



Course SYLLABUS Form

Fundamentals of Natural Sciences with Methodology I

Basic course information	
Academic unit:	University of Prizren "Ukshin Hoti" – Faculty of Education
Course title:	Fundamentals of Natural Sciences with Methodology
Program	Primary
Level:	Bachelor
Course status:	Compulsory
Year of study:	3rd year, 5th semester
Number of hours per week:	3 +2
Credits – ECTS:	6
Time / location:	Faculty of Education
Course instructor:	Assoc. Prof. Dr. Rifat Morina
Contact details:	rifat.morina@uni-prizren.com
Course description	The course "Fundamentals of Natural Sciences with Methodology" aims to provide basic knowledge of the core concepts of biology, chemistry, physics, and Earth sciences, integrating them with contemporary methodological approaches to teaching. The emphasis is on scientific understanding of natural phenomena, the development of critical thinking, and the practical application of active teaching methods. The course combines scientific content with didactic strategies to prepare students as competent teachers in the field of natural sciences.
Course objectives	The aim of this course is to equip students with: • Structured knowledge of the fundamental concepts of the natural sciences; • Ability to analyze and interpret natural phenomena scientifically; • Methodological competences for planning, delivering, and assessing teaching in the natural sciences;

	• A research- and experiment-based approach to the learning process.		
Expected learning outcomes:	Knowledge The student will be able to: • Explain the basic concepts of biology, chemistry, physics, and Earth sciences; • Describe the principles of teaching methodology in the natural sciences; • Understand the importance of experimental and inquiry-based approaches in education. Skills The student will be able to: • Design lesson plans in the natural sciences using active methods; • Carry out simple experiments and practical activities in the classroom; • Analyze and interpret simple scientific data; • Use technology and didactic resources in teaching. Competences The student will develop: • Critical and analytical thinking in interpreting natural phenomena; • Pedagogical competence for organizing interactive teaching; • Ability to promote scientific culture and environmental awareness among pupils; • Professional and ethical responsibility in the teaching process.		
Contribution to student workload (which should correspond to the student's learning outcomes)			
Activity	Hours	Days/week	Total
Lectures	3	15	45
Theoretical/laboratory exercises	1	15	15
Practical work			
Contact with the instructor / consultations	1	10	10
Field exercises	0	0	0
Midterms, seminars	5	2	10
Homework	1	10	10

Student self-study time (in the library or at home)	2	15	30
Final preparation for the exam	10	2	20
Time spent on assessment (tests, quiz, final exam)	2	3	6
Projects, presentations, etc.	2	1	2
Total			148

Teaching methodology:	The teaching methodology in this course is based on active, interactive, and inquiry-based approaches, integrating theory with practice. The learning process is organized so that the student is not only a passive recipient of information, but an active participant in constructing knowledge. Teaching is carried out through: • Interactive lectures, where the basic scientific concepts are presented and their practical applications are discussed; • Group work, for problem analysis, scientific discussions, and development of critical thinking; • Discovery- and experiment-based learning, by conducting practical activities and laboratory demonstrations; • Case studies, to connect theoretical concepts with real situations in education and the environment; • Individual and group projects, which encourage research, analysis, and scientific presentation; • Pedagogical reflection, where students analyze their learning experience and the role of didactic methods.
Assessment methods:	a) Attendance and participation in lectures.....5 % b) Attendance and participation in exercises..... 10 % c) Individual work5 % d) Seminar paper 5% e) Midterm I.....15 % c) Midterm II..... 15 % d) Final exam 45%

Literature		
Core literature:		<i>Fundamentals of Natural Sciences with Methodology</i> , 2026, Rifat Morina, Prizren
Additional literature:		<i>Teaching and Learning about Science</i> . Derek Hodson Sense Publishers.: 2009, Rotterdam: Sense Publishers
Designed course plan:		
Week	Lecture topic	Exercises
Week 1:	Matter and the particulate structure of matter (Bodies and matter, states of matter, physical and chemical changes, separation of mixtures)	Observation and classification of matter in the everyday environment. (Identifying states of matter and distinguishing physical from chemical changes)
Week 2:	Measurement and physical quantities (SI system) (Base units, measurement uncertainty, errors, direct and indirect measurements)	Practical measurement of physical quantities and error analysis. (Using measuring instruments, calculating uncertainty, and interpreting data)
Week 3:	Motion of bodies (Rest and motion, path, displacement, speed, acceleration, oscillatory motion)	Analysis of motion through simple experiments. (Measuring speed, calculating acceleration, and graphing results)
Week 4:	Waves and sound (Types of waves, propagation of sound, echo.	Demonstration of wave and sound propagation (Identifying types of waves and analyzing the phenomenon of echo)
Week 5:	Forces and interactions between bodies (Force, friction, deformation, change of motion)	Experiment on forces and friction (Measuring force, the effect of friction, and interpreting changes in motion)
Week 6:	First midterm test	Practice for the First Midterm Test (Analysis of applied problems and discussion of results)

<i>Week 7:</i>	Work and energy (Simple machines, types of energy, primary and secondary sources)	Mechanical work and energy transformations (Demonstration with simple machines and identification of types of energy)
<i>Week 8:</i>	Heat and temperature (Measuring temperature, heat transfer)	Measuring temperature and heat transfer (Comparison of materials and analysis of heat conduction)
<i>Week 9:</i>	Light and optical phenomena (Rectilinear propagation of light, reflection, eclipses)	Reflection and propagation of light (Experiment with mirrors and analysis of optical phenomena)
<i>Week 10:</i>	Earth and natural resources (Atmospheric phenomena, metals, fossil fuels and their role in energy)	Identification of natural resources and their environmental impact (Analysis of fuels and discussion of sustainable use)
<i>Week 11:</i>	Cells and living organisms (Prokaryotic/eukaryotic cells, unicellular and multicellular organisms, protists)	Microscopic observation of cells (Comparison of plant and animal cells)
<i>Week 12:</i>	Plants and animals (Classification, parts of plants, vertebrates and invertebrates, economic importance)	Classification of organisms based on biological characteristics (Group work to identify plants and animals)
<i>Week 13:</i>	Water, air, and natural cycles (Water cycle, states of water, components of air, oxygen cycle)	Analysis of natural cycles and human impact (Modeling the water cycle and discussion on air pollution)
<i>Week 14:</i>	Humans, evolution, and biodiversity (Nervous system, senses, human development, evolution and evidence for it)	Analysis of human body systems and biodiversity (Discussion on human development and the importance of conserving biodiversity)
<i>Week 15:</i>	Second midterm test	Practice for the Second Midterm Test (Analytical reflection and solving interdisciplinary problems)

Academic policies and rules of conduct:

Regular attendance at lectures and exercises is mandatory. Compliance with rules of conduct such as keeping quiet during class, switching off mobile phones, respecting the schedule, etc., is required.