College of Natural Science
MICHIGAN STATE UNIVERSITY

Department Biochemistry and Molecular Biology

BMB 200 Fall 2021 Syllabus

Course Number BMB 200
Credit Hours 4
Course meeting days and time Tue/Th 8:00 – 9:50 am EDT
Course location Biochemistry Building Room 101
Course website address: d2l.msu.edu
Course Modality: In person

Instructors

Instructor Information

Instructor/Course coordinator (she/her)	Instructor (she/her)
Name: Susanne Hoffmann-Benning	Name: Shannon Walsh
Office: BMB 223A	Office:
Office hours: immediately after class and by email appointment	Office hours: immediately after class and by email appointment
Phone: Do Not use my office phone; email	Phone: Do Not use my office phone; email
E-mail: hoffma16@msu.edu	E-mail: walshver@msu.edu

Teaching assistant (she/her)
Name: Christina Chiu
Office: BMB 208 (tentative)
Office hours: Wednesdays 5-6 pm and 6-7 pm
Phone: Do Not use my office phone; email
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Course Information

Course Description

In this course, you can learn how the food you eat lets you live. All food can be broken down into four major components, the same major components required for life. This class will systematically present the physical and chemical properties of these components, the role of each of these components in your body, and the processes by which your body utilizes these components.

Course Goals: When you successfully complete this course you will have a conceptual understanding of how the basic components found in the food you eat function in your body.

Course Objectives:

- Explain the roles water, chemical equilibrium, and pH play in your body.
- Recognize the chemical structure of the molecular building blocks found in the food you eat and identify the important chemical and physical properties of these building blocks.
- Describe how these molecular building blocks polymerize into larger molecules and organize into cellular structures.
- Compare and contrast the functions of these building blocks and their polymers in living cells.
- Explain how the chemical and physical properties of these building blocks cause them to carry out their specific functions in your body.
- Describe the basic cellular pathways used to break down the food you eat to produce the cellular building blocks and capture the energy your body needs.
- Discuss the relationship between coenzymes and vitamins and explain the roles of specific coenzymes in metabolism.
- Explain basic physical and chemical concepts that underlie cellular processes and apply these to problems involving your body's utilization of food.
- Explain how information is stored and passed on based on the chemical and physical properties of the molecules found in living cells.
- Explain how our understanding of biochemistry and molecular biology are changing the way society approaches food production and medical problems.

Recommended Texts & Other Materials:

Lectures will be based on the book "*Biochemistry*", by Mary Campbell and Shawn Farrell, Brooks/Cole publishing. The book is not required but highly recommended. 6th , 7th , 8th or 9th edition is acceptable. Print and e-text are both acceptable

Electronic text purchase link: **http://www.cengagebrain.com/shop/search/9781285429106**

We have four extra copies of the 8th edition that we are willing to loan out to the first four students. These books will need to be returned before the final exam period.

Prerequisite: General chemistry and organic chemistry.

Other required materials: i>clicker2 remote or device with the iClicker Cloud app

i>clicker2 Information

This semester we will be using the i>clicker2 classroom response system. This technology can greatly enhance learning during lectures. We will be using clickers during every lecture, including the first one. Starting the first day of class, you will need an i>clicker 2 remote OR a device with the iClicker Cloud app installed. To decide which is best for you and set up instructions see the iClicker instructions document

on D2L.

i>clicker2 remotes are available from the bookstores and you should purchase one, remove it from its packaging, and make sure it will turn on before you come to the first class. ASMSU offers free or low-cost clicker rentals for a semester. Go to the ASMSU Business Office (307 Student Services) to inquire about this program.

This is the i>clicker2. This is the one you need for this course.

This is the original i>clicker. **It will not work for this course.** However, you can get by with it for the first two weeks

This is the i>clicker+. **It will not work for this course.**

Registering your i>clicker2

We will register i>clicker2 before and/or after lecture during the first two weeks of class.
See instructions on D2L for iClicker app set up.

