SYLLABUS

1. Course title:

Introduction to Natural Sciences

2. Code:

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

No

7. Class restrictions:

Only classroom teaching education students

8. Duration / semester:

1 1

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	1
9.3. Laboratory/Practice classes:	0

10. Faculty:

Faculty of Humanities & Social Sciences

11. Department/study program:

TEACHER EDUCATION

12. Lecturer:

PhD Alen Lepirica, Assistant Professor

13. Lecturer's e-mail:

alen.lepirica@untz.ba

14. Web site:

http://www.pmf.untz.ba/

15. Course aims:

- identify the position of science studies, especially geography and biology in the science system;
- awaken the interest for physical world, environment in which they live;
- meet main natural laws, processes and phenomena; - point out the complexity of relations between animate and inanimate nature; - upgrade student's expertise, skills and ability with the aim to understand the position and role of man in nature preservation;
- meet natural phenomena and processes on the Earth surface, atmosphere, hydrosphere and biosphere and geosystems formed by mutual activity of natural phenomena and social processes;
- to understand of patterns and processes of the filed biology, such as genetics, evolution, genetic engineering and biotehnology, cell of biology, ecology and systemathic;
- through interaction of cognitive science educate expert that will practically understand and apply interdisciplinary knowledge and skills.

16. Learning outcomes:

- identify the position of science studies, especially geography and biology in the science system;
- form and apply natural scientific knowledge; - recognize, analyze and interpret causal relationship between animate and inanimate nature;
- develop critical attitude for natural processes and phenomena in the environment, acquire knowledge about the importance of science in nature preservation;
- understand and interpret natural phenomena and processes on the Earth surface, atmosphere, hydrosphere and biosphere;
- analyze and interpret geosystems formed by mutual activity of natural phenomena and social processes;
- apply acquired theoretical and practical knowledge about science in everyday life, recognize and solve environmental problems and help general socio-economic environment development and social community;
- overcome techniques of information transmitting on other society parts with the aim to make nature protection popular;
- apply basic concepts of biology in the interpretation of the specific contents of Nature and Biology and develop preferences for further learning; - apply modern approaches the study of biology in both lecture and laboratory settings; - apply and organize present coherent arguments for or against various debates in biology.

17. Course content:

Term, subject, aim and tasks, science classification, position in the science system, relationship with other scientific disciplines, modern development trends. Main properties of the substance; Types of energy; Sun and solar system; Light and heat radiation of Sun; Magnetism; Chemical elements and compounds; Size, form and Earth appearance; Earth movement; Geographical consequences of Earth movement. Orientation on Earth. Time and its counting (local, zone and world time). Cartographic presentation of Earth surface. Lithosphere and land relief: Form, composition, Earth and Earth crust age. Term and relief types; Activity of endogenous and exogenous forces on relief formation. Atmosphere: composition, features and classification; Climate elements and factors; importance of the atmosphere for the life on the Earth. Hydrosphere: water circulation; World's ocean and inland water; The importance of water for the life on the Earth. Pedosphere: formatin and soil composition, Natural and artificial resources.Biosphere: Life-world (classif., biogeographic distribution). Basic characteristic of plants, animals and man. Cell Biology-organisation and function. Biochemical and molecular processes in living organisms. Genetics (genetic code, sructure and function of the genetic material), genetic engineering and biotechnology. Living organisms and environment. Evolution. Influence of the social activity on natural phenomena and processes-geoecological problems and environment protection.

18. Learning methods:

The following activities of successful learning are planned: experience, observation and deliberation, creation of abstract concepts and active experimentation.
Preferred learning styles are: visual style, auditory, verbal, kinesthetic, logical, social and independent.
For the purpose of effective teaching, learning outcomes and student competencies, the following methods of successful learning are planned: the oral presentation method, the demonstration and illustration method, the method of question-and-answer conversation or discussion, textual method and practice method.
Lectures are mainly performed by the frontal instruction using multimedia tools, active learning techniques, with active participation and discussion of students. Auditory exercises include: frontal instruction, cooperative and collaborative learning, individual learning and field work.
Preparation and presentation of teamwork or individual seminar papers.

