Syllabus
Biochemistry: Macromolecules
CHE 418 / CHE 5418
Fall 2013

Instructor Information:
Name: J. Clinton Bailey II, Ph.D.
Office: 416 Math, Chemistry, and Computer Science Building
Telephone: 601.925.3338
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Website: http://www.mc.edu/faculty/bailey
My website contains class announcements, current office hours, syllabi, and lecture notes.

Period / Location:
Monday and Wednesday 12:00 – 1:15 p.m.; 402 Math, Chemistry, and Computer Science (MCC) Building.

Catalog Description:
CHE 418 – 5418 Biochemistry I: Macromolecules Credit; 3 sem. hrs.

Prerequisites: CHE 304 and BIO 111 or instructors consent.

This lecture course explores the structure and functions of biological molecules. Additional topics include the biological synthesis of proteins and nucleic acids.

Rationale:
This course is intended for students preparing to further their education in a professional (Medicine, Dentistry, Nursing, Physical Therapy, Graduate) school or pursue a career in science education. Biochemistry furthers the Mission of Mississippi College (See: http://www.mc.edu/about/mission.php) by "stimulating the intellectual development of its students through the liberal arts and sciences" and prepares students for professional study in "specialized fields, including pre-professional and professional programs." Biochemistry, as a component of the chemistry curriculum, prepares students "to utilize their skills, talents and abilities as they pursue meaningful careers, life-long learning, and service to God and others" as chemist, physicians, dentist, environmentalist, educators, and other areas.

Methods of Instruction:
This course will follow a lecture/ discussion format. Students should prepare for class by completing the assignments listed on the Lecture / Exam Schedule and completing assigned problem sets. Students will find it helpful to bring their textbook to class.

Textbook (Required):
Jeremy M. Berg, John L. Tymoczko, and Lubert Stryer, Biochemistry, 2012, Seventh Edition, W.H. Freeman. ISBN: 13: 9781429229364.

Each student is expected to complete the reading assignment listed in the lecture schedule prior to attending class.

Power point Lectures: A copy of each lecture is available through the links on my website.

Email Account: All email communication to members of this class will be sent to their M.C. email account. Please acquire an account and learn to use it.

Tutoring is available for students upon request through your instructor (during office hours) or by contacting Mrs. Reeves in the Chemistry and Biochemistry department office (MCC 415).

Learning Objectives:

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1. Identify and appropriately classify macromolecules including proteins, carbohydrates, lipids and nucleic acids
2. Explain the function of hemoglobin and myoglobin in carrying / holding oxygen *in vivo*.
3. Apply Michaelis-Menten and Lineweaver-Burk equations and plots to enzyme kinetics.
4. List and explain catalytic strategies of enzymes
5. Explain the process of DNA replication (DNA synthesis) and DNA repair
6. Explain the process of transcription (RNA synthesis)
7. Explain the process of translation (protein synthesis)

Attendance:

Class attendance is expected. The instructor will follow the established University attendance policy as described in current Undergraduate or Graduate Catalog.

Absence from Class: If you are absent from class or laboratory, it is your responsibility to obtain missed notes / assignments from another student.

Absence from an Exam: Attendance for every exam is mandatory. A student that is absent from an exam will receive a grade of zero for that exam. (See Make-up Exams Below.)

Withdrawing from this Course:

The last day to withdraw from this course without a grade appearing on the transcript is listed on the College Academic Calendar (http://www.mc.edu/resources/publications/schedules). This is also the last date for changing to AUDIT. Withdrawal before this date will result in a W listed on the transcript.

Tuition Refund: To receive a 100% refund of tuition, a student must withdraw from this course by 5:00 p.m. on the date listed on the College Academic Calendar. Following this date, the tuition refund is 0%.

Academic Honesty:

You, as a student at Mississippi College and member of a larger academic community, are expected to be honest. The instructor will not tolerate participation in cheating or plagiarism and will deal harshly with suspected acts of either. The University policy on Academic Honesty (Policy 2.19) as explained in the current edition of the Student Handbook, pp. 35 - 36, (http://www.mc.edu/resources/publications/handbook) will be followed.

Class Disruption:

In the interest of providing everyone an environment conducive to learning, please refrain from disrupting class. Students that disrupt class may be asked to leave the classroom and may

receive a zero for that day's assignment. Tardiness and noise from a cell phone are two commonly encountered disruptions that are easy to avoid.

Tardiness: Be on time, class begins at 12:00 p.m. (noon).

Cell Phone: Cell phones should be TURNED OFF and STORED (in a book bag, purse, or pocket) during the class period. The desktop, your hand or lap are NOT appropriate storage locations for a cell phone during class.

Evaluation:

Success: The key to success in this course is consistent, methodical study beginning the first week of class. "Study each day as if the test is tomorrow."

Grading: Student progress in mastering course requirements in Biochemistry I and II is measured by three unit exams (100 pts. each), a weekly quiz (10 pts. each) and a comprehensive final exam (200 pts.), as described below.

3 exams (@ 100 pts. each)	= 300 pts
Quiz grade (10 @ 10 pts. each)	= 100 pts
1 comprehensive final exam (200 pts.)	= 200 pts
TOTAL Undergraduate	**= 600 pts.**
Graduate Student Research Paper	= 50 pts.
TOTAL Graduate	**= 650 pts.**

Weekly Quiz: To encourage regular study, a ten point weekly quiz will be administered during the first 5 - 10 minutes each Wednesday. The quiz will contain questions about course material covered since the previous quiz. A student's highest ten weekly quiz grades will be used to calculate the "Quiz grade" (see above). Normally, 12-14 quizzes are administered in a semester. "Make-up" quizzes are NOT given.

