

## MOLBIOCH/BIOCHEM 6761 Course Syllabus, Fall Semester 2014.

All classes will be in room 107 Hamilton Hall, MWF, 10:20 – 11:15 a.m.

### Instructors:

Chuck Bell ([bell.489@osu.edu](mailto:bell.489@osu.edu); Office: 437 Hamilton Hall; 688-3115)

Mark Foster ([foster.281@osu.edu](mailto:foster.281@osu.edu); Office: 734 Riffe Building; 292-1377)

### Teaching Assistant:

Chris Smith ([smith.5584@osu.edu](mailto:smith.5584@osu.edu); 437 Hamilton Hall)

**Office Hours:** after class or by appointment

**Required Text:** The Molecules of Life: Physical and Chemical Principles, John Kuriyan, Boyana Konforti, David Wemmer ISBN: 978081534188, Garland Science, List \$145.00

**Evaluation:** 660 pts total for 2 Midterms (100 pts each), 2 Exams (200 pts each), and 4 journal article problem sets (15 pts each)

Date	Topic	Assigned Reading
8/27/14 W	Course Introduction, Molecules of Life, Amino Acids (Bell)	Chapter 1B,C
8/29/14 F	Non-covalent Interactions (Bell)	Chapter 1A, TBA
9/1/14 M	LABOR DAY, NO CLASS	
9/3/14 W	Properties of water and Hydrophobicity (Bell)	Chapter 1A, TBA
9/5/14 F	Peptide bond, backbone torsion angles (Bell)	Chapter 4A,B
9/8/14 M	Protein secondary structures: $\alpha$ -helix, $\beta$ -sheet (Bell)	Chapter 4A,B
9/10/14 W	Protein 3° structure: fibrous proteins (Bell)	TBA
9/12/14 F	Protein 3° structure: globular proteins, folds, families, motifs (Bell)	Chapter 4C, 5A,D
9/15/14 M	Protein quaternary structure and flexibility (Bell)	TBA
9/17/14 W	Membrane proteins (Bell)	Chapter 3B, 4D TBA
9/19/14 F	<b>MIDTERM FOR FIRST SESSION (material from 8/27 - 9/17)</b>	<b>100 pts</b>
9/22/14 M	Protein stability (Bell)	TBA
9/24/14 W	Protein stability (Bell)	TBA
9/26/14 F	Protein folding (Bell)	Chapter 10D, 18AB, TBA
9/29/14 M	Protein folding (Bell)	Chapter 10D, 18AB, TBA
10/1/14 W	Protein folding in the cell, processing, post-translational mod (Bell)	TBA
10/3/14 F	Protein expression, purification, analysis (Bell)	TBA
10/6/14 M	X-ray Crystallography (Bell)	Handout
10/8/14 W	X-ray Crystallography, structural analysis (Bell)	Handout
10/10/14 F	Protein structure prediction, sequence alignment (Bell)	Chapter 5B,C
10/13/14 M	Structure Visualization and Presentation (Bell)	TBA
10/15/14 W	<b>FINAL EXAM FOR FIRST SESSION (material from 8/27 - 10/13)</b>	<b>200 pts</b>
10/17/14 F	Nucleic Acid Structure: overview and nomenclature (Foster)	Chapter 1B, 1.5-1.9
10/20/14 M	DNA Structure (Foster)	Chapter 2A
10/22/14 W	DNA Structure (Foster)	Chapter 2A, Chapter 19B
10/24/14 F	Thermodynamics/Structure Prediction (Foster)	Chapter 19A

<b>Date</b>	<b>Topic</b>	<b>Assigned Reading</b>
10/27/14 M	RNA Structure (Foster)	Chapter 2B
10/29/14 W	Nucleic acid synthesis and sequencing (Foster)	TBA
10/31/14 F	Nucleic acid chemical and enzymatic probes (Foster)	TBA
11/3/14 M	Base Analogs and NAIM (Foster)	TBA
11/5/14 W	RNA Folding (Foster)	Chapter 18C
11/7/14 F	Binding (Foster)	Chapter 12
<b>11/10/14 M</b>	<b>MIDTERM FOR 2<sup>nd</sup> SESSION (material from 10/20 – 11/7)</b>	<b>100 pts</b>
11/12/14 W	Protein-Nucleic Acid Interactions-Introduction (Foster)	Chapters 6C, 13A
11/14/14 F	Protein-DNA interactions (Foster)	Chapter 13C
11/17/14 M	Protein-RNA interactions (Foster)	Chapter 13C
11/19/14 W	Protein-RNA interactions (Foster)	TBA
11/21/14 F	RNA Enzymes (Foster)	Chapter 16C, 16D
11/24/14 M	The Ribosome (Foster)	Chapter 19C
11/26/14 W	THANKSGIVING, NO CLASS	
11/28/14 F	THANKSGIVING, NO CLASS	
12/1/14 M	Fluorescence and FRET (Foster)	15.15, TBA
12/3/14 W	NMR Spectroscopy (Foster)	TBA
12/5/14 F	Mass Spectrometry (Wysocki/Somogyi)	TBA
12/8/14 M	Single molecule biology (Prof. Comert Kural)	TBA
<b>12/11/14 R</b>	<b>FINAL EXAM FOR 2<sup>nd</sup> SESSION (material from 10/20 - 12/8)</b> <b>10:00 a.m. - 11:45 a.m.</b>	<b>200 pts</b>

Last updated: 10/30/2014