TEL AVIV UNIVERSITY אוניברסיטת תל אביב

# Full Syllabus

## Course Title

**Corrosion Engineering**

## Lecturer

Professor Noam Eliaz

## Semester

A

## Course requirements

Two homework assignments: 20%; Exam: 40% (must get 60 or above!!!); Final project: 40% (see separate instructions).

## Final grade components

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## Course schedule

| Class no. / Date | Subject and Requirements (assignments, reading materials, tasks, etc.) |
|---|---|
| 1 | General terms and economics of corrosion |
| 2-5 | Thermodynamics of electrode reactions |
| 6-8 | Kinetics of electrode reactions |
| 9-10 | Corrosion measurements |
| 11-12 | Forms of corrosion |
| 13-14 | Corrosion protection |

## Required course reading

Eliaz, N., Gileadi, E. (2019) Physical Electrochemistry: Fundamentals, Techniques, and Applications, 2nd edition, Wiley-VCH, Weinheim, Germany. ISBN: 978-3-527-34139-9. In particular: Ch. 17: Corrosion, Ch. 15: Electrochemical impedance spectroscopy (EIS), Ch. 18: Electrochemical deposition.

Jones, D.A. (1995) Principles and Prevention of Corrosion, 2nd ed., Prentice Hall.

## Optional course reading

1. Popov, B.N. (2015) Corrosion Engineering: Principles and Solved Problems, Elsevier, Amsterdam, The Netherland.
2. Roberge, P.R. (2012) Handbook of Corrosion Engineering, 2nd ed., McGraw-Hill.
3. Revie, R.W. (2011) Uhlig's Corrosion Handbook, 3rd ed., John Wiley & Sons, Inc., NY, USA.
4. Fontana, M.G. (1986) Corrosion Engineering, 3rd ed., McGraw-Hill Book Co, Singapore.
5. Pourbaix, M. (1974) Atlas of Electrochemical Equilibria in Aqueous Solutions, 2nd ed., NACE, Houston, TX, USA.
6. *Corrosion*, http://www.corrosionjournal.org/.

7. *Corrosion Reviews*, https://www.degruyter.com/view/j/corrrev.
8. *Corrosion Science*, http://www.sciencedirect.com/science/journal/0010938X/.

## Comments

**Students Benefit**
The course has been approved for NACE International Collegiate Certification. Thus, students who will achieve a final grade of 75 or above will be eligible for a free year of student membership in NACE International.