BioC 4331
Biochemistry I: Structure, Catalysis, and Metabolism in Biological Systems
Spring Semester, 2015, 4 credits
M,T,W,Th / 2:30- 3:20 PM / MCB 3-120

Course Director: Dr. Sharon Murphy (e-mail: murph062@umn.edu)

Instructors
Dr. Carrie Wilmot
Dept. of Biochemistry, Molecular Biology and Biophysics
166 Gortner Lab, St Paul Campus
e-mail: wilmo004@umn.edu
phone: 612-624-2406
office hours: TBA

Dr. Sharon Murphy
Dept. of Biochemistry, Molecular Biology and Biophysics
2-127 CCRB, Minneapolis Campus
e-mail: murph062@umn.edu
phone: 612-624-7633
office hours: TBA

Teaching Assistants:
Graduate TA, Bob Evans (evans858@umn.edu)
Undergraduate TA, Mei Kuen Tang (tangx419@umn.edu)

Description
BioC 4331 covers structure, catalysis, metabolism and bioenergetics. Dr. Wilmot presents the first half of the course: Dr. Murphy presents the second half. The first 14 lectures review basic chemical concepts and then discuss primary structure (amino acids and sequence), secondary structure (helices, sheets, turns), tertiary structure (folding, three-dimensional structure) and quaternary structure (subunits and their interactions). The next 14 lectures deal with enzyme kinetics and mechanisms, binding interactions and bioenergetics. The next 14 lectures discuss carbohydrates, lipid and membranes, transport processes, introductory signal transduction and glycolysis. The final 14 lectures continue the discussion of metabolism by presenting glycogen synthesis, the Citric Acid Cycle, oxidative phosphorylation, amino acid and nitrogen metabolism, lipid synthesis and metabolism.

Prerequisites
Chem 2302 Organic Chemistry II, and Biol 1002 Introductory Biology II: Molecular, Cellular, and Developmental Perspectives or Biol 1009 General Biology. Exceptions only by consent of the instructor(s).

Textbook

Course Website – http://myu.umn.edu/
The Moodle web site will contain the course syllabus, lecture outlines, and study questions.
E-mail Course Notices: Course information may occasionally be sent out by email. University of Minnesota regulations require that this correspondence go to your assigned “___@umn.edu” address. Please be sure to check your umn.edu mailbox frequently. Don’t forward your umn.edu mail to another account (e.g. hotmail or yahoo), as these accounts can fill up and reject messages.

Discussion sessions: Discussion sessions led by the Teaching Assistant will be held once a week (time and place to be announced). They are not meant to discourage asking questions during class. Rather they are designed to clarify points raised in class, to answer questions, and to encourage discussion of study questions. Attendance is recommended but not required.

Grading and Student Conduct: The course grade will be relative to the cumulative score for all exams (350 pts); quizzes (100 pts) and problem sets (50 pts). The maximum total is 500 points. Students are responsible for all information disseminated in class and all course requirements, including deadlines and examinations. Class attendance is not counted in the course grade, but is strongly recommended.

The grading systems used are the A-F and S-N. Departmental majors must take major courses on the A-F system; non-majors may use either system. All students, regardless of the system used, will be expected to do all work assigned in the course. Any changes you wish to make in the grading base must be done in the first two weeks of the semester.

Examinations and Quizzes: There will be 10 quizzes (5 with Dr. Wilmot [10 pts each]; 5 with Dr. Murphy [10 pts each]), 3 in-class exams (75 pts) and a final exam (125 pts). Lecture material to be covered by each in-class exam and quizzes is described in the course outline. The final exam will consist of 75 pts of new material and 50 pts cumulative material, 25 pts of which will be devoted to material presented by Dr. Wilmot. Exams and quizzes will be closed book. Quizzes will consist of 70-80% multiple choice questions and 20-30% problem and/or structure questions. Exams will consist of questions in formats requiring you to explain and diagram concepts, provide short answers or work problems. Any questions about the exam scores or requests for regrades must be submitted within one week after the exams are returned.

