课程名（Coursename）  
Introduction to Polymers  
  
课程代码（Coursenumber）  
C5  
  
课程对象（Audience）  
Undergraduate  
  
开课教师（Teacher）  
Dr O. A. Scherman  
  
学期（Semester）  
L 4–8  
  
课程描述（Description））  
This course assumes knowledge of the organic chemistry covered in Chemistry B and the Part II A2 course. Plastics have an impact on every aspect of our daily lives. The chemistry and uses of polymers and other large molecules have undergone a revolution in the last ten years. New synthetic techniques can deliver unparalleled control in the size, shape, and properties of macromolecules. Novel applications are being developed every day, including displays, drug delivery, sensors, and electronics. The course will introduce the fundamental aspects of polymers and their synthesis and  
will illustrate their usefulness by considering a range of commercial applications. This  
will be followed by a more detailed Part III course on polymers which will build on the fundamental concepts covered in Part II.  
Topics Polymer Chemistry Synthesis of macromolecules. Chain vs. step polymerization,living systems, block co-polymers Reaction mechanisms and kinetics  
Molecular weight and topology Characterization techniques and analysis.NMR, GPC (SEC), mass spectra, DSC. Properties and applications. Shape and size of polymers, viscosity, solubility, thermosets, thermoplastics. Functional polymers Special applications. Plastic electronics, biocompatibility.  
  
课时信息（Totalhours）  
  
教参信息（Textbookinfo）  
1 Spectrometric Identification of Organic Compounds by Robert M. Silverstein, Francis X. Webster,and David Kiemle (Hardcover - Jan. 14, 2005)  
ISBN-13: 978-0471393627  
世界各地拥有馆藏的图书馆（OCLC）:421  
2 Structure Determination of Organic Compounds: Tables of Spectral Data by Ernö Pretsch, Philippe Bühlmann, and Martin Badertscher (Paperback - Apr. 23, 2009)  
ISBN-13: 978-3540938095  
世界各地拥有馆藏的图书馆（OCLC）:82  
3 The Systematic Identification of Organic Compounds by Ralph L. Shriner, Christine K. F. Hermann, Terence C. Morrill, and David Y. Curtin (Paperback - Dec. 9, 2008)  
ISBN-13: 978-0471215035  
世界各地拥有馆藏的图书馆（OCLC）:318  
4 Crystallization of Organic Compounds: An Industrial Perspective by Hsien-Hsin Tung, Edward L. Paul, Michael Midler, and James A. McCauley (Hardcover - June 9, 2009)  
ISBN-13: 978-0471467809  
世界各地拥有馆藏的图书馆（OCLC）:66  
5 Modern Organic Synthesis in the Laboratory by Jie Jack Li, Chris Limberakis, and Derek A. Pflum (Paperback - Sept. 10, 2007)  
 ISBN-13: 978-0195187991  
世界各地拥有馆藏的图书馆（OCLC）:332  
6 Organic Structure Determination Using 2-D NMR Spectroscopy: A Problem-Based Approach (Advanced Organic Chemistry) by Jeffrey H. Simpson (Paperback - July 24, 2008)  
ISBN-13: 978-0120885220  
世界各地拥有馆藏的图书馆（OCLC）:329  
7 The Synthetic Organic Chemist's Companion by Michael C. Pirrung (Paperback - July 10, 2007)  
ISBN-13: 978-0470107072  
世界各地拥有馆藏的图书馆（OCLC）:457  
8 Organic Synthesis: The Disconnection Approach by Stuart Warren and Paul Wyatt (Paperback - Jan. 14, 2009)  
ISBN-13: 978-0470712368  
世界各地拥有馆藏的图书馆（OCLC）:177  
9 Organic Structure Analysis (Topics in Organic Chemistry) by Phillip Crews, Jaime Rodriguez, and Marcel Jaspars (Hardcover - Oct. 29, 2009)  
ISBN-13: 978-0195336047  
世界各地拥有馆藏的图书馆（OCLC）:118  
10 Workbook for Organic Synthesis: The Disconnection Approach by Stuart Warren and Paul Wyatt (Paperback - Jan. 19, 2010)  
ISBN-13: 978-0470712269   
世界各地拥有馆藏的图书馆（OCLC）:35  
11 Environmental Organic Chemistry by Rene P. Schwarzenbach, Philip M. Gschwend, and Dieter M. Imboden (Paperback - June 15, 2002)  
ISBN-13: 978-0471357506  
世界各地拥有馆藏的图书馆（OCLC）:387