

BCM/CHE 678 Fall 2016

Textbook:		<i>Biochemistry (8th edition) by Berg JM, Tymoczko JL, Gatto, GJ Jr, and Stryer L (2015)</i>		
Time/Place		MWF 9:30AM - 10:25AM, LSB 100		
Date	Lecture	Topic	Readings in Textbook	
<i>Unit 01: 9 Lectures (01-09), Chapters 01, 02, 03, 08, and 09</i>				
M 08/29	Unit 1-01	Characteristics of biomolecules	Chapter 1 pp 1-23	
W 8/31	Unit 1-02	Protein structure and function	Chapter 2; pp 27-63	
F 09/02	Unit 1-03	Protein structure and function (cont); Quiz 1	Chapter 2; pp 27-63	
W 09/07	Unit 1-04	Experimental techniques	Chapter 3; pp 65-86 only	
F 09/09	Unit 1-05	Thermodynamics of catalysis	Chapter 8; pp 215-221	
M 09/12	Unit 1-06	Thermodynamics of catalysis (cont); Quiz 2	Chapter 8.3 pp 221-225	
W 09/14	Unit 1-07	Kinetics of enzyme catalysis	Chapter 8.4; pp 225-233	
F 09/16	Unit 1-08	Kinetics of catalysis 2	Chapter 8.5; pp 233-242	
M 09/19	Unit 1-09	Mechanics of enzyme catalysis	Chapter 9; pp 251-281	
W 09/21	Unit 2-10	Enzyme regulation by covalent modification	Chapter 10; pp 293-310	
F 9/23	EXAM 1, lectures 01-09			
<i>Unit 02: 10 Lectures (10-19), Chapters 07, 10-12, 14-15; and a small part of 18.</i>				
M 09/26	Unit 2-11	Allosteric effects: myoglobin vs hemoglobin	Chapter 7; pp 191-211	
W 9/28	Unit 2-12	Enzyme regulation by allostereism and cooperativity	Chapter 10; pp 285-292	
F 9/20	Unit 2-13	Multi-subunit isozymes; Quiz 3	Chapter 10; pp 292-293	
M 10/03	Unit 2-14	Carbohydrate structure	Chapter 11; pp 315-338	
W 10/05	Unit 2-15	Structures of lipids and lipid bilayers	Ch. 12.1-12.3; pp 341-350	
F 10/07	Unit 2-16	Membrane proteins; Quiz 4	Chapter 12.4; pp 350-356	
M 10/10	Unit 2-17	Signal transduction pathways	Chapter 14; pp 397-420	
W 10/12	Unit 2-18	Bioenergetics and cellular metabolism	Chapter 15; pp 427-438	
F 10/14	Unit 2-19	Thermodynamics of cellular redox reactions	Chapter 18.2; pp 526-529	
M 10/17	Unit 3-20	Glycolysis	Ch. 16.1-16.2; pp 449-474	
W 10/19	EXAM 2, lectures 10-19			
<i>Unit 03: 10 Lectures (20-29), Chapters 16, 17, 18, 21, and 27; and a part of 20.</i>				
F 10/21	Unit 3-21	Gluconeogenesis and regulation	Ch. 16.3-16.4; pp 449-474	
M 10/24	Unit 3-22	Glycogen metabolism	Chapter 21; pp 617-639	
W 10/26	Unit 3-23	Citric Acid (or TCA) Cycle	Ch. 17.1-17.2; pp 495-510	
F 10/28	Unit 3-24	Regulation of cycle; anaplerotic Reactions; Quiz 5	Chapter 17.4; pp 510-516	
M 10/31	Unit 3-25	Electron transport by mitochondrial complexes I-IV	Ch. 18.1,18.3; pp 523-541	
W 11/02	Unit 3-26	F ₀ F ₁ -ATPase & Chemiosmotic Model	Ch. 18.4-18.5; pp 541-552	
F 11/04	Unit 3-27	Regulation and uncoupling; Quiz 6	Ch. 18.6; pp 552-560	
M 11/07	Unit 3-28	Pentose Phosphate Pathway	Ch. 20.3-20.5; 601-613	
W 11/09	Unit 3-29	Integration of Metabolism	Chapter 27; 801-824	
F 11/11	Unit 4-30	Structure and functions of nucleic acids: Overview	Ch. 4; 105-131	
M 11/14	EXAM 3, lectures 20-29			
<i>Unit 04: 9 Lectures (30-38), Chapters 30, 31, 32, 33, and 35</i>				
W 11/16	Unit 4-31	DNA replication	Ch. 28.1-28.4; 827-845	
F 11/18	Unit 4-32	Chromatin structure; histone acetylation; Quiz 7	Ch.32.1,32.3;943-944;952	
M 11/28	Unit 4-33	RNA transcription	Ch. 29.1-29.3; 859-882	
W 11/30	Unit 4-34	Exploring genes	Chapter 5; 135-153 only	
F 12/02	Unit 4-35	Protein synthesis	Chapter 30; 893-912 only	
M 12/05	Unit 4-36	Protein turnover	Ch. 23.1-23.3;681-693	
W 12/07	Unit 4-37	Urea cycle	Ch. 23.4-23.5; 693-704	
F 12/09	Unit 4-38	Review; Quiz 8		
TBA	EXAM 4, lectures 30-38			

List of Activities, by date:

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Text– Required:

Biochemistry (8th edition) by Berg JM, Tymoczko JL, and Stryer L (2015).

