|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study program** Chemistry | | | | |
| **Course title** Corrosion and protection of metals (H135C) | | | | |
| **Name of lecturer/lecturers** Aleksandar LJ. Bojić | | | | |
| **Type of course** Elective | | | | |
| **Number of ECTS allocated** 4 | | | | |
| **Course objectives**  Introducing students with the basic principles of corrosion process, corrosion mechanisms, forms and types of corrosion and methods for inhibition and prevention of corrosion. Introducing students with the basic principles of procedures for applying metal coatings and coating quality testingalvanic coatings. | | | | |
| **Course outcomes** | | | | |
| **SYLLABUS**  *Lectures*  Corrosion principles. Thermodynamics of electrochemical corrosion of metals. Kinetics of electrochemical corrosion of metals. Chemical corrosion of metals: gas corrosion and corrosion in non-electrolytes. Types of corrosion. Corrosion cracking of metal and intergranular corrosion. Selective dissolution and erosion-corrosion. Passivation of metals. Inhibition and corrosion prevention. Basics of galvanic protection of metals. Electrolysis and overvoltage. Deposition of metal on the cathode. The cathodic and anodic processes. Preparation of metal surfaces, analysis galvanic baths and coating quality testing. Galvanic coating metals and alloys.  *Laboratory work*  Testing the rate of corrosion by chemical and electrochemical methods. The influence of the composition of the environment on the corrosion. Prevention of corrosion by chemical inhibitors, passivation, and anode protection. Chemical and electrochemical preparation of the metal surface. Electroplating copper. The influence of bath composition and temperature on the application speed and the coating quality. Testing the quality of galvanic coatings. Tour of industrial plants for electroplating. | | | | |
| **References**  1. Mladenović S. Korozija materijala, Tehnološko-metalurški fakultet, Beograd, 1990.  2. Potter E. Elektrokemija, Školska Knjiga, Zagreb, 1968.  3. Despić A., Dražić D., Tatić-Janjić O. Osnovi elektrohemije, Naučna Knjiga, Beograd, 1970.  4. Đorđević S. Metalne prevlake, Tehnička Knjiga, Beograd, 1970.  5. Plenar A. Galvaniziranje u teoriji i praksi, Rad, Beograd, 1950. | | | | |
| **Active teaching classes** | **Lectures** 30 | | **Laboratory work** 15 | |
| **Teaching mode** Lectures, interactive teaching, laboratory exercises, field teaching, consultations. | | | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | | | |
| **Pre exam duties** | **Points** | **Final exam** | | **Points** |
| Activity during lectures | 5 | Written examination | | 40 |
| Practical teaching | 25 | Oral examination | |  |
| Teaching colloquia | 30 |  | |  |
| Seminar |  |  | |  |