Chem 471H - Biochemistry I

Text: Principles of Biochemistry- Lehninger 6th or 7th Edition, Worth Publishing
Instructor: Dr. Susan Pedigo
Office Hours:

Day	Time	Location
Wednesday	9-10 am & 2-3 pm	201 Coulter

Course Description: Biochemistry is the study of the chemical basis of life. Topics covered include enzyme kinetics and regulation, ligand binding and cooperativity, acid-base chemistry, basic thermodynamic concepts, and the structure and chemical properties of all major biological molecules including proteins, nucleic acids, carbohydrates and lipids. Competency in basic biology, algebra and 2 semesters of organic chemistry is required.

Learning Objectives: Successful completion of this class requires:

- Knowledge of the basic structure and function of proteins, carbohydrates, lipids and nucleic acids.
- Knowledge of basic biological molecules in food, and how they are digested and transported through the body.
- Competency in Acid/Base chemistry of biological molecules including the role of pH buffering in physiology.
- Competency in biophysical concepts such as enzyme kinetics, binding equilibria and allostery.
- Applied knowledge of biophysical and molecular biological techniques.
- Knowledge of the processes comprising the central dogma of biology.
- Knowledge of the noncovalent forces that govern the structure and function of biological molecules.

Blackboard: I will communicate with you using Blackboard. Make sure that your Email address is correct.

Attendance: Honors courses are small classes, usually taught in seminar style with no more than fifteen students. They are reading, writing and discussion intensive. Student participation is therefore essential. In addition, the university commits extensive resources, especially in terms of faculty time, to these small classes. For these reasons, the Honors College has an attendance policy for all honors courses, both required and departmental. Students are entitled to two absences in Tuesday/Thursday classes and to three absences in Monday/Wednesday/Friday classes. Consequences of additional absences will be determined by the individual faculty member, but additional absences will lower your grade.

Disability Access and Inclusion: The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at **https://sds.olemiss.edu** to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at 662-915-7128 so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

Rules for Exams: Exams will be multiple choice and short answer format. Calculators, cell phones and smart watches are not allowed. Stow them in your pack in the front of room during exam. Students with cell phones out during an exam will be assigned a grade of 0 on the exam.

Graded Assignments: Three hourly and one final exams (100 pts each), written quizzes (40 pts), food essay (10 pts), TopHat (in-class quizzes and participation; 50 pts).

Exam Schedule: Hourly exams are scheduled from 5:30 – 7 pm in Coulter Hall classrooms. Seats will be assigned. Specific information will come later.

Exam 1: Tuesday, September 18
Exam 2: Thursday, October 18
Exam 3: Tuesday, November 13
Food Essay: Tuesday Nov. 27
Final Exam: ***Tuesday, December 4, noon (TBA)***

Grades: Grades will be assigned according to the following scale. If the scale is changed, it will be in your favor. A = 90 to 100%, B = 80 to 89%, C = 70 to 79%, D = 60 to 69%, F = <59%.

Academic Integrity: Academic integrity is essential to all the values upon which the university is founded. Students must therefore embody academic honesty in all aspects of their work. A student who cheats on an exam will receive an F on the exam. Paperwork noting the misconduct will be entered in the student's permanent academic record.

Weeks 1-4

Ch. 1 complete; eds 6 and 7 #**7,8,9,11,12**
Ch. 2 complete; ed 6 #**1-6,8,11-15,18a,b,22-30,32**; ed 7 #**1,2&2-8,10,13-17,20a,b,24-32,34**
Ch. 10 ed 6 p. 357-377; ed 7 p. 361-381; ed 6 #**1,3,4,9,15,17,19**; ed 7 #**1,3,4,11,14,16**
Ch. 11 ed 6 p. 385-399, 402-410; ed 7 p. 387-401, 405-413; ed 6 #**4,10,12,15,19,20**; ed 7 #**4,11,14,19,21,22**

Exam 1: Chapters 1,2,10,11; Ganong; Chylomicrons: Ch 17 ed 6 p. 668-669 (ed 7 p. 650-651), Ch 21 ed 6 p. 864-866 (ed 7 p. 842-843); ed 6 p. GLUT2: p. 406-407; Na-Glucose Symporter: p. 417; Na-K ATPase: p. 411-412

Weeks 4-8

Ch. 3 complete; eds 6 and 7 #**2-5,7,8,11-17,21**(ed6),**22**(ed7)
Ch. 4 complete; eds 6 and 7 #**1-4,7,10,11,13**,
Ch. 5 ed 6 and 7 p. 157-174 (Hb/Mb) ed 6 #**1-10,12**; ed 7 # **1-11, 13** (problem 5 is extra)

Exam 2: Chapters 3-5

Weeks 8-12

Ch. 6 ed 6 p. 189-213, 226-231; ed 7 p. 187-213, 225-231; ed 6 #**1,3-8,11-13,15**; ed 7 #**1,3-8,9,10,13-15,17**
Ch. 7 ed 6 p. 243-259, 263-264; ed 7 p. 241-257, 261-263; eds 6 and 7 #**1,4-7,10,12-16,23**
Ch. 8 ed 6 p. 281-299, 302-308; ed 7 p. 279-296, 302-313; ed 6 #**2,13,14**; ed 7 #**2, 12,13**
Ch. 9 ed 6 p. 313-319, 325-332, and box 9-1; ed 7 p. 319-325, 332-334; eds 6 and 7 #**1,3,4**

Exam 3: Chapters 6-9

Week 13 (before T-day break)

Biochemistry of food- ppt lecture notes

Food Essay: Due in class following T-week break.

Week 14 (Last week of Classes)

Ch. 24 ed 6 p. 947-969 (chromosomes) #**1,2,4,5**
Ch. 25 ed 6 p. 975-991 (replication) #**1,7-9**
Ch. 26 ed 6 p. 1021-1033 (transcription)
Ch. 27 ed 6 p. 1065-1079 (translation) **#1-5,9**

Structures for written quizzes: Phosphoric acid, Acetic Acid, Amino Acids and Peptide bond; Glyceraldehyde, Dihydroxyacetone, Glucose, Fructose, Mannose, Galactose, Sucrose, Maltose, Cellobiose, Lactose, Polysaccharide linkages, Phosphodiesters; TAG, PAG, Fatty Acids, Sphingolipids, Sterol ring