
	FACULTY OF ENGINEERING COURSE SYLLABUS FORM	Doküman Kodu	MF.FR.003
		Yayın Tarihi	06.09.2024
		Revizyon No	0
		Revizyon Tarihi	0
		Gizlilik Sınıfı	Hizmet içi

NE 205 – FUNDAMENTALS OF ORGANIC CHEMISTRY				
Course Code	Course Name			Semester
NE 205	Fundamentals of organic chemistry			Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/>
Hours			Credit	ECTS
Theory	Practice	Lab	3	4
3	0	0		


Course Details	
Department	Nanotechnology Engineering
Course Language	English
Course Level	Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/>
Mode of Delivery	Face to Face <input checked="" type="checkbox"/> Online <input type="checkbox"/> Hybrid <input type="checkbox"/>
Course Type	Compulsory <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
Course Objectives	This course aims to provide an introduction to the principles and mechanisms of organic chemistry including structure, nomenclature, reactions, and synthesis of organic molecules, with an emphasis on application in nanotechnology and materials science.
Course Content	Introduction to bonding, hybridization, functional groups, stereochemistry, reaction mechanisms, substitution and elimination reactions, alkanes, alkenes, alkynes, alcohols, ethers, aromatic compounds, and spectroscopy techniques (IR, NMR, MS)
Course Method/Techniques	Lecture <input checked="" type="checkbox"/> Question & Answer <input checked="" type="checkbox"/> Presentation <input checked="" type="checkbox"/> Discussion <input checked="" type="checkbox"/>
Prerequisites/Corequisites	
Work Placement(s)	

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Textbook/References/Materials
Textbook/References/Materials Textbook: <ul style="list-style-type: none"> <i>Organic Chemistry</i>, David R. Klein, 4th Edition, Wiley, 2021. References: <ol style="list-style-type: none"> <i>Organic Chemistry</i>, Paula Yurkanis Bruice, 8th Edition, Pearson, 2016. <i>Organic Chemistry as a Second Language</i>, David Klein, Wiley, 2019. <i>Introduction to Spectroscopy</i>, Pavia, Lampman, Kriz, 5th Ed., Cengage, 2014.

Course Category				
Mathematics and Basic Sciences	<input type="checkbox"/>		Education	<input type="checkbox"/>
Engineering	<input checked="" type="checkbox"/>		Science	<input checked="" type="checkbox"/>
Engineering Design	<input type="checkbox"/>		Health	<input type="checkbox"/>
Social Sciences	<input type="checkbox"/>		Profession	<input type="checkbox"/>

Weekly Schedule		
No	Topics	Materials/Notes
1	Introduction to Organic Chemistry and Chemical Bonding	Fundamentals of covalent bonding, orbitals, electronegativity
2	Hybridization, Resonance, Acid–Base Chemistry	Hybrid orbitals, resonance structures, pKa and acidity trends
3	Alkanes and Cycloalkanes – Structure and Conformation	Nomenclature, Newman projections, ring strain
4	Stereochemistry	Chirality, enantiomers, diastereomers, R/S configuration
5	Reactions and Mechanisms: Nucleophilic Substitution	SN1 vs SN2 mechanisms, kinetic considerations
6	Elimination Reactions (E1, E2)	Reaction pathways, competition with substitution
7	Alkenes: Structure, Properties, Reactions	Stability, addition reactions, regioselectivity
8	Midterm Exam	Covers Weeks 1–7

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9	Alkynes and their Reactions	Synthesis, hydration, reduction, acidity
10	Alcohols and Ethers	Preparation and reactions, protection strategies
11	Aromatic Compounds and Electrophilic Aromatic Substitution	Aromaticity, EAS mechanism, directing effects
12	Spectroscopic Methods: IR, NMR, MS	Interpretation of spectra for structure elucidation
13	Carbonyl Chemistry: Aldehydes and Ketones	Nucleophilic addition reactions, reactivity patterns
14	Carboxylic Acids and Derivatives	Mechanisms of substitution, acidity, synthesis
15	Amines and Functional Group Review	Basicity, acylation, cumulative review
16	Final Exam	Covers entire semester

 OSTİM TEKNİK ÜNİVERSİTESİ A N K A R A	FACULTY OF ENGINEERING COURSE SYLLABUS FORM	Doküman Kodu	MF.FR.003
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Assessment Methods and Criteria		
In-term studies	Quantity	Percentage
Attendance		
Lab		
Practice		
Fieldwork		
Course-specific internship		
Quiz/Studio/Criticize		
Homework		
Presentation / Seminar	1	25
Project		
Report		
Seminar		
Midterm Exam	1	25
Final Exam	1	50
Total		100%
Contribution of Midterm Studies to Success Grade	50	50
Contribution of End of Semester Studies to Success Grade	50	50
Total		100%

ECTS Allocated Based on Student Workload			
Activities	Quantity	Duration (Hrs)	Total Workload
Course Hours	14	3	56
Lab			
Practice			
Fieldwork			
Course-specific Work Placement			
Out-of-class study time	14	3	42
Quiz/Studio/Criticize			
Homework			
Presentation / Seminar	1	5	5
Project			
Report			
Midterm Exam and Preparation for Midterm	1	15	15
Final Exam and Preparation for Final Exam	1	24	24
Total Workload			150
Total Workload / 25			150/25
ECTS Credit			6

