课程名（Coursename）  
Chemical Biology III – Nucleic Acids  
  
课程代码（Coursenumber）  
C7  
  
课程对象（Audience）  
Undergraduate  
  
开课教师（Teacher）  
Prof. S. Balasubramanian and Dr M. Gait  
  
学期（Semester）  
L 4–8  
  
课程描述（Description））  
Nucleic acids are fundamental to life and to the study and exploitation of the life sciences. Understanding the chemistry of nucleic acids is as important now as it has ever been given the recent groundbreaking discoveries that relate to DNA, RNA and genome function. These lectures will provide detailed insights into the chemistry of nucleic acids and how this relates to their structure and function in living systems. Specific themes will include: DNA/RNA structure; the chemical synthesis of DNA, RNA and their analogues; the recognition of nucleic acids by organic (drug) molecules, and by natural proteins; chemical modification of DNA; the chemical biology of enzymes that mediate DNA- or RNA-related transactions (e.g. synthesis, cleavage and repair); the chemistry of DNA sequencing; and nucleic acids-based molecular medicine.  
  
Lecture 1 Introduction to DNA structure  
Lecture 2 Chemical synthesis of Nucleic Acids  
Lecture 3 Recognition of DNA by proteins  
Lecture 4 RNA structure and recognition by proteins  
Lecture 5 Chemistry and enzymology of nucleic acid cleavage  
Lecture 6 RNA World and RNA enzymes – Ribozymes  
Lecture 7 Chemical analogues of DNA/RNA and therapeutics  
Lecture 8 Chemical reactions on DNA and the repair of DNA  
Lecture 9 Recognition of DNA by synthetic organic molecules  
Lecture 10 Enzymatic synthesis of DNA – Polymerases  
Lecture 11 DNA replication and medicinal chemistry  
Lecture 12 Chemistry of DNA sequencing  
  
课时信息（Totalhours）  
  
教参信息（Textbookinfo）  
1 Student Companion to Accompany Biochemistry, 6th Ed. by Richard I. Gumport, Frank H. Deis, Nancy Counts Gerber, and Roger E. Koeppe II (Paperback - June 16, 2006)  
ISBN-13: 978-0716770671  
世界各地拥有馆藏的图书馆（OCLC）:27  
2 Biochemistry I (Cliffs Quick Review) by Frank Schmidt (Paperback - Sept. 11, 2000)  
ISBN-13: 978-0764585630  
3 BRS Biochemistry, Molecular Biology, and Genetics (Board Review Series) by Todd A. Swanson, Sandra I Kim, and Marc J Glucksman (Paperback - Dec. 1, 2009)  
ISBN-13: 978-0781798754  
世界各地拥有馆藏的图书馆（OCLC）:87  
4 Underground Clinical Vignettes Step 1: Biochemistry by Todd A. Swanson, Sandra I Kim, and Marc J Glucksman (Paperback - Apr. 1, 2007)  
ISBN-13: 978-0781764728  
世界各地拥有馆藏的图书馆（OCLC）:  
5 Lipid Biochemistry: An Introduction by Michael I. Gurr, John L. Harwood, and Keith N. Frayn (Paperback - June 17, 2002)  
ISBN-13: 978-0632054091  
世界各地拥有馆藏的图书馆（OCLC）:211  
6 Reviews of Physiology, Biochemistry and Pharmacology 150 by H.-J. Apell, H. Koepsell, B. Schmitt, and V. Gorboulev (Hardcover - Mar. 5, 2004)  
ISBN-13: 978-3540202141  
世界各地拥有馆藏的图书馆（OCLC）:7  
7 Rapid Review Biochemistry: With STUDENT CONSULT Online Access by John W. Pelley PhD and Edward F. Goljan MD (Paperback - Nov. 15, 2006)  
ISBN-13: 978-0323044370  
世界各地拥有馆藏的图书馆（OCLC）:102  
8 Biomethanation II (Advances in Biochemical Engineering Biotechnology) (v. 2) by Birgitte K. Ahring, B.K. Ahring, I. Angelidaki, and J. Dolfing (Hardcover - June 4, 2003)  
ISBN-13: 978-3540443216  
世界各地拥有馆藏的图书馆（OCLC）:62  
9 Plant Peroxisomes: Biochemistry, Cell Biology and Biotechnological Applications by A. Baker and I.A. Graham (Hardcover - Apr. 30, 2002)  
ISBN-13: 978-1402005879  
世界各地拥有馆藏的图书馆（OCLC）:109  
10 Organic Chemistry I Workbook For Dummies by Arthur Winter (Paperback - July 8, 2008)  
ISBN-13: 978-0470251515  
世界各地拥有馆藏的图书馆（OCLC）:52