PlSc 542 Biochemistry
Fall 2022

Credits: 3 hours
Time Tuesday and Thursday 8:00-9:15 AM (8/23/22 – 12/12/22)
Place Ag. Sci. Bldg. 339
Instructor Zonglie Hong
Office: AgBiotech Bldg. Rm 207
Phone: 885-5464; email: zhong@uidaho.edu

Prerequisites: Biol 300 (Survey of Biochemistry), Biol 380 (Biochemistry I) or by permission.

Textbook: **Biochemistry** (4th Ed), by D. Voet and J. G. Voet, 2011, John Wiley & Sons, Inc.
ISBN 978-0470-570951 (Hardcover),
ISBN 978-0470-917459 (Loose-leaf) or
ISBN 978-0470-914106 (Wiley E-text)

Bb Learn: Class handouts, previous exams and supplemental reading materials are available for download at https://bblearn.uidaho.edu/ (for registered students).

Zoom link:
This class meets on Tuesday and Thursday from 8:00 – 9:15 am in Ag. Sci. Bldg. 339. After getting approval from the instructor, registered students from a remote location can join the classroom of PlSc 542 Biochemistry via the Zoom link:
https://uidaho.zoom.us/j/**921941527**

Course description
This course examines the biochemical properties of biomolecules (amino acids, proteins, carbohydrates, vitamins and lipids), the bioenergetics principles, enzyme mechanisms and regulation of the central metabolic pathways. Topics include protein structures and functions, enzyme kinetics and mechanisms, glycolysis, gluconeogenesis, pentose phosphate pathway, the citric acid cycle, metabolic regulation of glucose and glycogen metabolism, lipid degradation and biosynthesis, oxidative phosphorylation and photosynthesis. The course is designed for graduate students who are interested in the chemical and molecular natures of living systems.

Student learning outcomes:
- Students will learn the structures and functions of major biomolecules in living systems.
- Students will learn the basic principles and language of chemistry important for explaining biology at the molecular level.
- Students will demonstrate a comprehension of the basic concepts and mechanisms of enzymatic catalysis.
- Students will demonstrate a comprehension of the basic concepts and mechanisms of energy metabolisms in living systems.

Examinations
Examinations will cover material presented during the lectures and material in the assigned text reading. Each exam will cover the material presented after the previous exam. The last exam (Exam 4) will consist of two parts, Part I (20 points) will cover the material presented after Exam 3, and Part II (20 points) will cover the whole course.

Exam 1: 20 points,
Exam 2: 20 points,
Exam 3: 20 points, and
Exam 4: 40 points.

All exams will be close-book. Therefore, you may not bring your text, handouts and notes to exams. The exam format will consist of multiple choices and short answer questions. Make-up examinations will be given only for a valid reason and within a timely manner. Cheating and plagiarism cases will be handled according to the Student Code of Conduct.

Grading

Final course grades will be determined as follows:
A: >90
B: 70-89
C: 50-69
F: < 49

Assistance

The instructor will have office hours from 9:30AM to 11:00AM every Tuesday and Thursday. Students are also encouraged to make an appointment to meet with the instructor.

Disability support services reasonable accommodations statement:

Reasonable accommodations are available for students who have documented temporary or permanent disabilities. Please notify the course instructor(s) during the first week of class regarding accommodation(s) needed for the course. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306.

*phone: 885-6307 e-mail: dss@uidaho.edu
website: http://www.uidaho.edu/studentaffairs/asap/dss

University of Idaho classroom learning civility clause:

In any environment in which people gather to learn, all members must feel free and safe as possible in their participation. To this end, I expected that everyone in this course will be treated with mutual respect and civility, with an understanding that all of us (students, instructors, professors, guests, and teaching assistants) will be respectful and civil to one another in discussion, in action, in teaching, and in learning.