Course platforms/Structure:
Lectures are from 8:00 A.M. to 9:50 A.M. EDT on Tuesdays and Thursdays in Biochemistry room 101. Attendance at lecture is expected and part of your grade comes from classroom participation in the form of clicker points

Desire2Learn (D2L): For course information, lecture notes, grades, and announcements, go to d2l.msu.edu and sign in with your MSU NetID and password. Double click on the course name to enter the course. Course e-mail will also be sent through D2L. If you encounter trouble with D2L, please contact the D2L helpdesk. Make sure your D2L is forwarded to the email address you monitor most frequently. We are not responsible for missed emails.

Technical Assistance:
If you need technical assistance at any time during the course or to report a problem you can:

- Visit the MSU Help site at http://help.msu.edu
- Visit the Desire2Learn Help Site at http://help.d2l.msu.edu
- Call the MSU IT Service Desk at (517)432-6200, (844)678-6200, or e-mail at ithelp@msu.edu
- Request assistance navigating and requesting instructional design help: https://tech.msu.edu/service-catalog/teaching/instructional-design-development/
- Email your instructors/TA – we may be able to help

Course Outline/Schedule/Grading

Grading: Final grades will be based on the assessments shown below:

Quizzes/Homework	20%	(best 4 of 6 quizzes/homework – drop the two lowest scores)
"Clicker" Points	8%	(each day counts equally; drop your lowest 4 clicker days)
Exams	72%	(4 exams at 18% each)

The course grades will be rounded to the nearest tenth and determined based on the scale shown below.

Percentage	Grade	Percentage	Grade
90.0% or above	4.0	< 68% to 60.0%	2.0
< 90% to 83.0	3.5	< 60 % to 55.0%	1.5
< 83% to 75.0%	3.0	< 55% to 50.0%	1.0
< 75% to 68.0%	2.5	< 50%	0.0

Assessments:

Quizzes/Homework: There will be six unannounced "mini-exam" quizzes, short classroom writing assignments, or (announced) homework assignments. These will be either short (5-10 question ~ 10 minute) quizzes designed to acquaint you with the style of examination questions you may be asked on an upcoming exam or writing assignments assigned by the instructor. Your two lowest scores from these will be dropped and the remaining scores will count as 20% of your grade. This is equivalent to more than one exam, so it is your opportunity to solidify a good grade or balance a bad exam grade. There will be no make-up quizzes. If, on the day of a quiz, you are not in class for any reason, this is one of the scores that will be dropped. If you miss more than two quizzes for any reason, the additional missed quizzes will count as zeros.

"Clickers": This course will use the i>clicker2 classroom response system. You will receive 2/3 of a point for sending in any answer and an additional 1/3 point for sending in the correct answer for each question posed during class. The lowest 4 clicker day scores will be dropped from your overall course grade. "Clicker" points will make up 8% of your grade. It is your responsibility to bring your clicker to class each day. There are no make up opportunities for missed clicker points. If you forget to bring your clicker or miss class for any reason, including absences, you will receive no points for that day. Because we drop multiple days of clicker scores, you can miss or forget your clicker for several days of class and still get full credit. **If you replace your clicker during the semester, please notify the TA.** Any student found using another student's clicker will be considered cheating and in violation of the Academic Honesty policy listed below.

Exams: On Sept. 23, Oct. 21, and Nov. 18 from during normal class time there will be midterm exams. Exams will not be followed by lecture on those days. The final exam will be on Tuesday, Dec. 14, starting at 8:00 A.M. covering material taught after exam III. The exams will count as 72% your grade (18% for each exam). Exams will consist of a variety of question types, including multiple choice, true/false and essay-style questions.

No collaborations/discussions allowed during exams. Any detection of plagiarism will result in a "zero grade" for all involved parties.

If you miss an exam and provide an excuse according to MSU exam policy, we will provide one make-up exam option for the semester. You will need to be prepared to document your illness or the extenuating circumstances that caused you to miss the exam. Oversleeping won't do it.

