Name of subject	SCIENTIFIC-PEDAGOGICAL WORK (ECTS 8)
Subject/module code	**IPI1312**
Science taught semester (s).	1st, 2nd and 3rd semesters
Responsible teacher	Ganiyev Inomjon Gulomovich – head of the department "Road engineering", PhD, professor
Education language	Uzbek
Connection to the curriculum	Scientific activity
Training hours (this including independent education)	**Semester 1 — 60 h** **Semester 2 — 60 h** **Semester 3 — 120 h**
ECTS	8
The purpose and tasks of subject / learning outcomes	**The purpose of teaching the subject is** To develop competence for planning and teaching specialist subjects in higher education using a competency-based approach, activating student learning, assessing outcomes, using contemporary digital/pedagogical technologies, producing teaching materials and reflecting on teaching quality. **The objectives of teaching the subject are** To study the regulatory and methodological documents governing higher education, qualification requirements, curricula, and course syllabus; To ensure constructive alignment between intended learning outcomes, instructional content, learning activities, and assessment methods; To plan, organize, and deliver lectures, practical classes, laboratory sessions, and seminars; To apply problem-based, project-based, research-based, collaborative, and active learning approaches in the teaching process; To integrate Learning Management Systems (LMS), digital educational resources, presentations, simulation tools, and artificial intelligence technologies into teaching practices in a pedagogically appropriate, ethical, and responsible manner; To develop assessment criteria, rubrics, and tasks for diagnostic, continuous, midterm, and final assessment of students' knowledge, skills, and competencies; To plan and facilitate independent learning activities and establish effective systems for academic consultation, guidance, and feedback; To prepare instructional and methodological guidelines, lesson plans, teaching handouts, and digital educational content; To conduct pedagogical observations, engage in reflective teaching practices, perform peer observations and evaluations, and continuously improve the quality of teaching and learning; To adhere to the principles and requirements of academic integrity, inclusivity, professional teaching ethics, and educational safety. **Learning outcomes:** 1. Analyze the relationship among state educational standards, qualification requirements, curricula and course programs. 2. Formulate measurable learning outcomes for a specialist subject and plan classes around outcomes. 3. Prepare lesson plans and technological maps for lectures, practical, laboratory and seminar classes. 4. Select and apply active, problem-, project- and research-based teaching methods appropriate to the topic. 5. Create digital, visual and methodological materials for classroom and independent learning. 6. Use LMS, videoconferencing, simulations, tests and AI tools appropriately and responsibly for pedagogical purposes.

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<tr><td></td><td>7. Develop assessment criteria, rubrics and assignments for knowledge, skills and competencies.
8. Independently conduct a lecture, practical or laboratory class and manage time/group activity.
9. Provide clear, developmental and timely feedback and advise students on independent study.
10. Evaluate a class through observation, peer analysis and reflection and prepare an improvement plan.
11. Comply with academic integrity, pedagogical ethics, inclusion and safe-learning-environment requirements.
12. Document and defend scientific-pedagogical work in a portfolio, report and presentation.</td></tr>
<tr><td>Course content</td><td>I. Main activity and expected outputs:
Semester 1 — Study regulatory/methodological documents; observe and analyze lectures/practical/laboratory/seminar classes; study modern pedagogy/ICT, assessment, independent learning and teaching-material development; analyze standards, curricula and course programs; prepare one lesson plan and semester report.
Semester 2 — Define objectives/outcomes/assessment; select teaching methods and resources; prepare and conduct microteaching/lesson; use digital/simulation tools; observe experienced teachers; prepare independent-study assignment and rubric; semester report.
Semester 3 — Develop observation and assessment instruments; prepare lecture/class plan; apply modern digital/AI tools; participate in departmental educational activities; support labs/practice/independent learning; analyze assessment and feedback; produce methodological/digital resource; conduct open class; prepare final portfolio, report and defense.</td></tr>
<tr><td>Scope of assessment criteria</td><td>This is an individual scientific-activity module rather than a taught course. Credit is awarded through completion of the approved individual research plan, semester reports/attestations, research outputs and successful thesis preparation/defense milestones.
<table>
<tr><th>Assessment evidence</th><th>Basis of judgement</th></tr>
<tr><td>Personal work plan and activity diary</td><td>Completion, regularity and documented evidence.</td></tr>
<tr><td>Observed/microteaching/independent classes</td><td>Planning, pedagogical quality, student engagement, time/group management.</td></tr>
<tr><td>Teaching materials and assessment instruments</td><td>Alignment, methodological quality, digital/inclusive design and rubrics.</td></tr>
<tr><td>Portfolio and semester/final reports</td><td>Completeness, reflection, improvement proposals and academic integrity.</td></tr>
<tr><td>Report/portfolio defense</td><td>Professional presentation and evidence-based answers.</td></tr>
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<tr><td>Criteria for assessing student knowledge</td><td>
<table>
<tr><th>5 grade</th><th>100 points</th><th></th><th>Assessment criteria</th></tr>
<tr><td>5</td><td>90-10</td><td>Excellent</td><td>When a student is considered to be able to make independent conclusions and decisions, think creatively, observe</td></tr>
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				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.
Recommended Literature	1. Ganiyev, I. G. Ilmiy-pedagogik ish / I. G. Ganiyev. - JizPI, 2026. 2. Felder, R. M. Teaching and Learning STEM: A Practical Guide / R. M. Felder, R. Brent. - 2nd ed. - Wiley, 2024. 3. Lovett, M. C. How Learning Works / M. C. Lovett et al. - 2nd ed. - Wiley, 2023. 4. Zakrajsek, T. D. Teaching at Its Best / T. D. Zakrajsek, L. B. Nilson. - 5th ed. - Wiley, 2023. 5. Bean, J. C. Engaging Ideas / J. C. Bean, D. Melzer. - 3rd ed. - Wiley, 2021. 6. UNESCO. Guidance for Generative AI in Education and Research / UNESCO. - UNESCO, 2023.			