Should you feel our classroom interactions do not reflect an environment of civility and respect, you are encouraged to meet with me during office hours to discuss your concern. Additional resources for expression of concern or requesting support include the Dean of Students office and staff (5-6757), the UI Counseling & Testing Center's confidential services (5-6716), or the UI Office of Human Rights, Access, & Inclusion (5-4285).

Firearms on University of Idaho property:

The University of Idaho bans firearms from its property with only limited exceptions. One exception applies to persons who hold a valid Idaho enhanced concealed carry license, provided those firearms remain concealed at all times. If an enhanced concealed carry license holder's firearm is displayed, other than in necessary self-defense, it is a violation of University policy. Please contact local law enforcement (call 911) to report firearms on University property.

In-person Class Attendance:

Refrain from attending class in-person if you are ill, if you are experiencing any of the known symptoms of coronavirus, or if you have tested positive for COVID-19 or been potentially exposed to someone with COVID-19.

- If you display symptoms and/or test positive, you should quarantine following the CDC's recommendations. Do not return to class until you meet the CDC's requirements.
- If you have been exposed but are asymptomatic, you should stay home for 14 days from the last exposure if you remain asymptomatic, adhering to the CDC's requirements.

Documentation *(a doctor's note)* for medical excuses is not required; instead, email me to make arrangements to submit any missed work and make plans to use Zoom and/or online course materials to stay current with the course schedule.

Face Covering Requirements:

All faculty, staff, students, and visitors across all U of I locations must use face coverings over the nose and mouth whenever in any U of I buildings. Thus, you are required to wear a face covering in this classroom at all times.

- If you have a medical condition that affects your ability to comply with the face covering policy, please contact the Center for Disability Access and Resources (CDAR) to request a reasonable accommodation.
- If you have other reasons you believe make you exempt from wearing face coverings, please contact the COVID-19 Coordinator.
- Failure to wear a face covering over your nose and mouth will require you to leave the classroom immediately. If a disruption to the learning experience occurs due to repeated offence and/or egregious behavior, you will be reported to the Dean of Students Office for a potential code violation.
- All Vandals are highly encouraged to be vaccinated.

Lecture Topics for PlSc 542 Biochemistry (Fall 2022)

Date	Lecture	Topic	Reading
08/23	1	Introduction	Chps 2 & 3
08/25	2	Amino Acids & Polypeptides	Chps 4 & 7
08/30	3	Protein 3-D Structures	Chapter 8
09/01	4	Protein Folding	Chapter 9
09/06	5	Protein Function: Hemoglobins	Chapter 10
09/08	6	Protein Purification & Analysis	Chapter 6
09/13		Study/review day	
09/15		**Exam 1**	
09/20	7	Enzyme Introduction	Chapter 13
09/22	8	Enzyme Kinetics (1)	Chapter 14
09/27	9	Enzyme Kinetics (2)	Chapter 14
09/29	10	Catalytic Mechanisms	Chapter 15
10/04	11	Enzyme Examples	Chps 13 & 15
10/06	12	Cofactors & Vitamins	Chapter 13
10/11		Study/review day	
10/13		**Exam 2**	
10/18	13	Biochemical Reactions & Metabolism	Chapter 16
10/20	14	Carbohydrates	Chapter 11
10/25	15	Glycolysis	Chapter 17
10/27	16	TCA cycle	Chapter 21
11/01	17	The Pentose Phosphate Pathway	Chapter 23
11/03	18	Gluconeogenesis & Glycogen Metabolism	Chps 18 & 23
11/08		Study/review day	
11/10		**Exam 3**	
11/15	19	Lipid metabolism	Chapter 25
11/17	20	Membranes: Structures & Functions	Chapter 12
11/22		Thanksgiving week (no class)	
11/24		Thanksgiving week (no class)	
11/29	21	Electron transport chain in mitochondria	Chapter 22
12/01	22	ATP synthesis	Chapter 22
12/06	23	Light harvesting	Chapter 24
12/08	24	Photophosphorylation	Chapter 24
12/12	**(Monday)**	**Exam 4 (AgSc 339; time 8:00-10:00 am)**	