

中文	英文
<p>教學大綱： 有機合成方法和策略，並注重反應選擇性之探討及天然物合成之舉例。</p> <p>基本內容：</p> <ol style="list-style-type: none"> 1. 烯醇離子的化學，包括羰基α-位的烷基化與醛醇縮合反應；其形成及加成反應，著重於其立體選擇性和重要之應用。 2. 氧化、還原反應；說明不同試劑的功能，控制化性、位向、立體和光學選擇性的方法。 3. 有機硼、矽、磷、硫化合物在有機合成上之應用；使用非金屬和半導體元素於有機反應以建構碳碳鍵。 4. 有機金屬反應（包括主族金屬和過渡金屬）；使用有機金屬試劑（包括主族金屬和過渡金屬）建構碳碳鍵（有機化合物的骨架）。 5. 周環反應；協同式反應建構碳碳鍵的方法如 Diels-Alder 環化加成反應、1,3-偶極環化加成反應和重排反應。 6. 光化學反應；說明光化學反應的原理，與加熱的方法比較，使用光化學反應常可形成特異構造的化合物。 7. 自由基反應；調控活性自由基中間體的方法和應用，如聯繼反應。 8. 保護基和官能基之轉換，引進保護基和脫去保護基的原則。 9. 有機合成之策略與設計；合成溯徑分析，鍵拆解，合成團。 10. 複雜化合物之全合成；以天然物或特殊構造分子為例，比較不同的合成途徑。 	<ol style="list-style-type: none"> 1. Enolates of carbonyl compounds including alkylation at the α-position of carbonyl compounds, aldol reactions: formation and addition reactions with emphasis of the stereoselectivity and important application. 2. Oxidation / reduction reactions; Functions of different reagents; Methods for controlling the chemo-, regio-, stereo- and enantioselectivities. 3. Application of organoboron, organosilicon, organophosphorus and organosulfur reagents in organic synthesis; Use of nonmetallic and semiconductor elements as organic reagents for carbon-carbon bond formation. 4. Organometallic reactions (including main group and transition metals); Formation of carbon-carbon bonds (skeleton of organic compounds) using organometallic reagents, including main group and transition metals. 5. Pericyclic reactions; Formation of carbon-carbon bonds by using concerted reactions, such as Diels-Alder cycloaddition reactions, 1,3-dipolar cycloaddition reactions and sigmatropic rearrangements. 6. Photochemical reactions; Principle of photochemical reactions that often lead to compounds of unusual structures. 7. Free radical reactions; Methods and application for manipulation of reactive free radical intermediates, such as in the tandem reactions. 8. Conversion between protecting group and functional group; Principles for introduction and removal of protection groups. 9. Strategy and design of organic synthesis; Retrosynthesis, bond disconnection and synthons. 10. Total synthesis of complex compounds; Make comparison of different approaches to synthesize natural products and the compounds of special structures.