CHEM 548 - Physical Chemistry of Interfaces

1. Course Information

Course Name: Physical Chemistry of Interfaces

Semester, Year: Fall 2014

Location & Time:K-09, Thursdays 9:40-12:30

2. Instructor Information

Name: Mehmet Fatih Danışman

Office Address: 0-318 Chemistry

3. Course Description

The aim of this course is to introduce students to basic surface science related terminology and instrumentation, and surface and thin film (mainly organic) preparation and characterization techniques. Hopefully at the end of the term students will have gained enough knowledge to be able to read a surface science related research article and have at least a basic understanding of its contents.

4. Course Materials & Resources

Textbook :

Surface science : an introduction, Oura, K. et al., Springer, c2003

Call no: QC173.4.S94 S96425

Modern techniques of surface science, Woodruff, D. P., Cambridge University Press, 1986

Call no: QC173.4.S94 W66

Surface Science Techniques, Bracco G and Holst B, Springer, 2013 (pdf available for download through METU library)

Theoretical Surface Science, Gros A., Springer, 2009 (pdf available for download through METU library)

Tailoring Surfaces : Modifying Surface Composition and Structure for Applications in Tribology, Biology and Catalysis, Spencer N. D., World Scientific, 2011 (pdf available for download through METU library)

Practical Guide to Surface Science and Spectroscopy, Chung Y, Academic Press, 2001 2011 (pdf available for download through METU library)

Other resources:

Mathcad: This is a powerful and easy to use/learn math software. Since it is based on a visual input format that uses standard mathematical notation (rather than text input that many other math software, like *Mathematica*, use) it is very easy to learn how to use it. ***Mathcad* is installed (or will be installed shortly) in all the computers in the chemistry computer lab**.

5. Chapters to be covered (Tentative)

- Introduction to vacuum concepts and basic instrumentation
- Surface crystallography
- Surface diffraction techniques
- Electron spectroscopy techniques
- Microscopy techniques
- Elementary processes at surfaces
- Organic thin film growth

6. Course Policies

a. Exams and Grading Policy

Homeworks	30%
Literature report and presentation	30%
Final	40%

b. Office Hours and Communication

- There are no office hours. Before coming to my office for your questions please first take an appointment through e-mail (otherwise you may not find me at my office, or I may be busy).**Please include in the subject line of your e-mails "CHEM 548" so that they won't end up in my spam box**.
- All announcements (grades, assignments,...) will be posted on "METU Class" website, and you are expected to check it regularly (weekly).

c. Prerequisites:

None, but some knowledge of quantum mechanics and/or solid state chemistry/physics may help us proceed faster.