table>
* Note: 60% of the points allocated for current and intermediate control are allocated to independent work assignments. Independent work assignments are evaluated as system assignments through the electronic platform.
</td></tr>
<tr><td>Recommended Literature</td><td>
1. Republic of Uzbekistan. Law on Highways, No. O‘RQ-1162 of 5 August 2026. Edition of 6 August 2026. Article 55 governs phased commencement. LexUZ
2. Republic of Uzbekistan. Law on Standardisation, No. O‘RQ-800 of 3 November 2022. Edition cited in the syllabus: 25 March 2026. LexUZ
3. Republic of Uzbekistan. Law on Technical Regulation, No. O‘RQ-819 of 27 February 2023. Edition cited in the syllabus: 19 January 2026. LexUZ
4. Ministry of Construction and Housing and Communal Services of Uzbekistan. SHNQ 2.05.02-23, Highways. Design Requirements. Order No. 01/2-61 of 23 August 2024. Effective date cited in the syllabus: 14 October 2024. LexUZ
5. Ministry of Construction and Housing and Communal Services of Uzbekistan. QR 06.03-23, Highways. Construction regulations approved by Order No. 2 of 5 January 2024. mc.uz
Additional legal, research and teaching sources
6. Republic of Uzbekistan. Law on Normative Legal Acts, No. O‘RQ-682 of 20 April 2021. Edition cited in the syllabus: 14 August 2026. LexUZ
7. Republic of Uzbekistan. Urban Planning Code, approved by Law No. O‘RQ-676 of 22 February 2021. The case dated 2 November 2026 uses the 27 July 2026 edition. The version dated 30 December 2026 is later than the case. LexUZ
8. Federal Highway Administration. Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects. FP-24, 2024. Errata cited in the syllabus: 16 October 2026. FHWA
9. Mogawer, W. S., Austerman, A. J., Stuart, K. D., Abdalfattah, I. A., Zhou, F. Comprehensive Balanced Mixture Design Protocol: Design Phase through Production Quality Assurance. Transportation Research Record, 2679(1), 2025, 915–933. DOI 10.1177/03611981231186422. DOI
</td></tr>
</table>