课程名（Coursename）  
Biomolecular Structure and Function  
  
课程代码（Coursenumber）  
M8  
  
课程对象（Audience）  
Graduates  
  
开课教师（Teacher）  
Prof. C. Abell and Prof. S. Balasubramanian  
  
学期（Semester）  
  
课程描述（Description）  
Our understanding of biological processes at the molecular level is developing at an unprecedented rate. Advances in genomics and proteomics, coupled with a rapid increase in the amount of structural information about proteins and oligonucleotides, are providing a wealth of information about the interaction between a biological catalyst and its substrate. In this course we will use some key biological systems to explain ideas about the interplay between structure and function, and how this relates to mechanism and catalysis. A recurrent theme will be the opportunities this knowledge presents for the design of novel pharmaceuticals. The course builds on material in the Part II courses on Biological Catalysis (B3) and the Biological Macromolecules (C3).  
Prof. C. Abell  
1–6 Oligosaccharide assembly and breakdown. Carboxylation reactions. Tetrapyrrole assembly. Radical reactions on enzymes  
Prof. S. Balasubramanian  
7–12 DNA recognition by proteins. RNA secondary structure and protein recognition. RNA enzymes – Ribozymes. Riboswitches and micro RNA. Nucleic acid cleavage by Nucleases. DNA polymerases. DNA replication  
  
课时信息（Totalhours）  
  
教参信息（Textbookinfo）  
1 From Dynamics to Structure and Function of Model Bio-Molecular Systems (Stand Alone Dup) by Fabien Fontaine-Vive (Paperback - Apr. 15, 2007) – Illustrated  
ISBN-13: 978-1586037413  
世界各地拥有馆藏的图书馆（OCLC）:36  
2 Structure, Dynamics and Function of Biological Macromolecules and Assemblies (NATO Science) by J.D. Puglisi (Hardcover - May 2005) – Illustrated  
ISBN-13: 978-1586034757  
世界各地拥有馆藏的图书馆（OCLC）:85  
3 Biomolecular Films: Design, Function, and Applications (Surfactant Science) by James F. Rusling (Hardcover - Feb. 26, 2003)  
ISBN-13: 978-0824708993  
世界各地拥有馆藏的图书馆（OCLC）:134  
4 Petascale Computing: Algorithms and Applications (Chapman & Hall/CRC Computational Science) by David A. Bader (Hardcover - Dec. 22, 2007)  
ISBN-13: 978-1584889090  
世界各地拥有馆藏的图书馆（OCLC）:148  
5 Molecular Modeling and Simulation by Tamar Schlick (Hardcover - Aug. 19, 2002)  
ISBN-13: 978-0387954042  
世界各地拥有馆藏的图书馆（OCLC）:331  
6 Bionanotechnology: Lessons from Nature by David S. Goodsell (Hardcover - Jan. 29, 2004)  
ISBN-13: 978-0471417194  
世界各地拥有馆藏的图书馆（OCLC）:656  
7 Automation in Proteomics and Genomics: An Engineering Case-Based Approach by Gil Alterovitz, Roseann Benson, and Marco Ramoni (Hardcover - May 11, 2009)  
ISBN-13: 978-0470727232  
世界各地拥有馆藏的图书馆（OCLC）:88