The bookstore stocks the unbound version of the text, bundled together with online access to the Sapling Learning Environment.

This is the same text being used for BCM 475/476.

The online access is a course requirement. If you purchase a used textbook, you will need to purchase stand-alone access to Sapling for 1 semester. (Available at the SU Bookstore for approximately \$30).

Requirements for graded work:

Exams: There will be four examinations, including the final exam. The final will not be cumulative.

Each exam will consist of approximately 50 multiple-choice questions, along with an additional 10-25 questions requiring short answers or multiple matching of verbal concepts to diagrams, chemical structures, or schematics of processes.

The questions for each of the 4 unit exams will all focus on the stated learning objectives for that unit.

Online quizzes: There will be several (8) 30-minute online quizzes. These must be taken during the second half of class time. However, you need not be present in the classroom. That is, if you have no laptop to take the quiz in the classroom, you may use computers in a Syracuse University cluster to take the quiz. Please see the professor for other accommodations that you may need.

Grading:

Exams: 90-100% Quizzes: 0-10%

When determining the final grade, the lowest of the four exam grades will be dropped, and the remaining 3 exams will count for 90% of the course grade, i.e. 30% each.

The lowest exam scores will be determined using the following procedure. For each exam, each student's raw percentage score will be rescaled by adding the same value (with four independently determined values for each of the four exams), so that the top rescaled score in the class on each of the four exams will be 100. At the end of the semester, each student's top three (rescaled) scores will be averaged, and the final ranking as well as the course curve will be based only on these averages.

A similar approach will be taken toward the quizzes. The top 2 quizzes will each count for up to 5% of the final grade. However, the quizzes are optional, and only quiz scores that exceed the exam average will count at all. That is, one or two "uncounted" quiz scores will be replaced by the average of your exams, if the latter are higher, so that the exam scores effectively count 100% rather than 90%.

The letter-grade breakdown will be according to the following number-to-letter conversion. However, additional curving will be applied if needed, to insure that the median in the course will be at least B. All letter-grade numerical boundaries chosen to minimize assignments of different letter grades to two students whose performance is essentially identical.

Under no circumstances will any student be assigned a grade, other than F, W, or I (incomplete), based on fewer than three exams. Completion of any incomplete will require taking the missed exam(s) in Fall 2017, which is the next time this course will be offered.

Grades	Enter grade criterion in this column (e.g. percentage)
A	Above 90
A-	87-89.999
B+	83-86.999
B	79-82.999
B-	75-78.999
C+	70-74.999
C	60-69.999
C-	50-59.999
F	0-49.999

¹Grades of D and D- may not be assigned to graduate students.

² Available only for Law students in LAW courses.

Course Specific Policies on attendance, late work, make up work, examinations if outside normal class time, etc.:

If an exam or quiz is missed due to medical or other excused absence, the exact same examination or quiz cannot be offered at a later date, due to the inability to keep the specific exam questions confidential. Any makeup exam offered will be in a different format as well, most likely a few long-essay questions, due to the time-consuming nature of composing multiple-choice and matching questions. With the grading policies in this course, however, it is possible to miss one of the four exams, and/or multiple quizzes, and still receive an A, or even a ranking of #1 in the class.

Academic Integrity Policy

Syracuse University's academic integrity policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first instance of academic dishonesty by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of academic integrity policy. The presumptive penalty

for a first instance of academic dishonesty by a graduate student is suspension or expulsion. SU students are required to read an online summary of the university's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information and the complete policy, see <http://academicintegrity.syr.edu/>.

In this course:

- All submitted writings, calculations, and/or graphical work that counts towards the grade must be the creation of individual students, and not the result of a partnership or group effort.
- In particular, no student may receive help from any other student during in-class written examinations or graded online quizzes.
- **Possession, copying, or transmission of exam or quiz questions outside of the time that a student is taking the exam or quiz is an academic integrity violation, and will result in a grade of F in the course, and referral to the academic integrity office.**

Disability-Related Accommodations

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498, TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. My goal is to create learning environments that are useable, equitable, inclusive and welcoming. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, I invite any student to meet with me to discuss additional strategies beyond accommodations that may be helpful to your success.

Religious Observances Notification and Policy

SU religious observances notification and policy, found at <http://hendricks.syr.edu/spiritual-life/index.html>, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes and by the submission deadline for flexibly formatted classes.

For fall and spring semesters, an online notification process is available for students in **My Slice / StudentServices / Enrollment / MyReligiousObservances / Add a Notification**. Instructors may access a list of their students who have submitted a notification in My Slice Faculty Center.

If an exam is missed due to a religious observance, the exact same examination cannot be offered at a later date, due to the inability to keep the specific exam questions confidential. Any makeup exam offered will be in a different format as well, most likely a few long-essay questions, due to the time-consuming nature of composing multiple-choice and matching questions.