CHEM 323: BIOLOGICAL CHEMISTRY
(WINTER TERM 2009)

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CHEM 323 WEB SITE: http://www.chem.queensu.ca/courses/09/CHEM323/

LECTURES: Ellis Hall, Rm 324, Mon @ 1:30, Wed @ 12:30, Thurs @ 11:30

OFFICE HOURS: Anytime, but email in advance.

RECOMMENDED TEXTBOOKS

Biochemistry, *3rd Ed.*, by Voet & Voet.

Organic Chemistry, by Clayden, Greeves, Warren & Wothers.

ADDITIONAL USEFUL TEXTBOOKS

Structure and Mechanism in Protein Science, 2000, by A.R. Fersht (W.H. Freeman & Co.). *This is my personal favourite text on enzyme catalysis and protein folding.*

Proteins: Structures and Molecular Properties, 2nd Ed., by T.E. Creighton (W.H. Freeman & Co.). *A bible on protein structure.*

USEFUL WEBSITES

National Center for Biotechnology Information (NCBI)
http://www.ncbi.nlm.nih.gov/
I probably use this website more than any other to find journal articles, protein sequences, DNA sequences, align protein sequences (BLAST), find protein structures and lots more.

ExPASY Proteomics Server (also known as Swiss-Prot)
http://ca.expasy.org/
This an annotated database dedicated to proteins, which also contains lots of useful online tools for protein sequence and structure analysis. A user-friendly protein structure viewer is available for download as well (http://ca.expasy.org/spdbv/).

Protein Data Bank
http://www.pdb.org/pdb/home/home.do
This is where structures of proteins or nucleic acids, determined by X-ray or NMR, are deposited. You can search for a biomolecule then download the file to your own PC for viewing on PyMOL or Swiss-PDBView.

USEFUL SOFTWARE

Download one (or both) of the following FREE programs for viewing and analyzing 3-dimensional structures of biomolecules:

PyMol
http://pymol.sourceforge.net/

Swiss PDB-Viewer
http://ca.expasy.org/spdbv/

Topics

1. Protein structure, analysis and folding.
2. Enzyme catalysis.
3. Chemical protein synthesis.
4. DNA structure
5. Chemical synthesis of DNA
6. Enzymatic synthesis of DNA
7. Transcription
8. Translation
9. Lipids and fatty acid biosynthesis
10. Lipid structure and membrane proteins
11. Signal transduction: GPCR's
12. Special Topics

GRADING SCHEME

Problem Sets: 20%
Midterm: 35% (TBA, 2 hrs)
Final Exam: 45% (TBA, 3 hrs)

University policy regarding plagiarism:

The Senate document on Academic Dishonesty states that "Plagiarism means presenting work done (in whole or in part) by someone else as if it were one's own." Plagiarized work could result in an automatic failure in any Chemistry course and a subsequent request to withdraw from the program. Students should consult the Senate document (http://www.queensu.ca/secretariat/senate/policies/acaddish.html) or talk to the course instructor when in doubt about how best to refer to the work of others.