

# **MME 4008 Corrosion (Korozyon)**

**1:30-4:20 pm Room C-Z-06**

Wednesdays, Spring 2016

Metalurji ve Malzeme, Mühendislik Fakültesi

Muğla Sıtkı Koçman Üniversitesi

**Instructor:** Prof. Dr. T. David Burleigh  
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**Office:** B-1-03

**Reference Textbook:** Denny A. Jones, Principles and Prevention of Corrosion, 2<sup>nd</sup> Ed., Prentice Hall, NJ, (1996), ISBN 0-13-359993-0.

## **Course Objectives**

To inform Metallurgical and Materials Engineering students on the fundamentals of corrosion and metal oxidation, to facilitate the design of corrosion protection systems and selection of appropriate materials.

## **Corrosion Report and Presentation (15% of grade)**

Each student will write an 8-10 page corrosion report and give a 10-minute presentation based on their corrosion project. The report topics are selected by the student, and approved by the professor. Plagiarized reports will receive a zero.

## **Team Quizzes and Exams**

Attending the lectures and participating in classroom discussions are essential for a good grade. The exams and quizzes will be based on my lectures and the example problems.

## **Laboratory**

Laboratory demonstrations will be presented when and where feasible.

## **Grading:**

Your semester average will be weighted with the following distribution:

Six Team Quizzes	10%
Exam #1	12%
Exam #2	13%
Report & Presentation	15%
Final Exam	50%

Wed. 2016	Lecture (Week )	Tentative Chapter and Corrosion Lecture Topic
3-Feb	1	Introductions
10-Feb	2	1. Introduction to Corrosion corrosion rates, chemical reactions, <b>Team Quiz #1</b>
17-Feb	3	2: Thermodynamics Pourbaix diagrams, electrodes
24-Feb	4	3: Kinetics, potentiodynamic polarization, PDP, LP, <b>Team Quiz #2</b>
2-Mar	5	4: Passivity active-passive, anodic protection
9-Mar	6	<b>Exam #1</b>
16-Mar	7	5: Polarization Methods, Rp resistance, sources of errors, EIS, <b>Team Quiz #3</b>
23-Mar	8	6: Galvanic & Concentration Cells cathodic protection, differential aeration
30-Mar	9	7: Pitting and Crevice Corrosion Microbial Induced Corrosion, filiform, <b>Team Quiz #4</b>
6-Apr	10	8: Environmentally Induced Cracking, SCC hydrogen induced cracking
13-Apr	11	<b>Exam #2</b>
20-Apr	12	9: Metallurgical intergranular corrosion, weldments
27-Apr	13	10: Hydrogen, Erosion-corrosion, cavitation 11: Environments, soils, concretes, <b>Team Quiz #5</b>
4-May	14	12: Atmospheric, hot corrosion, presentations 13. Cathodic Protection, sacrificial anodes, presentations
11-May	15	14. Coatings and Inhibitors, presentations 15. Selection and Design, <b>Team Quiz #6</b>
16-27 May		<b>Final Exam</b>