Exam Format: Exams (and quizzes) may contain multiple choice, matching, fill in the blank, true or false, short answer, or discussion type questions.

Make-up Exam: Make-up exams will NOT be given except in extreme circumstances. (E.g. death or hospitalization of an immediate family member, or your hospitalization). Students involved in university-sanctioned activities (e.g. athletics, choir, etc.) or attending interviews for professional school must arrange to take the exam PRIOR to the regular exam date, and before leaving for the event. Administration of a make-up exam is at the discretion of the instructor.

Electronic devices: Use or possession of an unauthorized electronic device (computer, cell phone, calculator, P.D.A., Blackberry, etc.) during an exam or quiz will be considered cheating. During an exam, please securely store your electronic devices in a zipped pocket of a book bag or purse.

Graduate Student Project: Graduate students will prepare a research project. (50 pts.). Instructions for this project will be provided in a separate document.

Extra credit is NOT offered in this course.

Distribution of Final Grade: Since a student's grade is available on Banner Web soon after the semester ends, course grades will NOT be posted or distributed. Email inquires concerning grades should originate from your M.C. email account.

Scale: A student's letter grade is based on the percent of total possible points earned during the semester using the scale given below.

Undergraduate (CHE 418 or 419)				Graduate (CHE 5418 or 5419)		
Percentage	Points (600 pts)	Grade		Percentage	Points (650 pts.)	
100 – 90.0 %	600 – 540 pts.	A		100 – 90.0 %	650 – 585 pts.	A
89.9 – 80.0 %	539 – 480 pts.	B		89.9 – 87.0 %	584 – 559 pts.	B^+
79.9 – 70.0 %	479 – 420 pts.	C		86.9 – 80.0 %	558 – 520 pts.	B
69.9 = 60.0 %	419 – 360 pts.	D		79.9 – 76.0 %	519 – 494 pts.	C^+
59.9 – 0 %	359 – 0 pts.	F		75.9 – 70.0 %	493 – 455 pts.	C
				69.9 – 60.0 %	454 – 390 pts.	D
				59.9 – 0 %	389 – 0 pts.	F

ADDITIONAL REQUIREMENTS FOR GRADUATE STUDENTS: In addition to completing the requirements listed above, students registered for CHE 5418 or 5419 are required to complete a research project on a current topic in biochemistry.

Special Accommodations: In order for a student to receive disability accommodations under Section 504 of the Americans with Disabilities Act, he or she must schedule an individual meeting with the Director of Student Counseling Services (SCS) immediately upon recognition of their disability (if their disability is known they must come in before the semester begins or make an appointment immediately upon receipt of their syllabi for the new semester). The student must bring with them written documentation from a medical physician and/or licensed clinician that verifies their disability. If the student has received prior accommodations, they must bring written documentation of those accommodations (example Individualized Education Plan from the school system). Documentation must be current (**within 3 years**). The student must meet with SCS face-to face and also attend two (2) additional follow up meetings (one mid semester before or after midterm examinations and the last one at the end of the semester). Please note that the student may also schedule additional meetings as needed for support through SCS as they work with their professor throughout the semester. Note: Students must come in each semester to complete their Individualized Accommodation Plan (example: MC student completes fall semester IAP plan and even if student is a continuing student for the spring semester they must come in again to complete their spring semester IAP plan).

Student Counseling Services is located in Alumni Hall Room #4 or they may be contacted via email at christia@mc.edu or rward@mc.edu. You may also reach them by phone at 601-925-7790.

The instructor reserves the right to change this syllabus at any time during the semester to meet the needs of the class. Last updated on 25 August 2013

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DATE	DAY	TOPIC / READING ASSIGNMENT
August 28	W	MACROMOLECULES Biochemistry: An Evolving Science Ch. 1 Protein Composition and Structure Ch. 2 Exploring Proteins and Proteomes Ch. 3 DNA, RNA and the Flow of Genetic Information Ch. 4 Carbohydrates Ch. 11 Lipids and Cell Membranes Ch. 12
September 3	**M**	**No Class – Holiday - Labor Day**
4	W	Quiz
9	M	
11	W	Quiz
16	M	
18	W	Quiz
23	M	
25	W	
30	**M**	**EXAM I**
October 2	W	Quiz KINETICS AND REGULATION Hemoglobin: Portrait of a Protein in Action Ch. 7 Enzymes: Basic Concepts and Kinetics Ch. 8 Catalytic Strategies Ch. 9 Regulatory Strategies Ch. 10
7	**M**	**No Class – Holiday – Fall Recess**
9	W	Quiz
14	M	
16	W	Quiz
21	M	
23	W	Quiz
25 ###	**F**	**LAST DAY TO DROP**
28	M	
30	W	Quiz
November 4	M	
6	W	Quiz
11	**M**	**EXAM II**

13	W	Quiz CENTRAL DOGMA DNA Replication, Repair and Recombination Ch. 28 RNA Synthesis and Processing Ch. 29 Protein Synthesis Ch. 30 The Control of Gene Expression in Prokaryotes Ch. 31 The Control of Gene Expression in Eukaryotes Ch. 32
18	M	
20	W	Quiz
25	M	
27	**W**	**No Class – Holiday - Thanksgiving**
December 2	M	
4	W	Quiz
9	**M**	**EXAM III**
11	W	
13	**F**	**COMPREHENSIVE FINAL EXAM 12:00 (NOON) - 3:00 p.m.**

Friday, 25 October 2013, LAST DAY TO DROP THIS COURSE.

Text: Jeremy M. Berg, John L. Tymoczko, and Lubert Stryer, Biochemistry, 2012, Seventh Edition, W.H. Freeman. ISBN: 13: 9781429229364

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