课程名（Coursename）  
Structure and Reactivity  
  
课程代码（Coursenumber）  
B2  
  
课程对象（Audience）  
Undergraduate  
  
开课教师（Teacher）  
Dr F. J. Leeper and Dr D. A. Longbottom  
  
学期（Semester）  
M 6–8 & L 1–3  
  
课程描述（Description））  
The course will build on last year’s work on NMR spectroscopy and on the relationship between molecular geometry and reactivity. It will introduce powerful new methods for structure determination which have revolutionised NMR spectroscopy. These will be applied to problems of conformation and configuration, both in simple ring systems and in bicyclic structures. Molecular orbital theory will be applied, without mathematics, to explain the preferred structures and conformations of organic molecules, and then extended to explain the reactivity and especially the stereochemistry of a wide range of organic reactions. New reactions having interesting features will be added, extending the range from those already presented in Part IB.   
1–6 NMR Spectroscopy. Pulsed NMR. Chemical Exchange. Shift reagents. Nuclear Overhauser effect. Two-dimensional Spectra.Conformational Analysis. Conformation of six-membered rings including ketones, alkenes and heterocycles. Larger and smaller rings. Fused ring systems including steroids. Cis and trans ring-fusion. Axial and planar chirality. Structure Determination. How to determine absolute configuration and enantiomeric excess. Combined use of spectroscopic techniques to determine structure and conformation.  
7–12 The fundamental ideas of molecular orbital theory as a basis for understanding reactivity. Through space and through-bond (HOMO/LUMO) orbital interactions; hard and soft nucleophiles and electrophiles. Stereoelectronic effects on fundamental organic reactions: additions, eliminations, rearrangements, fragmentations and cyclisations. Introduction to pericyclic reactions.  
  
课时信息（Totalhours）  
  
教参信息（Textbookinfo）  
1 Inorganic Chemistry: Principles of Structure and Reactivity (4th Edition) by James E. Huheey, Ellen A. Keiter, and Richard L. Keiter (Hardcover - Jan. 17, 1997)  
ISBN-13: 978-0060429959  
2 Organic Chemistry: Structure and Reactivity by Seyhan N. Ee (Hardcover - July 3, 2003)  
ISBN-13: 978-0618318094  
世界各地拥有馆藏的图书馆（OCLC）:60  
3 Biological Inorganic Chemistry: Structure and Reactivity by Harry B. Gray, Edward I. Stiefel, Joan Selverstone Valentine, and Ivano Bertini (Hardcover - Oct. 30, 2006)  
ISBN-13: 978-1891389436  
世界各地拥有馆藏的图书馆（OCLC）:417  
4 Structure and Reactivity in Organic Chemistry by Mark G. Moloney (Paperback - May 2, 2008)  
ISBN-13: 978-1405114516  
世界各地拥有馆藏的图书馆（OCLC）:338  
5 Celluose Allomorphs: Structure, Accessibility and Reactivity by Diana Ciolacu and Valentin I. Popa (Paperback - July 2010)  
ISBN-13: 978-1616683238  
世界各地拥有馆藏的图书馆（OCLC）:4  
6 Organic Chemistry: Structure and Reactivity (Study Guide) by Seyhan N. Ege (Paperback - July 30, 2003)  
ISBN-13: 978-0618318100  
世界各地拥有馆藏的图书馆（OCLC）:11  
7 Chemical Structure and Reactivity: An Integrated Approach by James Keeler and Peter Wothers (Paperback - July 15, 2008)  
ISBN-13: 978-0199289301   
世界各地拥有馆藏的图书馆（OCLC）:156  
8 Carbon-Centered Free Radicals and Radical Cations: Structure, Reactivity, and Dynamics (Wiley Series of Reactive Intermediates in Chemistry and Biology) by Malcolm D. Forbes (Hardcover - Feb. 8, 2010)  
ISBN-13: 978-0470390092  
世界各地拥有馆藏的图书馆（OCLC）:115  
9 Structure and Reactivity of Surfaces: Proceedings of a European Conference, Trieste, Italy, September 13-16, 1988 (Studies in Surface Science and Catalysis) by Claudio Morterra, Adriano Zecchnia, and Giacomi Costa (Hardcover - Sept. 1989)  
ISBN-13: 978-0444874658  
10 Molecular Structure and Energetics, Structure and Reactivity (Molecular Structure and Energetics, Vol 7) (Volume 7) by Joel F. Liebman and Arthur Greenberg (Hardcover - Jan. 10, 1989)  
ISBN-13: 978-0471187233   
11 Computational Advances in Organic Chemistry: Molecular Structure and Reactivity (NATO Science Series C: (closed)) by Cemil Ögretir and Imre G. Csizmadia (Hardcover - Dec. 31, 1990)  
ISBN-13: 978-0792310648  
12 Modelling Molecular Structure and Reactivity in Biological Systems (Special Publications) by Kevin J. Naidoo, John Brady, Martin J. Field, and Jiali Gao (Hardcover - Nov. 9, 2006)  
ISBN-13: 978-0854046683   
世界各地拥有馆藏的图书馆（OCLC）:133