

**COURSE RECORD**

Code	AMN 582
Name	<b>Surface Chemistry</b>
Hour per week	4 (3+ 1)
Credit	7,5
ECTS	
Level/Year	Graduate
Semester	Spring
Type	Elective
Location	
Prerequisites	
Special Conditions	
Coordinator(s)	<b>Dr. Dilek SENOL ARSLAN</b>
Webpage	
Content	This course provides fundamental knowledge and skills for surface chemistry; including adsorption, surface tension, electrical aspects of surface chemistry; electrical double layer, zeta potential, DLVO theory, contact angle (theory and measurement methods), surface forces, wettability of surface, flotation, aggregation and flocculation.
Objectives	To provide students information on surface chemistry , electrical double layer, contact angle, surface charge, electrical double layer, DLVO theory.
Learning Outcomes	L01 Surface characterization methods., Electrical aspects of surface chemistry. L02 Solid-liquid interface, stability of dispersions, stabilization of suspensions L03 Adsorption and surfactants. L04 Contact angle and hydrophobicity, Surface tension. L05 Flotation, flocculation and aggregation.
Requirements	Expected requirements of the course.
Reading List	1- Introduction to surface chemistry and catalysis / Gabor A. Somorjai, Yimin Li 2-Surface chemistry of solid and liquid interfaces / H. Yildirim Erbil.
Ethical Rules and Course Policy	Students are required to do all assigned work independently unless the assignment is defined as a group project. The assignments are required to be submitted to Turnitin.com for a review of textual similarity and detection of possible plagiarism. Proper citation of your reference source, including web sites, reviews and original research literature is essential.

**LEARNING ACTIVITIES**

<b>Activities</b>	<b>Number</b>	<b>Weight (%)</b>
Lecture	3	25%
Group Works	8	25%
Presentations	7	25%
Site Visits	1	25%
	<b>Total</b>	<b>100</b>

**ASSESSMENT**

<b>Evaluation Criteria</b>	<b>Weight (%)</b>
Group Project Assignments & Presentations	25%
Attendance/Participation	15%
Midterm	20%
Final Exam/Submission	40%
	<b>Total 100%</b>

For a detailed description of grading policy and scale, please refer to the website <https://goo.gl/HbPM2y> section 28.

### COURSE LOAD

Activity	Duration (hour)	Quantity	Work Load (hour)
In class activities	2	14	28
Lab	1	7	7
Group work	2	12	24
Research (web, library)	2	12	24
Required Readings	2	10	20
Pre-work for Presentation	2	7	14
Lab reports	1	7	7
<b>General Sum</b>			<b>124</b>

ECTS: 7,5 (Work Load/25-30)

### CONTRIBUTION TO PROGRAMME OUTCOMES\*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
LO1	5	5	5	5	4	5	5	4	5	5	5	5	5	5
LO2	5	4	5	5	4	5	5	4	5	5	5	4	5	5
LO3	5	5	5	5	4	5	5	4	4	5	4	4	5	5
LO4	5	4	5	5	5	4	5	5	4	5	4	5	5	5
LO5	5	4	5	5	5	4	5	5	5	5	5	5	5	5

\* Contribution Level: 0: None, 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

### WEEKLY SCHEDULE

W	Topic	Outcomes
1	Introductions, basic concepts of surface chemistry	L01-5
2	Thermodynamics of liquid interfaces.	L01-5
3	Classification of colloids	L01-5
4	Surfactants (structure and properties)	L01-5
5	Electrokinetics phenomena, The electrical double layer. Lab: Zetapotential measurements	L01-5
6	Wetting. Contact angle (theory and measurement methods). Lab: Contact angle measurements	L01-5
7	Flotation, aggregation and flocculation Lab: Flocculation experiment	L01-5
8	Rheology	L01-5
9	Polymers in Colloidal Systems	L01-5
10	Surface of solids	L01-5
11	Adsorption Lab : Adsorption	L01-5
12	Surface forces and DLVO theory	L01-5
13	AFM (Atomic Force Microscope) Lab/Activity: AFM measurements	L01-5
14	Term Project / Presentation	L01-5

Dr. Dilek ŞENOL ARSLAN  
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