| Course Name | Research Methodology (ECTS 4) |
|---|---|
| **Topic/Module Code** | ITM1104 |
| Semester(s) Offered | Semester 1 |
| Assigned Instructors | J. Hamidov, Professor<br>O. Azizov, Associate Professor |
| Language of Instruction | Uzbek |
| Course Type | Compulsory |
| Study Hours (Including Independent Study) | **Total Hours – 120**<br>**Classroom Hours – 36**<br>Lecture Hours – 18<br>Laboratory Hours —<br>Practical Class Hours – 18<br>**Independent Study – 84 hours** |
| ECTS | 4 |
| Course Aim and Objectives / Learning Outcomes | **Course Aim** – To develop students' self-awareness and sound reasoning in scientific work and to teach them to integrate theory and practice when designing a research program.<br>**Course Objective** – To develop skills in classifying scientific disciplines, using methods effectively, selecting a topic for a research program, choosing materials, studying literature that builds research capacity, and applying the knowledge gained in practice.<br>**Learning Outcomes**<br>1. Identify a scientific problem and formulate a research topic.<br>2. Define the aim, objectives, object and subject of the research.<br>3. Select and apply appropriate scientific research methods.<br>4. Find, analyze and evaluate scientific sources.<br>5. Analyze research findings and draw scientific conclusions.<br>6. Use modern information and communication technologies.<br>7. Present research findings in articles, abstracts, reports and other formats.<br>8. Comply with academic integrity and research ethics requirements. Think independently, critically and creatively.<br>9. Use modern technologies, including artificial intelligence tools, effectively and responsibly in scientific work.<br>10. Identify a scientific problem and formulate a research topic. Define the aim, objectives, object and subject of the research. Develop a research hypothesis. Find and select scientific literature and information sources. Analyze, compare and synthesize scientific sources. Select and apply research methods suited to the research aim. |
| Course Content (Topics) | **I. Core Theory (Lectures)**<br>**Topic 1. Science as a sociocultural phenomenon. Classification of the sciences.** [9]<br>**Topic 2. Creativity and scientific research as products of cognitive activity. Forms of scientific research. Types of scientific research.** [9]<br>**Topic 3. The relationship between a problem and a problem situation in scientific research.** [9]<br>**Topic 4. "Contemporary approaches and opportunities in research methodology using artificial intelligence"** [9]<br>**Topic 5. Research schools, methods and methodological approaches in the systematic organization of scientific work** [9]<br>**Topic 6. Intellectual property law and the relationships between innovation and novelty, discovery and invention, and intellectual property and patents.** [9]<br>**Topic 7. The professionalization of researchers and their social responsibility.** [9]<br>**Topic 8. Searching for, collecting and processing scientific information. Research papers and scientific writing.** [9]<br>**Topic 9. Social ethics in scientific research.** [9] |

**II. Guidelines and Recommendations for Laboratory Sessions**

The curriculum does not include laboratory sessions.

**III. Guidelines and Recommendations for Practical Classes**

To prepare for a practical class, the instructor first reviews the relevant documents (the curriculum, the topic plan and others) and then draws up a lesson plan. The instructor should have a clear understanding of the aims and objectives of the class and of how much work each student is expected to complete.

The methodological guidelines are the instructor's main reference for preparing and conducting practical classes.

Practical classes aim to help students understand the theory and acquire the relevant skills. They also develop students' ability to apply what they learn purposefully in academic and professional work and to formulate their own views with confidence.

**Recommended Topics for Practical Classes**

1. Science as a sociocultural phenomenon
2. Classification of the sciences
3. Creativity and scientific research as products of cognitive activity. Forms of scientific research
4. The relationship between a problem and a problem situation in scientific research
5. Research schools, methods and methodological approaches in the systematic organization of scientific work
6. Intellectual property law and the relationships between innovation and novelty, discovery and invention, and intellectual property and patents
7. Understanding and explanation as criteria for scientific work
8. The impact of information and information technology on scientific research
9. Social ethics in scientific research

**IV. Independent Study and Assignments**

Independent learning skills help students direct their own development and work more effectively in professional settings. Under the instructor's guidance, students complete independent assignments in traditional or electronic form using their own mobile devices.