19. Assessment methods:

The assessment or evaluation of the exam is based on the total number of points which student obtained by fulfilling the pre-examination tasks and completing the final exam, and according to the quality of the acquired knowledge and skills, and contains a maximum of 100 points (Section 20).
For the attendance of lectures and exercises during the semester the student can be awarded by 0 to 5 points. The maximum number of 5 points is given to students who were not absent any time or were absent one time, 4 points are awarded to students who were absent 2 times, 3 points to students who were absent 3 times, and students who were absent more than three times earn 0 points. For a continuous activity on lectures and exercises during the semester the student can achieve 0 to 5 points.

After the first part of the semester, the students write the test (first partial/interim exam), which includes the lectures and exercises that have been discussed in that part part of semester. The test consists of questions and tasks of multiple choice, simple recall or essay questions. Each correct answer is scored with 1 point, apropos the student can score up to 15 points on the first mid-point. After the end of the semester, the students write a test (second partial/interim exam) covering the curriculum content of lectures and exercises from the second part of the semester. The test consists of the same type of questions and tasks as the first partial exam. The answers are scored in the same way as the first partial exam. The student in the second test can achieve a maximum of 15 points. In order to achieve well-balanced level of knowledge which is being tested and conditions under which students are taking the exam all student must approach the exam at the same time.

As a part of the pre-examination tasks, students are required to prepare individual or teamwork seminar paper with a specific topic from the content of the subject. The seminar paper is submitted to the subject teacher in writing and after is being reviewed seminar must be presented orally in the last15thweek of lectures. For the seminar paper, the student can achieve 0 to 10 points.

The final exam is oral. The student answers five questions out of the curriculum program that is processed in lectures and exercises. Student must answer all five questions to pass the exam. The maximum number of points a student can achieve on an oral exam is 50, and to pass the exam it is necessary to win 25 points. Remedial and additional remedial exams are organized the same way as the final exam. In order to pass the exam student must achieve a minimum of 54 cumulative points out of which a minimum of 25 must be from the final exam.

20. Assessment components:

The exam score contains maximum 100 points and it is determined according to the following scale:

Criteria	Points	Mark	Grade	ECTS grade
Attendance of lectures	0-5	< 54	5	F
Activity during the lectures	0-5	54 - 63	6	E
Partial/Interim tests	0-30	65 - 73	7	D
Seminar paper	0-10	75 - 83	8	C
Final exam	25-50	85 - 93	9	B
Total	25-100	95 - 100	10	A

21. Required reading list:

1. Bognar, A. et al. (1997): Geografija I. Zagreb: Profil international.
2. Ćurčić, S. (2012). Osnove prirodnih nauka-praktikum. Jagodina: Pedagoški fakultet.
3. Fundamentals of Physical Geography (2006). Textbook for Class XI, NC of ER and Training. New Delhi.
4. Huddart, D., Stott, T. (2010). Earth Environments: Past, Present and Future. Liverpool: John Wiley & Sons, Ltd.
5. Matanović, V. (1997). Odabrana poglavlja iz prirodnih nauka. Beograd: Učiteljski fakultet.
6. Marsh, W., Kaufman, M. (2013). Physical Geography: Great System and Global Environments. Cambridge UP.
7. Moran, E. F. (2010). Environmental Social Science-Human Environment Interactions and Sustainability. Wiley-Blackwell. United Kingdom.
8. Stojanović, V., Pavić, D., Pantelić, M. (2014). Geografija životne sredine. Novi Sad: PMF, DGTH.
9. Strahler, A. (2011). Introducing Physical Geography. Fifth Edition. John Wiley & Sons, Inc. Boston University.
10. Vresk, M. (1997). Uvod u geografiju. Zagreb: Školska knjiga.

22. Web sources:

1. http://fhmzbih.gov.ba/
2. https://www.wmo.int/pages/index_en.html
3. http://www.worldweather.org/en/home.html
4. http://www.dwd.de/DE/Home/home_node.html
5. http://geografija.ba/geografija/

23. Applicable starting from the academic year:

2022/23

24. Adopted in the Faculty/Academy session: