课程名（Coursename）  
Stereocontrolled Organic Synthesis  
  
课程代码（Coursenumber）  
M5  
  
课程对象（Audience）  
Graduates  
  
开课教师（Teacher）  
Prof. I. Paterson (1–6) and Dr M. J. Gaunt (7–12)  
  
学期（Semester）  
  
课程描述（Description）  
Modern organic synthesis plays a key role in providing useful quantities of organic compounds, which include natural products and their structural analogues for biological evaluation, new materials, and molecules with diverse chemical structures and properties.   
The main emphasis of this course is to link the consideration of stereochemistry with retrosynthetic analysis, strategic bond recognition and stereocontrolled reactions (both diastereoselective and enantioselective). This builds on the Part II A2 course The Foundations of Organic Synthesis and considers more challenging synthetic targets (several stereocentres, highly functionalised, multiple rings, etc.), where retrosynthetic analysis combined with efficient synthetic methods are exploited to allow a high level of stereocontrol in the execution of the synthesis. Illustrative examples will be given throughout from partial and total syntheses of a variety of natural (and unnatural) products. New reactions and concepts will be introduced and transition state models presented where appropriate.  
Topics Controlling and understanding relative and absolute stereochemistry in modern organic synthesis. Diastereoselective reactions of enantiomerically pure starting materials (chiral pool manipulation). Stoichiometric asymmetric synthesis using chiral reagents, substrates and auxiliaries. Catalytic asymmetric synthesis using chiral Lewis acids, oxidants, reductants, organocatalysts and enzymes. Chemical and enzymatic desymmetrisation of meso-compounds.  
  
课时信息（Totalhours）  
  
教参信息（Textbookinfo）  
1 Classics in Total Synthesis: Targets, Strategies, Methods by K. C. Nicolaou and E. J. Sorensen (Paperback - Dec. 16, 1996)  
ISBN-13: 978-3527292318  
2 Catalysts for Fine Chemical Synthesis, Regio- and Stereo-Controlled Oxidations and Reductions (Catalysts For Fine Chemicals Synthesis) (Volume 5) by Stanley M. Roberts and John Whittall (Hardcover - Sept. 24, 2007)  
ISBN-13: 978-0470090220  
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