

SYLLABUS

1. Course title:

Kinetics and Mechanisms of Physical - Chemical Processes

2. Code:

(max. 20 characters)

3. Cycle of study:

1

4. ECTS credits:

7

5. Type of course: Mandatory Elective**6. Prerequisites:**

Physical Chemistry

7. Class restrictions:

(max. 150 characters)

8. Duration / semester:

1

4

9. Weekly contact hours:

9.1. Lectures:

4

9.2. Seminars:

0

9.3. Laboratory/Practice classes:

2

10. Faculty:

Faculty of Technology

11. Department/study program:

Chemical Engineering and Technologies

12. Lecturer:

Husejin Keran

13. Lecturer's e-mail:

husejin.keran@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

The aim of course is that student has to get the theoretical and practical knowledge about chemical and physical and electrochemical processes and methods for solving different problems in systems.

16. Learning outcomes:

students should be able:

- to physical and chemical processes, mechanisms and kinetics of reactions, adsorption and electrochemical processes, electrochemical and thermo-chemical dependence, kinds of electrodes, conductivity and photochemistry law and application. After finishing of course, students will be able to understand colloidal changes on this kind of matter.

17. Course content:

- Introduction in chemical kinetics,
- Speed, order and molarity of reactions,
- Chemical reactions dependence on temperature and other
- Kinds of reactions, complex reactions,
- Chemical kinetics, the first, the second and n- order of chemical reactions,
- Half time of chemical reactions,
- Kinetical theory of gaseous,
- Catalyzed and non catalyzed reactions, heterogeneous and homogeneous reactions,
- Diffusion, viscosity, heat conductivity,
- Processes on solid surface, adsorption processes,
- Photochemistry, kinds of reactions, principles, application of those reactions, kinetics of photochemical processes
- Electro-chemistry, Electrolysis, - basics, Faraday's laws, conductivity, Galvanic cell
- Electromotive forces, Electrochemical reactions, Nernst's law,
- Entropy, Electromotive forces, Oxidation and Reduction,
- Electrochemical kinetics, Electrochemical thermodynamics

18. Learning methods:

- lectures including interactive communication with students, with practical samples
- experimental exercises, where student learn on practical applications of kinetics, adsorption, colloidal chemistry and electrochemistry.
- consultancy.

19. Assessment methods:

During lectures students learn to solve practical problems, and they get skills on solving different problems. and they have exams during lectures, three in total, Students are going to get theoretical and practical knowledge to participate in research work, so they will attend to

- seminars,
- attendance at practical exercises in laboratory
- attendance at theoretical lectures,
- regular exams, planned by plan of exams during year

Students will during lectures attend two parts of exam, consisting from theory and practical work, e.g. I and II part. Students who pass exams, from theoretical and practical parts, including I and II part, getting the maximum number of points, teacher will sign in the mark, but after all obligations done at subject (after getting teacher sign in index and passing kolokvijum).

Final exam will attend students who are not satisfied with mark or they not passed some parts of exam (I or II part), but completed all their obligations.

Student can not get final mark if he or she is not passed both practical parts of exam. After exam, results of exam will be published within 10 days.

20. Assessment components:

Final mark is based on the total number of points received through lectures and on final exam, according quality of knowledge and skills. Total number points is 100, and consisting from the following:

1. attendance of lectures and experiments, total 5 points,
2. entrance kolokvijum, total 5 points,
3. final kolokvijum, 10 points,
4. partial tests (20 points per test), including theory and practical problems, minimum for pass 10 points,
5. total pre-exam points 60
6. final exam, 40 points.

21. Required reading list:

1. S . Đorđević, Fitzička hemija, Tehnološko - Metalurški fakultet Beograd, 1985.,
2. P.W. Atkins, M.J. Clugston, Načela Fizikalne hemije, Školska knjiga Zagreb, 1996. (Translation T.Cvitaš, D. Šafar - Cvitaš)
3. P.W. Atkins, Physical Chemistry, Oxford. 8.ed.

22. Web sources:

www.tf.untz.ba

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session:

(max. 10 char.)