**Recommended Topics for Independent Study**

1. Reviewing the literature on the topic and selecting scientific information
2. Preparing a dissertation abstract
3. Writing and presenting the introduction to a dissertation
4. Preparing a presentation on the social responsibility and ethics of researchers
5. Key stages in the development of science
6. Innovations in contemporary science
7. Scientists' views on the distinctive features of scientific development
8. Fundamental research and its role in the development of society
9. Links and differences between applied research and production
10. Types of creative activity
11. Heuristics as a new methodological approach
12. Nanotechnology as a discovery of the third millennium
13. The concepts of scientific inquiry and risk-taking
14. The importance of using symbols in scientific research
15. Key concepts in science
16. Innovation policy, its aims and objectives, and the initial directions for its implementation
17. The concept, subject and object of scientific research
18. Theory of knowledge
19. Research methods and their classification
20. The structure of a research paper, the writing process and formatting requirements
21. Considerations for writing the introduction to a research paper
22. Guidelines for writing the conclusion of a research paper
23. Preparing research for defense using the example of drafting a dissertation synopsis
24. Science as a sociocultural phenomenon

| | |
|---|---|
| | 25. Classification of the sciences<br>26. Forms of scientific research<br>27. The interplay of innovation and novelty, discoveries and inventions in scientific research<br>28. Sociohistorical aspects of research schools and how they operate over time<br>29. Key methodological approaches and principles<br>30. Problems and evidence as the starting points of scientific research<br>31. Importance of information and information technology in scientific research<br>32. The professional and social responsibilities of researchers<br>33. Corruption in the scientific community and methods and tools for its prevention |
| Student Assessment | Students are assessed on their mastery of the course material during the semester and at the final assessment, based on their performance on tests, assignments, and written and oral work.<br>Research Methodology is graded on a 100-point scale. Continuous and midterm assessment account for 50 points. Of those 50 points, 60% is for continuous assessment and independent study and 40% is for midterm assessment. The final assessment accounts for 50 points. Students with a combined continuous and midterm score below 30 points are ineligible for the final examination. Students who score 30 points or more on the final assessment pass the course. |
| Examination Requirements | Students must fully master the theoretical and practical concepts of the topic and be able to present their analysis results accurately. They must complete the independent study, continuous assessment and midterm assessment assignments. They must also earn the required points for continuous assessment, midterm assessment, independent study and final assessment within the time allotted for the course.<br>Students who fail to submit the continuous assessment, midterm and independent study assignments, or who score below 30 points on these assignments and assessments, are ineligible for the final assessment.<br>Students who miss 25% or more of the scheduled classroom hours without a valid reason are withdrawn from the course, barred from the final examination and deemed to have earned no course credits.<br>Students who fail the final examination or score 0–29.9 on an examination of this type are deemed to have an outstanding academic requirement. |
| Recommended Reading | *Mirziyoyev Sh. M. Upholding the Rule of Law and Protecting Human Interests as a Guarantee of National Development and Public Welfare. Tashkent, O‘zbekiston, 2017.*<br>*Mirziyoyev Sh. M. Together We Will Build a Free and Prosperous State of Uzbekistan. Tashkent, O‘zbekiston, 2017. 56 pp.*<br>*Mirziyoyev Sh. M. We Will Build Our Great Future Together with Our Courageous and Noble People. Tashkent, O‘zbekiston, 2017. 488 pp.*<br>*Mirziyoyev Sh. M. We Will Stay on Our Path of National Development and Take It to a New Level. Tashkent, O‘zbekiston, 2017. 592 pp.*<br>*Mirziyoyev Sh. M. Critical Analysis, Strict Discipline and Personal Accountability Must Be a Daily Rule for Every Leader. Tashkent, O‘zbekiston, 2017. 104 pp.*<br>*Karimov I. A. Collected Works. Volumes 1–24. Tashkent, O‘zbekiston, 1996–2016.*<br>*Shermuhamedova N. Research Methodology. Tashkent, Fan va axborot texnologiyalar, 2014. 450 pp.*<br>*N. A. Shermuhamedova. Research Methodology. Textbook. Tashkent, Axborot texnologiyalari, 2020. 454 pp.*<br>*N. A. Shermuhamedova. Research Methodology. Textbook. Tashkent, Innovatsiya ziyo, 2021. 452 pp.* |