



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese		有機化學反應與機制		學年/學期 Academic Year/Semester		112/1	
課程名稱(英文) Course Name in English		Organic Reactions and Mechanisms					
科目代碼 Course Code		CHEM50300	系級 Department & Year	碩士	開課單位 Course-Offering Department	化學系	
修別 Type		選修 Elective	學分數/時間 Credit(s)/Hour(s)		3.0/3.0		
授課教師 Instructor		/林哲仁					
先修課程 Prerequisite							
課程描述 Course Description							
<p>The purpose of this course is to study the interrelationships between reactivity and structure in common organic molecules. This course will introduce the fundamentals, such as the essence of bonding and structure in organic molecules, the nature of the basic reactive intermediates, and organic reaction mechanisms to students.</p> <p>利用物理化學之觀念與技術來深入了解有機物結構與性質及反應機構</p> <p>Application of the concepts and techniques of physical chemistry to understanding of structures and properties of organic compounds as well as their reaction mechanisms.</p> <p>結構與鍵結 Structure and Bonding</p> <p>張力與穩定性 Strain and Stability</p> <p>活性中間產物 Reactive Intermediates</p> <p>非共價鍵結 Non-Covalent Binding Forces</p> <p>酸鹼化學 Acid-Base Chemistry</p> <p>立體化學 Stereochemistry</p> <p>軌域對稱 Orbital Symmetry</p> <p>動力學與位能面 Kinetics and Potential Energy Surface</p> <p>研究有機反應的方法 Experiments Methods for Mechanistic Studies.</p> <p>有機反應機制:加成反應與消去反應 Reaction Mechanism: Addition and Elimination</p> <p>有機反應機制:取代反應與重排反應 Reaction Mechanism: Substitution and Rearrangement</p> <p>周環性反應 Thermal Pericyclic Reactions</p> <p>光化學 Photochemistry</p>							
課程目標 Course Objectives							
使學生在修完此一課程後，就能很順利的直接了解有機文獻的內容而充實有機化學的知識以利研究工作的進行。							
系專業能力 Basic Learning Outcomes						課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives	
A	具備化學專業知識						●
B	具備獨立思考及分析解決問題之能力						●
C	具備設計與執行化學實驗之能						○
D	具備國際視野與外語能						○
圖示說明Illustration：● 高度相關 Highly correlated ○ 中度相關 Moderately correlated							

授課進度表 Teaching Schedule & Content

週次Week	內容 Subject/Topics	備註Remarks
1	Lewis structure, valence bond theory, hybridization, polarity, polarizability, hard-soft theory, resonance, hyperconjugation	
2	Molecular quantum mechanics	
3	MO theory	
4	Strain	
5	National Day	
6	Stereoselective reaction	
7	Symmetry and stereochemistry-I	
8	Symmetry and stereochemistry-II	
9	Chemical kinetics-I	
10	Midterm exam	
11	Chemical kinetics-II	
12	Isotope effects	
13	Environmental effects	
14	Substituent effects	
15	10-min reports	
16	Final exam	
17	New Year Holiday	
18		

教學策略 Teaching Strategies

- ☒ 課堂講授 Lecture
 ☒ 分組討論 Group Discussion
 ☐ 參觀實習 Field Trip
☐ 其他 Miscellaneous:

教學創新自評 Teaching Self-Evaluation

創新教學(Innovative Teaching)

- ☐ 問題導向學習(PBL)
 ☐ 團體合作學習(TBL)
 ☐ 解決導向學習(SBL)
☐ 翻轉教室 Flipped Classroom
 ☐ 磨課師 Moocs

社會責任(Social Responsibility)

- ☐ 在地實踐 Community Practice
 ☐ 產學合作 Industry-Academia Cooperation

跨域合作(Transdisciplinary Projects)

- ☐ 跨界教學 Transdisciplinary Teaching
 ☐ 跨院系教學 Inter-collegiate Teaching

- ☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance	10%			✓					
期中考成績 Midterm Exam	30%	✓							
期末考成績 Final Exam	30%	✓							
作業成績 Homework and/or Assignments									
其他 Miscellaneous (期末報告)	30%			✓					
評量方式補充說明 Grading & Assessments Supplemental instructions									
教科書與參考書目 (書名、作者、書局、代理商、說明) Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)									
1. Advanced Organic Chemistry Part A: Structure and Mechanisms, Francis A. Carey and Richard J. Sundberg ,5th Ed 2. Modern Physical Organic Chemistry, Eric V Anslyn and Dennis A. Dougherty, 2 nd Ed. 3. Perspectives on Structure and Mechanism in Organic Chemistry, Felix A. Carrol, 2nd Ed. 4. The Art of Writing Reasonable Organic Reaction Mechanisms, Robert B. Grossman, 3rd Ed. 5. March's Advanced Organic Chemistry, Michael B. Smith and Jerry March, 6th Ed.									
課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址) Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.) https://teams.microsoft.com/l/channel/19%3ayAAMMcb681vKYAYfKyXHJJPTAk12MmtPq5yNJJ_Kc_A1%40thread.tacv2/%25E4%25B8%2580%25E8%2588%25AC?groupId=4eb4d4ea-9a45-436a-b1d2-68da5cf7153b&tenantId=edba3211-8174-4411-b089-357c588fa127									
其他補充說明 (Supplemental instructions)									