

Syllabus  
**Biochemistry: Macromolecules**  
**CHE 418 / CHE 5418**  
And  
**Biochemistry: Metabolism**  
**CHE 419 / CHE 5419**

### **Instructor Information:**

Name: J. Clinton Bailey II, Ph.D.  
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Web Site: <http://www.mc.edu/campus/users/bailey/>  
Current Office Hours: <http://www.mc.edu/campus/users/bailey/Officehours.html>

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**Period / Location:** Monday, Wednesday, and Friday; 9:00 – 9:50 a.m.;  
Hederman Science Building 312.

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### **Catalog Description:**

**Prerequisites:** CHE 304 and BIO 112 or instructors consent. Lecture three hours a week

**Credit:** 3 Semester Hours.

**Biochemistry I: Macromolecules CHE 418 / 5418:** This lecture course explores the structure and functions of biological molecules. Additional topics include the biological synthesis of proteins and nucleic acids.

**Biochemistry II: Metabolism CHE 419 / 5419:** This lecture course covers the fundamentals of metabolism and bioenergetics. Clinical correlations with metabolic diseases and diabetes are presented.

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**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.

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## **Learning Objectives, Lecture/Exam Schedule, and Laboratory Schedule** are located at:

<http://www.mc.edu/campus/users/bailey/CHE418and419Page.html>

### Biochemistry I: Macromolecules CHE 418 / 5418 Topics

1. Macromolecules including proteins, carbohydrates, lipids and nucleic acids
2. Hemoglobin and myoglobin
3. Kinetics (including Michaelis-Menten and Lineweaver-Burke equations and plots)
4. Catalytic Strategies
5. DNA Replication and Repair
6. Transcription
7. Translation

### Biochemistry II: Metabolism CHE 419 / 5419 Topics

1. Glycolysis
2. Citric Acid Cycle
3. Oxidative Phosphorylation
4. Photosynthesis (Light and Dark Reactions)
5. Pentose Phosphate Pathway
6. Glycogen Metabolism
7. Fatty Acid Metabolism
8. Amino Acid Catabolism
9. Amino Acid Anabolism
10. Nucleotide Biosynthesis
11. Lipid and Steroid Biosynthesis

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**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, 2007, Sixth Edition, W.H. Freeman. ISBN: 0-7167-8724-5; ISBN-13: 978-0-716-78724-2. 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 the Lecture and Exam Schedule:

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**Attendance:** Class attendance is expected. The instructor will follow the established University attendance policy as described in 2009 – 2010 Undergraduate Catalog

(<http://www.mc.edu/resources/publications/catalogs/2009-2010Undergraduate.pdf>) pp. 56-57.

**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. Make up exams may be administered at the professor's discretion.

**Withdrawing from this Course:** The last day to withdraw from this course without a grade appearing on the transcript is March 26, 2010. 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., Thursday, January 21, 2010. Following this date, the tuition refund is 0%.

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**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. 36 - 37, <http://www.mc.edu/resources/publications/handbook/2009-2010Handbook.pdf> will be followed.

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**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 or pager are two commonly encountered disruptions that are easy to avoid.

**Tardiness:** Be on time, class begins at 9:00 a.m.

**Cell Phone or Pager:** Your cell phone 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.

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**Evaluation:** Student progress in mastering course requirements in Biochemistry I and II is measured by four unit exams (100 pts. each) and a comprehensive final exam (200 pts.), as described below.

**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.

**Exam Format:** Exams 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.) 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.

**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 and CHE 419)

A = 100 – 90 %

B = 89.9 – 80 %

C = 79.9 – 70 %

D = 69.9 – 60 %

F = 59.9 – 0 %

Graduate (CHE 5418 and CHE 5419)

A = 100 – 90 %

B<sup>+</sup> = 89.9 – 86 %

B = 85.9 – 80 %

C<sup>+</sup> = 79.9 – 76 %

C = 75.9 – 70 %

D = 69.9 – 60 %

F = 59.9 – 0 %

**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.

## **ADDITIONAL REQUIREMENTS FOR GRADUATE**

**STUDENTS:** In addition to completing the requirements listed above, students registered for CHE 5418 are required to make a 12 – 15 minute presentation on a topic agreed upon between the graduate student and professor. Please speak to Dr. Bailey to determine a suitable topic.

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**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 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](mailto:christia@mc.edu) or [rward@mc.edu](mailto:rward@mc.edu). You may also reach them by phone at 601-925-7790.

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The instructor reserves the right to change this syllabus at any time during the semester.  
Last updated on 10 January 2010.