SYLLABUS

1. Course title:

COMPOSITE MATERIALS

2. Code:

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

No prerequisites

7. Class restrictions:

8. Duration / semester:

1 8

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Technology

11. Department/study program:

Chemical Engineering and Technologies/Chemistry and Engineering of Materials

12. Lecturer:

Sabina Begić, associate professor

13. Lecturer's e-mail:

sabina.begic@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

The aim of the course is to give students necessary knowledge in the field of production of composite materials. The chemical and physical properties and their characteristics in relation to other materials and their practical use. Constructive characteristics and their presence in the process industry. Introduction to multicomponent systems - polymer, metal and ceramic composites. Developing an understanding of the interconnectedness of microstructure, properties and processing of composites.

16. Learning outcomes:

The aim of the course is to teach students the basic principles of functioning of structural and functional composite materials as well as the principles of operation of intelligent composite materials through:
1. Description of the synthesis, processing and properties of fibers for reinforcement of composite materials.
2. Analysis of the function of the fiber and matrix connection
3. Analysis of the criteria for selection of materials for the matrix
4. Description of key process techniques for the production of composite materials with a polymer, metal and ceramic matrix
5. Determining the interdependence of structure-properties-processing and performance of composite materials.

17. Course content:

At the end of the semester, successful students, who continued to perform their duties throughout the teaching period, gain the ability to understand the structure, properties, process techniques and performance of contemporary composite materials through:
1. Ability to explain how fibers produce and how their properties change with structure
2. Ability to explain the role of fiber-matrix boundary on the properties of composite materials
3. Ability to make a choice of material for the composite material matrix for different applications
4. Ability to describe and choose the processing method for composite production for a particular application
5. Ability to explain how process parameters affect composite properties
6. Ability to analyze and explain the mechanical properties of composite materials

18. Learning methods:

Auditorial lectures, using multimedia resouces (power point presentations), favoring the active participation and discussion of students.
Practical work on the preparation and public pesentation of individual and group seminar papers.

19. Assessment methods:

Knowledge and skills are continually evaluated throughout the semester, through: partial exams - tests - T1 and T2, and final exam. Students are obliged to approach all forms of knowledge checking during the semester.
Partial exam I includes knowledge checking after the first seven teaching units, adopted through lectures.
Partial exam II includes knowledge checking, adopted through lectures (teaching units from 8 to 15).
Partial exams I and II are in written form and each consists of 10 questions. At each partial exam, the student can win a maximum of 20 points.
As part of the prerequisites, the student can prepare a seminar work on the topics of the course content, which he submits in written form for review and assessment and can achieve a maximum of 5 points.
The presence at lectures is evaluated with a maximum of 5 points (lectures are mandatory). The student can earn up to 50 points on pre-exam activities.
The final exam covers the entire course. At the final exam, the student can win a maximum of 50 points.

20. Assessment components:

The rating on the exam is based on the total number of points the student has achieved by fulfilling the prerequisites and completing the final exam, and it contains a maximum of 100 points and is determined according to the following scale: Attendance at the lectures 5 points; Seminar work 5 points; Partial test I and II -40 points. Prerequisites total 50 points and final exam total 50 points.

21. Required reading list:

1. T. W. Chou, Eds., Structure and Properties of Composites, Vol. 13 of Materials Sciencand Technology, R. W. Cahn, P. Haasen and E. J. Kramer, Eds.,VCH Publishers Inc., New York, 1993.
2. L. A. Pilato, M. J. Michno, Advanced

22. Web sources:

http://www.unep.fr/scp/cp/publications/ (10.04.2015)

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: