

ORGANIC CHEMISTRY I

1	Course Title:	ORGANIC CHEMISTRY I	
2	Course Code:	KIM2011	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	3	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	4.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. MUSTAFA TAVASLI	
15	Course Lecturers:	Prof. Dr. GANI KOZA	
16	Contact information of the Course Coordinator:		
17	Website:		
18	Objective of the Course:		
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Learning the basic organic chemistry terms
		2	Realizing the general properties of organic compounds
		3	Learning the risks about organic compounds (personal and environmental) and using the chemicals carefully
		4	Learning the reactions of some main organic functional groups.
		5	Understanding and being able to comment on the reaction mechanisms.
		6	Being able to comment on the problems about organic chemistry and getting skills for solving the problems.
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		10	
21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	

1	Carbon Compounds and Chemical Bonds <ul style="list-style-type: none">• Chemical Bonds: Ionic and covalent bonds? Writing Lewis Structure? Octet Rule and exceptions of the rule? Formal Charge? Resonance• Molecular Orbital Theory? Atomic Orbitals (s, p)? Molecular Orbitals (σ, σ^*, π, π^*)? sp^3, sp^2 and sp Hybridization? Molecular Geometry• Presentations of Molecular Formula? Closed,? Structural,? Condensed,? Line,? Three dimensional formulas At the end of the course problem solving			
2	Functional Groups <ul style="list-style-type: none">• Polar/apolar covalent bonds• Intermolecular forces• Unctional Groups:? Alkanes, Alkenes and Alkynes? Aromatic Compounds? Alkyl Halides? Alcohols and Ethers? Amines? Aldehyde and Ketons? Carboxylic Acids, Acid chlorides, Acid			
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	? Electromagnetic spectrum ? Hook rule			
Practicals/Labs				
Self study	? Functional group regions			
Homeworks				
Projects	? The Frequencies of Characteristic			
Field Studies				
Midterm exams				
4	Acids and Bases			
Others				
Final Exams	? Borsted-Lowry Definition ? Lewis Definition			
Total Work Load				
Total work load/ 30 hr	? The Strengths of Acidity and Basicity (K_a , pK_a)			
ECTS Credit of the Course				4.00
	with pK_a <ul style="list-style-type: none">? Curve arrows? The factors effecting the Acidity and Basidity? Hybridization? Inductive effect? Resonance effect? Diameter? Positive atoms? Solvent			

5	<p>Alkanes: Nomenclature and Conformation</p> <ul style="list-style-type: none"> • Straight and branched Alkanes: ? Nomenclature ? Structural Isomery ? Intermolecular Forces ? Conformational Analysis: Newman Projects / Sawtooth ? Ethane, propane and butane analyses 	
6	<ul style="list-style-type: none"> • Cycloalkanes: ? One cyclo, two cyclo and polycyclo alkanes ? Nomenclature ? cis-/trans Isomery ? Ring stretching ? Conformational Analysis: Chair / Boat ? Cyclohexane, monosubstituted cyclohexane and di-substituted cyclohexane analyses 	
7	<p>Stereochemistry</p> <ul style="list-style-type: none"> • Chiral Molecules: ? Tetrahedral carbon and chirality ? N-containing compounds and chirality ? Substituted cyclohexane and chirality 	
8	<ul style="list-style-type: none"> ? Determining the (R/S) Configuration ? Optical Activity ? Specific turning angle 	
9	<ul style="list-style-type: none"> • Enantiomers: ? Racemic Mixture ? Enantiomeric excess (e.e) • Diastereoisomery: ? Diastereomeric excess (d.e.) • Meso Compounds • Fisher Projection Formulas ? Determining the (R/S) Configuration 	
10	<p>Reactions of Alkanes</p> <ul style="list-style-type: none"> • Radical Reactions: ? Homolytic Bond Breaking ? Radical Formation and Stability ? Reaction Mechanism ? Initiators, Growing and Termination • Examples: ? Radicalic chlorination of methane ? Radicalic Addition of Hydrogen bromide to Alkanes ? Radicalic Polymerization of alkanes 	
11	<p>Reactions of Alkyl Halides</p> <ul style="list-style-type: none"> • Nucleophilic Substitution (SN1/SN2) <p>Reactions:</p> <ul style="list-style-type: none"> ? Nucleophile, Electrophile and Leaving Groups ? Heterolytic bond breaking • SN2 Reaction: ? Reaction Kinetics ? Non-steady state (Walden Inversion) ? Stereochemistry ? Factors effecting the reaction rate ? The effects of Nucleophile, Electrophile, Leaving Group and Solvent 	

ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			