SYLLABUS

1. Course title:

Corrosion and Protection of Materials

2. Code:

054031A1-15

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

No

7. Class restrictions:

No

8. Duration / semester:

1 6

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	0
9.3. Laboratory/Practice classes:	2

10. Faculty:

Faculty of Technology

11. Department/study program:

Chemistry and Engineering of Materials +Occupational Safety

12. Lecturer:

dr.sc. Sead Catic, full professor

13. Lecturer's e-mail:

sead.catic@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

The aim of the course "Corrosion and Protection of Materials" is to introduce students with physical and chemical properties of various materials which are essential for practical application. Acquisition of basic knowledge of material degradation due to corrosion processes and possible ways of protecting constructional materials from these undesirable processes.

16. Learning outcomes:

- Apply fundamental knowledge of electrochemistry and the appearance of electrochemical corrosion
- recognize the types of corrosion, their causes and consequences
- Explain the principles of corrosion protection techniques
- knowledge of essential chemical and physical properties of certain construction materials
- Students will understand the importance of protecting corrosion materials within the chemical engineering profession
- Apply acquired knowledge to identify and solve practical corrosion problems and protect materials
- Use literature and standards in the field of corrosion and protection of materials.

17. Course content:

Introduction. Classification of materials. Definition and division of corrosion processes by mechanism: chemical and electrochemical corrosion. Thermodynamic conditions, Pourbaix diagram. Terms of immunity and passivity of metal materials. Corrosion distribution according to the appearance of corrosion damage. Special types of corrosion. Allocation of corrosion processes toward the center where they are taking place. Atmospheric corrosion. Corrosion in soil. Corrosion in the sea. Corrosion in concrete. Kinetics of corrosion processes. Corrosion testing - electrochemical methods. Electrochemical methods for determination of corrosion rate : DC and AC methods. Corrosion protection by choice of material and design. Protection of corrosion materials by intervention in corrosion medium. Corrosion Inhibitors. Corrosion protection using electrode potential. Surface protection. Preparation of surface for protection of materials. Choice of metal coatings and application methods. Inorganic non-metallic coatings. Oxide and phosphate coatings. Organic coatings. Basic components of organic coatings. Procedures for applying organic coatings. Control of the quality of coating.

18. Learning methods:

- lectures
- laboratory exercises
- consultations as needed

19. Assessment methods:

Students must complete two partial (I and II) tests from the theoretical part during the course.
Students who have passed the 1st and the 2nd test from the theoretical part of the subject with the maximum number of points, Professor fill the grade in the index after completing all the obligations on the subject (the proof isthe signature of the Professor in the index). All students who did not passed one of the tests (I or II /) or who are not satisfied with the grade and who have fulfilled all the obligations on the subject (have the signature of the Professor in the index) are approached by the final exam.
After each test or exam, the results will be published on the info board within 7 days.

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
Attendance at lectures:	10 points
Exit Colloquium:	5
Test of the theoretical part:	20 (minimum pass number 10 points per test)
Practical exercises:	5
Final Exam:	40

21. Required reading list:

- E. Stupnišek-Lisac, Korozija i zaštita konstrukcijskih materijala, FKIT Zagrebu, (2007).
- S. Martinez, I. Štern, Korozija i zaštita- eksperimentalne metode, HINUS Zagreb (1999).
- B. Jarić, A. Rešetić, Korozija elektrohemijske osnove i katodna zaštita, Korexpert d.o.o. savska 155a, Zagreb (2003).
- I. Esih, Tehnologija zaštite od korozije, Školska knjiga Zagreb, (1990).

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: