

SYLLABUS

1. Course title:

Physical Chemistry and Rheology of polymers

2. Code:**3. Cycle of study:**

1

4. ECTS credits:

6

5. Type of course: Mandatory Elective**6. Prerequisites:****7. Class restrictions:**

No

8. Duration / semester:

1

5

9. Weekly contact hours:

9.1. Lectures:

3

9.2. Seminars:

1

9.3. Laboratory/Practice classes:

2

10. Faculty:

Faculty of Tehnology

11. Department/study program:

Chemical Engineering and Technologies

12. Lecturer:

Dr. sc. Amra Bratovic, assistant professor

13. Lecturer's e-mail:

amra.bratovic@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

Introduction in particular thermodynamic and kinetic behaviour of polymers which differ from behaviour of low molecular systems and their rheology. Introduction with the experimental methods for determining rheological parameters of polymeric materials. Students gain insight into all the requirements and phases of performing experiments and analysing rheological measurement results.

16. Learning outcomes:

At the end of the semester, successful students who continued to perform their duties throughout the teaching period will be trained to provide a clear picture of the structure and behavior of polymers and polymer systems, as well as the thermodynamic sizes that characterize these systems and their changes. Through theoretical and practical exercises that are conceived as short research experiments, students need to acquire autonomy in solving practical problems.

17. Course content:

The subject Physical chemistry and rheology of polymers defines rheology as a science, studying flow and deformation of material in the action of force. Knowledge is gained that gives insight into the particularity of the polymeric structures and allows to consider the influence of rheological properties on the processing and end of use polymer materials. It recognizes the thermodynamic and kinetic flexibility of polymer chains, the parameters of which depend on and their practical importance.

Colloidal polymer dispersions, polymer liquid crystals, theory of polymeric solutions, absolute and relative methods of determining the average molecular mass as well as the particularity of thermodynamic sizes of enthalpy, entropy and Gibbs free energy of mix are studied.

18. Learning methods:

The following activities of successful learning are planned:

- Lectures with the use of multimedia resources, with active participation and discussion of students;
- Auditorial exercises that acquire the skill of solving specific problems;
- Preparation and presentation of group and individual seminar papers.

19. Assessment methods:

At the beginning of the semester, the student is obliged to pass the entrance exam prior to entering the lab, and at the end of the semester will be evaluated the work in the laboratory. As part of the pre-requisites, students are required to prepare individual or group seminar work that will cover the appropriate subjects of the subject.

During the semester, the student will have two tests of the theoretical part. Each test carries 15 points.

During the semester the student will have two tests from the computational part. Each test carries 10 points.

Oral exam carries 35 points.

Lab exam carries 10 points.

The total number of points is 100.

20. Assessment components:

The assessment of the exam is based on the total number of points the student has obtained by fulfilling the pre-requisites and passing the exam according to the quality of the acquired knowledge and skills, and it contains a maximum of 100 points and is determined according to the following scale:

Student Obligations Points

Attending lectures 5

Test from the computational part 20

Test from theoretical part 30

Practical exercises 10

Final Exam 35

21. Required reading list:

- An internal script prepared by the subject teacher with the content of the lecture.
- Plavšić.M., "Polimerni materijali-nauka i inženjerstvo", Naučna knjiga, Beograd, 1996.
- Furukawa.J."Physical Chemistry of Polymer Rheology", Berlin, 2010.

22. Web sources:**23. Applicable starting from the academic year:**

2015/2016

24. Adopted in the Faculty/Academy session: