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## ②國玄東華大學 教學計劃表 Syllabus

		1	产訂劃衣	Sy 113	abus				
	程名稱(中文) Name in Chinese 有機化學(一)					ester	114/1		
	程名稱(英文) Name in English	Organic Chemistry(I)							
Co	科目代碼 ourse Code	系級 開課單位 CHEM21700 Department 学二 Course-Offering Department					化學系		
	修別 Type	學程 Program	0/3.0						
I	授課教師 Instructor	1/年多昌							
Pr	先修課程 Prerequisite								
		課	程描述 Course	Descript	ion				
使同學掌握有機分子結構及有機化學的基礎知識,瞭解部分有機反應及轉化機制(Mechanisms),初步瞭解有機化學 與其它學科的關聯性及有機分子結構鑒定技術。									
		課	程目標 Cours	e Objecti	ves				
						ا تعد	o o l		
課程目標與系專業能 力相關性 Correlation between Course Objectives Basic Learning Outcomes and Dept.'s Education Objectives									
A 具係	<b>觜化學基礎知識</b>						•		
B具係	<b>精獨立思考及分析解決</b> [	問題之能					•		
C 具係	具備化學專業知								
D 具角	<b>構執行化學實驗之能力</b>		0						
E 具備國際視野與外語能力									
圖示說明	Illustration :	● 高度相關 Hi	ghly correla	ted 〇中	度相關 Moderately	corre	lated		
授 課 進 度 表 Teaching Schedule & Content									
週次Weel	週次Week 內容 Subject/Topics				,	備註Remarks			
1	1 Chapter 1 有機化合物的結構;成鍵理論等								
2									
3	3Chapter 2 Acids and Bases; Functional groups (有機化合物分子間作用力; 有機酸-鹼反應, 有機官能基團等)								
4	4 Chapter 3 Structure and Stereochemistry of Alkanes (烷烴化合物命名 及構象; 環烷烴構象分析等)								
Chapter 4 The Study of Chemical Reactions (以烷烴的free-radical chain halogenation為例,介紹其reaction energy diagram,free energy change,bond-dissociation enthalpies以及rate-determining step等。介紹Free radical,carbocation,carbanion,carbene中間體及其穩定性)									

6	Chapter 5 Stereochemistry [手性及手性分子;用Cahn-Ingold-Prelog序列 法則以(R)/(S)標記chirality center; specific rotation; enantiomeric excess; L/D命名體系,Fisher projection等]	
7	同上	
8	Chapter 6 Alkyl Halides; Nucleophilic Substitution [Alkyl halides nomenclature; 利用自由基反應製備alkyl halides; Alkyl halides 的 Bimolecular Nucleophilic Substitution反應 (SN2 reaction); Alkyl halides 的 Unimolecular Nucleophilic Substitution反應 (SN1 reaction) 以及等SN1反應過程中的重排現象等].	
9	期中考試週 Midterm Exam	
10	Chapter 7 Structure and Synthesis of Alkenes; Elimination Reactions [Nomenclature of Alkenes; Cis/Trans-以及E/Z-isomers; Stability of alkenes; 利用alkyl halides的Unimolecular Elimination 反應 (El reaction) 製備alkenes 以及其過程中的重排現象; Zaitsev's Rule; 利用alkyl halides的Bimolecular Elimination 反應 (E2 reaction) 製備alkenes; Hofmann Orientation等].	
11	同上	
12	Chapter 8 Reactions of Alkenes (Electrophilic addition of hydrogen halides to alkenes/Markovnikov's Rule; Free-Radical addition of HBr to alkenes/Anti-Markovnikov addition; Acid-catalyzed hydration of alkenes; Hydration of alkenes via Oxymercuration-Demercuration, Hydroboration of alkenes; Halogen addition to alkenes; Catalytic hydrogenation of alkenes; Addition of carbenes to alkenes; Epoxidation of alkenes together with acid-catalyzed opening of epoxides; Syn-Dihydroxylation of alkenes; Oxidative cleavage of Alkenes)	
13	同上	
14	Chapter 9 Reactions of Alkynes (Nomenclature of Alkynes; Acidity of Alkynes and formation of Acetylides; SN2 reaction of Acetylides and Nucleophilic Addition to Carbonyls; Synthesis of Alkynes by Elimination Reactions; Addition Reactions of Alkynes).	
15	同上	
16	Chapter 10 Structure and Synthesis of Alcohols (Nomenclature of alcohols and phenols; Acidity of alcohol and phenols/formation of alkoxides and phenoxides; Alcohol synthesis via addition of organometallic reagents to carbonyls; Alcohol synthesis via reduction of carbonyl compounds; Alcohol synthesis via hydrogenation of carbonyl compounds, etc.)	
17	Chapter 11 Reaction of Alcohols (Oxidation states; Oxidation of alcohols to carbonyl compounds; Transformations involving tosylates derived from alcohols; Reaction of alcohols with HBr, ZnC12, PBr3 or SOC12; Acid-catalyzed dehydration of alcohols, etc.)	
18	期末考試週 Final Exam	

教學策略 Teaching Strategies						
✓ 課堂講授 Lecture						
其他Miscellaneous: 課堂授課,課後習題, 習題分析講解。						
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						
社會責任(Social Responsibility)						
□ 在地實踐Community Practice □ 產學合作 Industy-Academia Cooperation						
跨域合作(Transdisciplinary Projects)						
一 跨界教學Transdisciplinary 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	配分比例	多元評量方式 Assessments							
Items	Percentage	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(含出缺席) General Performance (Attendance Record)									
期中考成績 Midterm Exam	50%								
期末考成績 Final Exam	50%								
作業成績 Homework and/or Assignments									
其他 Miscellaneous									

評量方式補充說明

Grading & Assessments Supplemental instructions

隨堂不定期點名5-6次, 全勤者額外加10-8分。

## 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.)

Organic Chemistry, 10th Global Edition L. L.G. Wade and J.W. Simek

## 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.)

講義ppt 上傳至:https://reurl.cc/gY1KZ4

每章習題答案將張貼在理工二館A-408外

其他補充說明(Supplemental instructions)