For accepted excuses see https://msu.edu/unit/ombud/classroom-policies/index.html#attend-final

Academic Honesty: The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards. Academic honesty as described in the Spartan Life Handbook (see in particular: Protection of Scholarship and Grades and Integrity of Scholarship and Grades) is expected. For the written homework assignment, you can discuss your work with friends, however, the writing has to be in in your own words. Quotes from the text will not count as your own words and will not be counted as answer to the questions. More than 30% identity to other homework assignments, the original text, or other publications will be considered plagiarism and will result in a "0" and a report to the Dean's office. If you are unsure, use cross check or ask your instructors.

Students with Disability Requests: Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation ("VISA") form. Please present this form to Dr. Hoffmann-Benning at the start of the term and/or two weeks prior to the accommodation date (test, project, etc). Requests received after this date will be honored as possible.

Covid Statement

MSU has issued a vaccine and mask mandate, which will be enforced in class. Please be considerate of your fellow students and your instructors and follow the rules so class can be taught in a timely fashion. For students that become sick, the normal MSU health policy will be followed.

Lecture Schedule BMB 200-Fall 2021

Date	Day	Lec. #	Topic	Instructor	Reading
2-Sep	Th	1	Are you what you eat? - An overview of biochemistry.	SHB	Chapter 1
		2	Cell composition and compartmentalization; cells; water	SHB	
7-Sep	Tu	3	Acid/base/pH; buffers	SHB	Chapter 2
		4	Amino acids; peptides	SHB	Chapter 3
9-Sep	Th	5	Peptides and proteins	SHB	Chapter 3
		6	Three-dimensional structure of proteins,	SHB	Chapter 4
14-Sep	Tu	7	Folding and disease; protein function	SHB	Chapter 6
		8	Introduction to enzymes	SHB	
16-Sep	Th	9 &10	The behavior of proteins: Enzymes	SHB	Chapter 7
21-Sep	Tu	11 &12	The behavior of proteins: Enzymes, Mechanisms, Control	SHB	Chapter 7
23-Sep	Th		**Exam I - Lectures 2 - 12**	SHB	
28-Sep	Tu	13 &14	Lipids and membranes	SHB	Chapter 8
30-Sep	Th	15 &16	Membranes; Action potentials and neurotransmitters Hot topic: "Chocolate, Cannabis, and the Chemistry of the Brain"	SHB	Chapter 8
5-Oct	Tu	17 & 18	Nucleic Acid Structure	SHB	Chapter 9
7-Oct	Th	19 & 20	DNA Replication and DNA Repair Hot topic: Replication, mutation and the COVID pandemic	SHB	Chapter 10
12-Oct	Tu	21 & 22	RNA Transcription and Control	SHB	Chapter 11
14-Oct	Th	23 & 24	Protein Synthesis	SHB	Chapter 12
19-Oct	Tu	25 &26	Methods in Biotechnology. Hot topic: The good, the bad, and the evil: are GMOs our friend or foe?	SHB	Chapter 13
21-Oct	Th		**Exam II - Lectures 13 - 26**	SHB	
26-Oct	Tu		**Break Day !!!**		
28-Oct	Th	27 & 28	Sugars and carbohydrates	SW	Chapter 16
2-Nov	Tu	29 & 30	Basics of metabolism and thermodynamics	SW	Chapter 15
4-Nov	Th	31 & 32	Glycolysis	SW	Chapter 17
9-Nov	Tu	33 & 34	Glycolysis and Fermentation	SW	Chapter 17
11-Nov	Th	35 & 36	Storing and using carbohydrates	SW	Chapter 18
16-Nov	Tu	37 & 38	Other carbohydrate pathways	SW	Chapter 18
18-Nov	Th		**Exam III - Lectures 27-38**	SW	
23-Nov	Tu	39 & 40	Pyruvate oxidation and citric acid cycle	SW	Chapter 19
25-Nov	Th		THANKSGIVING –NO CLASS		
30-Nov	Tu	41 & 42	Oxidative phosphorylation	SW	Chapter 20
2-Dec	Th	43 & 44	Metabolism of fats	SW	Chapter 20
7-Dec	Tu	45 & 46	Photosynthesis	SW	Chapter 22
9-Dec	Th	47 & 48	Amino acids and nucleotides	SW	Chapter 23
14-Dec	Tu		**Exam IV– Lectures 39-50**	SW	