



MARMARA UNIVERSITY Faculty of Arts and Sciences

Chemistry Department

SYLLABUS

<2016-2017> <Fall>

Course level: Lisans (First Cycle)

Course Code	Course Name	Course Type	Course Pool (if exists)	Weekly Course		Local Credit	ECTS Credit	Semester
				T	A			
CHEM4521	Drug Design in Organic Chemistry	Seçimlik	CHEM-S1	2	0	3	3	7

Prerequisite (Ders Kodu ve Adı, Min Harfli Başarı Notu)	Prerequisite to (Ders Kodu ve Adı, Min Harfli Başarı Notu)	Weekly Time & Classroom Schedule (Gün, Saat Aralığı, Derslik)
<Bu dersi bağlayan önceki derslerin kodu, adı, min hb> {Her bir dersi birbirinden noktalı virgülle ayırınız.}	<Bu dersin bağladığı sonraki derslerin kodu, adı, min hb> {Her bir dersi birbirinden noktalı virgülle ayırınız.}	

Course Lecturer	Prof. Dr. Safiye ERDEM	Teaching Assistants	<Unvan, Adı, Soyadı>
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Office hour schedule		Office hour schedule	

Course Objectives	To introduce general principles of drug design and drug action from an organic chemical perspective rather than from the perspective of specific classes of drugs; to emphasize Computer-Aided-Drug-Design approaches since these methods are important tools in modern drug design.
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Textbooks and or References	Course Web page:	
	1.	Richard B. Silverman, The Organic Chemistry of Drug Design and Drug Action, Elsevier, USA, 2015.
	2.	A. R. Leach, Molecular Modelling Principles and Applications, Prentice Hall Pearson Education, England, 2001.

Course Learning Outcomes	1.	Define and use the terms and concepts related to drug discovery and action.
	2.	Analyze and interpret the QSAR models.
	3.	Analyze and interpret a docking result.
	4.	Relate the drug action to enzyme inhibition.
	5.	Analyse a topic, in order to prepare for an oral presentation.

Program Outcomes x Course Learning Outcomes Matrix	Program Outcomes															1:Weak; 2:Medium; 3:Strong
	PK1	PK2	PK3	PK4	PK5	PK6	PK7	PK8	PK9	PK10	PK11	PK12	PK13	PK14	PK15	Course Learning Outcomes
1	0	1	0	0	0	3	0	0	0	0	0	0	3	2		DK1. Define and use the t...
0	0	2	0	0	3	2	3	0	0	0	0	0	0	2		DK2. Analyze and interpre...
0	0	3	0	0	3	2	0	0	0	0	0	0	0	2		DK3. Analyze and interpre...
1	0	3	0	0	0	2	0	0	0	0	0	0	0	2		DK4. Relate the drug acti...
0	0	3	0	1	1	1	1	2	2	3	1	1	2			DK5. Analyse a topic, in ...
0	0	2	0	0	1	2	1	0	0	1	0	1	2	0		TOTAL EFFECT

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Language of Instruction	Learning Activities and Teaching Methods			Course Presentation Form				
	Lecture, discussion.			Face-to-face, question/answer, case studies, demonstration.				
Week	Date	Weekly Course Content				Reference No - Section		
1. Week		Drug Discovery without a Lead; Lead Discovery: Screening						
2. Week		Lead Modification, Structure-Activity Relationships, Combinatorial Chemistry						
3. Week		Substituent Effects, Quantitative-Structure-Activity-Relationships (QSAR)						
4. Week		Ligand-based design: QSAR applications						
5. Week		Drug-Receptor Interactions, Topographical and Stereochemical Considerations						
6. Week		Enzymes as Catalysts, Mechanisms of Enzyme Catalysis						
7. Week		Enzyme Inhibition and Inactivation, Why Inhibit an Enzyme?						
8. Week		Midterm Exam						
9. Week		Reversible Enzyme Inhibitors and Mechanism						
10. Week		Selected Examples of Reversible Inhibitor Drugs						
11. Week		Case history of Rational Drug Design of Enzyme Inhibitors						
12. Week		Irreversible Enzyme Inhibitors, Mechanism-Based Enzyme Inhibitors						
13. Week		Structure-based design: Molecular docking						
14. Week		Group project presentation I						
15. Week		Group project presentation II						
16. Week		Group project presentation III						
17. Week		Final Exam						
Evaluation Tool		YSSL (BDS)	BNAL (BDS)	BDKL (BDS)	Calculation of Grade			
Evaluation Tools and Weight %	Evaluation Tools		Quantity	Date	Weight in Total (%)		Weight in Semester Evaluation (%)	
	Final Exam		1		60,00		0,00	
	Final-Make up Exam (if exists)		1		60,00		0,00	
	Semester Evaluation Tools				40,00		100,00	
	Midterm Exam(s)		1		20,00		50,00	
	Quiz(es)							
	Project		1		20,00		50,00	
	Homework							
	Laboratory/Atelier							
	Presentation / Seminar / Demo							
	Research / Report / Other							
	Attendance							
Student Workload Calculation								
Tool	Weekly Avr. Hour	Semester Total Hour	Tool	Weekly Avr. Hour	Semester Total Hour	Tool	Weekly Avr.	Semester Total hour
Theoretical Hours	2,00	28	Midterm Exam and Preparation	1,00	14	Atelier and Preparation		
Applied Hours	0,00	0	Quiz and Preparation			Presentation/Seminar/Demo and Preparation	1,00	14
Pre-class Self Study			Project and Preparation	1,00	14	Research/ Report/ Other and Preparation		
Pre-application/Post-application Self Study			Homework and Preparation			Final Exam and Preparation	1,00	14
Total Student Workload Hours:		84	1 ECTS Credit = 25 Student Workload Hours			Workload Calculation:	Hesap Doğru	