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Biology Syllabi Spring 2012

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### 440-01 Biochemistry

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**CHEMISTRY 440-01**  
**BIOLOGY 440-01**  
**BIOCHEMISTRY SYLLABUS**  
Fall Semester 2010, Xavier University

**Instructor:** Dr. Adam Bange  
**Office:** 301-A Logan Hall  
**Phone:** (513) 745-3950  
**E-mail:** BangeA1@xavier.edu  
**Office Hours:** 9:00-11:00 every day, and by appointment

**Prerequisite:** One full year of Organic Chemistry plus Laboratory

**Format:** Three 50 minute lectures per week, 11:30-12:20 MWF, 3 credit hours.

**Description:** A one semester course in biochemistry. This course is an introduction to the structures, properties, reactions and metabolism of biomolecules.

**Rationale:** This course has been approved for an American Chemical Society Certified Degree program. It is intended for students majoring in Chemistry, Biology, and Natural Sciences, or those seeking entry into health professional programs.

**Required Text:** A. Lehninger, D. Nelson, M. Cox, "Principles of Biochemistry", 4<sup>th</sup> Edition (2005) or 5<sup>th</sup> Edition (2008), Freeman Publishers

**Attendance:** Regular attendance in this lecture class is recommended but not required and roll will not be taken. However, those officially auditing must attend regularly.

**Examinations:** Examination dates are listed on the attached schedule. Students are responsible for taking the examinations at the scheduled times. Exceptions are made only for good cause and if arrangements are made in advance. The instructor must be personally seen and an explanation as to why you might miss an exam must be submitted in writing.

Evaluation of student performance in this section will be based as follows:

Five tests, each constituting 20% of the final grade.

The final examination, TEST 5, will not be comprehensive.

**Grades:** A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: Below 60. This grading scale is subject to downward re-evaluation depending on overall class performance. Plus (+) grades will be given to scores within the top three numerical values of a grade level. Minus (-) grades will be given to scores within the lowest three numerical values of a grade level. Xavier does not have an A+ grade designation.

It should be noted that according to the Xavier University Catalog, a grade of "A" is earned for "Exceptional" performance. This is also the agreed grading policy of the faculty in the Chemistry Department. The Chemistry Department Grading Policies should be viewed by all students and can be found on the Departmental WEB site at [http://www.xavier.edu/chemistry/dept\\_policies\\_grading.cfm](http://www.xavier.edu/chemistry/dept_policies_grading.cfm)

**Academic Misconduct Policy:** A zero grade will be given to any student violating the University Academic Honesty Policy. The student may appeal according to normal university procedures as stated in the University Catalog.

Although this class does not require the use of electronic calculators, no graphic character display electronic calculator or computer may be used during tests or quizzes. Only non-graphic numeric display calculators are allowed.

It is the responsibility of the student to inform the instructor at the beginning of the semester of any individual conditions, medical or otherwise, that may require special attention. Appropriate consideration will be given in these situations.

**NSTA Reporting Standards for Teaching Science:**

CHEM440 Satisfies NSTA Reporting Standards for Teaching Science Numbers 1a, 1b, 1c, 3a, 4a

The schedule and procedures in this course syllabus are subject to change in the event of extenuating circumstances. These changes, if necessary, will be announced to the class in as timely a manner as possible.

### **BIOCHEMISTRY CLASS SCHEDULE**

W 8/24	- Introduction, Chapter 1, Molecules of living systems
F 8/26	- Chapter 1 - Organization of biomolecules
M 8/29	- Chapter 2 - Water, acid bases, hydrogen bonding
W 8/31	- Chapter 3 - Amino acids, structures
F 9/2	- Chapter 3 - Amino acids, acid-base importance
M 9/5	- Labor Day Holiday, <b>No Classes</b>
W 9/7	- Chapter 3 - Proteins and peptides
F 9/9	- Chapter 4 - Folding of protein structures
M 9/12	- Chapter 4 - Three Dimensional Structures of proteins
W 9/14	- Chapter 3.3 - Purification and analysis of proteins
F 9/16	- <b>TEST 1</b>
M 9/19	- Chapter 5 - Binding to proteins
W 9/21	- Chapter 5 - Cooperative Ligand Binding to proteins
F 9/23	- Chapter 6 - Introduction to enzymes
M 9/26	- Chapter 6 - Mechanisms of enzyme action
W 9/28	- Chapter 6 - Inhibition of enzymes
F 9/30	- Chapter 7 - Carbohydrates
M 10/3	- Chapter 7 - Carbohydrates
W 10/5	- <b>TEST 2</b>
F 10/7	- Chapter 8 - Nucleotides
M 10/10	- Chapter 8 - Nucleic acids
W 10/12	- Chapter 10 - Lipid structure
F 10/14	-- Autumn Holiday, <b>No Classes</b>
M 10/17	- Chapter 11 - Introduction to Biological Membranes
W 10/19	- Chapter 11, 12 - Membrane transport, Signal Transduction
F 10/21	- Chapter 13 - Introduction to bioenergetics
M 10/24	- Chapter 14 - Glycolysis

- W 10/26 - Chapter 15 - Alternate entries to glycolysis
- F 10/28 - Chapter 15 - Regulation of glycolysis
- M 10/31 - **TEST 3**
- W 11/2 - Chapter 20 - Gluconeogenesis
- F 11/4 - Chapter 20 - Glycogen Metabolism
- M 11/7 - Chapter 16 - Citric Acid Cycle
- W 11/9 - Chapter 16 - Citric Acid Cycle
- F 11/11 - Chapter 16 - Regulation of Citric Acid Cycle
- M 11/14 - Chapter 19 - Oxidative Phosphorylation
- W 11/16 - Chapter 19 - Oxidative Phosphorylation
- F 11/18 - Chapter 17 - Fatty Acid Degradation
- M 11/21 - **TEST 4**
- W 11/23 - Thanksgiving Holiday, **No Classes**
- F 11/25 - Thanksgiving Holiday, **No Classes**
- M 11/28 - Chapter 17 - Ketone bodies
- W 11/30 - Chapter 21 - Lipid biosynthesis
- F 12/2 - Chapter 19 - Transport of reducing equivalents
- M 12/5 - Chapter 18 - Fate of the nitrogen atom
- W 12/7 - Chapter 18 - Urea Cycle
- F 12/8 - Catecholamine metabolism

**FINAL EXAM – F 12/16 - EXAM 5, 10:30 - 12:20pm**