

**Met/MSE 423 Syllabus: Corrosion
Fall Semester**

Course Information:

Course title: Corrosion

Course number: Met 423/ MSE 423, Fall semester

Credit hours: 3 credits

Prerequisites by topic: Chem 111 Principles of Chemistry I

Chem 112 Principles of Chemistry II

Met/MSE 201 Elements of Materials Science

Classroom: Forestry building 20 (Tuesday, Thursday; 9:30am – 10:45am)

Instructor Information:

Instructor: Batric Pesic, Professor of Metallurgy

Office: McClure 407b

Office tel: 885-6569

Office hours: 8:00am-9:00am, Tu, Th: Room 407A McClure 407B

Textbook:

Denny A. Jones, Principles and Prevention of Corrosion, Prentice Hall, 1996;

ISBN: 0-13-359993

Reference: Xeroxed notes; class handouts

Course Objectives:

The course is designed to provide the students in metallurgical, materials science, mechanical and chemical engineering with the fundamental and practical knowledge toward the understanding of corrosion and its prevention.

Course Learning Objectives:

1. To know basics of electrochemistry.
2. To be able to distinguish between galvanic and electrolytic cells, galvanic and corrosion couples.
3. To know the principles leading to metal and materials corrosion.
4. To know various forms of corrosion.
5. To know how to prepare experimental setup and measure corrosion rates.
6. To know how to evaluate corrosion (types, rates, corrosion controlling mechanisms.)
7. To know how achieve corrosion protection.
8. To know the corrosion of various metals and alloys.
9. To know how to do the materials selection resistant to corrosion

Grading System:

Exams: 100%

Homework: No credit (homework is mandatory)

Course calendar:

Lesson	Topic
1.	The technology and evaluation of corrosion
2.	
3.	Electrochemical thermodynamics and electrode potential
4.	
5.	Electrochemical kinetics of corrosion
6.	
7.	Passivity
8.	
9.	Exam
10.	Polarization methods to measure corrosion rate
11.	
12.	Galvanic and concentration cell corrosion
13.	Pitting and crevice corrosion
14.	Environmentally induced cracking
15.	
16.	Effects of metallurgical structure on corrosion
17.	
18.	Exam
19.	Corrosion related damage by hydrogen, erosion and wear
20.	
21.	Corrosion in selected corrosive environments
22.	
23.	Atmospheric corrosion and elevated temperature oxidation
24.	
25.	Cathodic protection
26.	
27.	Fall Recess
28.	Coatings and inhibitors
29.	
30.	Materials selection and design
31.	
32.	Final Examination 10:00am-12:00pm

Homework:

There are 13 homework sets, each available at the end of respective chapter. All problems must be solved.

Laboratory Projects:

None

Elements of Proper Behavior:

Come to class on time.

No snacks, drinks and chewing gums.

For the students, please address me as Dr. Pesic or Professor Pesic, you choose. This is an institution of higher learning, therefore it calls for proper communications too.