Problem sets: Problem sets will be posted online several days prior to their due date, which is listed in the course outline. The questions are designed to illustrate or reinforce important concepts or experiment strategies. You must turn in your answers before the start of class; no points will be given for answers turned in after the start of lecture. You can earn a maximum of 50 points for the semester (25 from Dr. Wilmot; 25 from Dr. Murphy).

Top Hat in-class questions: During class, there will be questions (multiple choice and text answers) using Top Hat technology. Students can answer questions using a laptop, tablet, smartphone or mobile phone through wi-fi or text messaging. To participate, students will need to register at www.tophat.com. Students will receive an e-mail invitation with instructions on how to register prior to the start of class. There is a cost associated with registration ($20 for the semester). The cost is fully refundable within two weeks of registration. Points are earned for participation, i.e. it does not matter whether you answer correctly or incorrectly. A maximum of 10 “substitution” points are associated with using Top Hat during the course. Any points accumulated will be substituted for one quiz, if (1) you missed a quiz, or (2) if you took all 10 quizzes and your lowest scoring quiz is < your top hat accumulated points, then the top hat points will replace your lowest quiz score.

Makeup exams: You must contact the instructor either before the exam or in a timeframe after the exam that is consistent with the reason for missing the exam. The format of the makeup exam is at the discretion of the instructor. No make up quizzes will be given. However, if you have been participating in the Top Hat in-class questions, the participation score will take the place of one missed quiz. Further missed quizzes will be scored as zero.
**Electronic Devices:** Only approved calculators may be used during exams. No other electronic devices of any kind, including iPods and cell phones may be used during any examinations. Use of a prohibited device during an examination is considered Scholastic Dishonesty and falls under the University Student Conduct Code.

**Incompletes:** Grades of incomplete will be granted only to students who experience illness or other calamities that prevent them from finishing the course. The following conditions must be met:

1. the student must have a compelling reason why they can not finish the work and provide adequate documentation,
2. the instructor has a reasonable expectation that the student can successfully complete the unfinished work by the end of the next semester, and
3. The student and instructor have signed a contract (available in CBS Student Services, 223 Snyder) agreeing to the work yet to be completed and the timeframe for this completion.

Furthermore, the instructor and student acknowledges that the "I" is not given to help a student improve their grade in the course "I" grades will automatically lapse to "F"s at the end of the next semester of a student's registration, unless an instructor agrees to submit a change of grade for a student during a subsequent semester to maintain the grade as an "I".

**Academic Misconduct:** Cheating during an exam and altering an exam prior to submission are examples of academic misconduct. Violations of acceptable academic conduct will elicit penalties commensurate with the offense. Penalties can include assignment of a failing grade for an examination or a failing grade for the entire course, depending on the nature and severity of the infraction. Although collaboration during exams is strictly forbidden, students may work together on problem sets. See the "scholastic dishonesty" section of the Student Conduct Code at [http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.pdf](http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.pdf).

Any instances of plagiarism (presenting someone else's work as your own) or cheating will be dealt with through University procedures for academic dishonesty (see Office for Student Conduct and Academic Integrity at [http://www1.umn.edu/oscai/](http://www1.umn.edu/oscai/) for more information).

**Dispute Resolution:** In case disputes regarding grades or conduct, student may wish to contact the Student Dispute Resolution Center (SDRC) in 107 Eddy Hall (625-5900) for assistance.

**Disabilities:** Students with disabilities that might hinder their ability to participate in the full range of class activities should contact the instructor as soon as possible. Additional information on accommodation is also available from Disability Services in 230 Gateway (V/TTY) 624-4037.

**Sexual Harassment:** University policy prohibits sexual harassment as defined in the December 1998 policy statement, available at the Office of Equal Opportunity and Affirmative Action. Questions or concerns about sexual harassment should be directed to this office, located in 419 Morrill Hall.

**Withdrawals and Deadlines**

- 100% tuition refund, no mark on transcript ..........Tuesday, January 27
- 75% tuition refund, no mark on transcript ..........Monday, February 2
- 50% tuition refund, W on transcript .....................Monday, February 9
- 25% tuition refund, W on transcript .....................Monday, February 16
- No tuition refund, W on transcript .....................Friday, March 13
- Changes in grading status between A-F and S-N .....Monday, February 2