Course Title: Biochemistry II (50:115:404/ 56:115:512:01)

General Information:
Instructor: Dr. Jinglin Fu
Classroom: SCI Lecture Hall
Office: Joint Health Science Center (JHSC), room 121
Tel: 856-225-6612
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Class time and place: Tuesday/Thursday 11:10 am – 12:30 pm, SCI lecture hall

Office hour: Wednesday (11: 20 am-12:20 pm), Joint Health Science Center, room 121

Or Join Zoom Meeting

https://rutgers.zoom.us/my/jf604?pwd=UmxxRndIdVpKQkRwWnJKdkFLak1MQT09

Course pre/co - requisites: Biochem I (**50:115:403)** ; Organic Chem (**50:160:335-336)**

Suggested Text: Voet & Voet, Biochemistry (Wiley) 4th Edition (2010) (ISBN # 978-0-470-57095-1)

Disabilities and services: A student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation. For more information, please click https://success.camden.rutgers.edu/disability-services

Learning goals: This class will be an advanced overview of general biochemistry. Upon completion of this course, the student should have a fundamental understanding of the principle of metabolism pathway and regulation, cellular signaling transduction and modern biotechnology; be able to calculate the thermal dynamical parameters of biochemical reactions as well as energy input and output; identify the important biochemical reaction intermediates and energy cofactor; understand the membrane transport.

Course Description: The biochemistry class is to develop a comprehensive understanding of:

(1) The major biochemistry pathways;
(2) Membrane transport and signaling
(3) Advanced enzyme active-site mechanism and enzymology
(4) Bioenergy and synthetic biology
(5) DNA transcription and translation;
(6) Introduction to modern biotechnology and nanomedicine

Canvas: Announcement, syllabus, quiz and lecture PPTs will be posted on the Canvas

PowerPoint Files: You can download and view PowerPoint files that I use in class. These PPTs are on the Canvas.

Attendance policy: Students are expected to attend classes regularly. If you need to temporarily leave the classroom, please leave, and return quietly to minimize the disruption to the classroom. You do not need permission from the instructor.

Assessments and Grading:

	Undergraduates	Graduates
Pre-lecture/on-lecture Quiz	20 %	20%
Mid-term I	20%	15%
Mid-term II	20%	15%
Final exam	40%	35 %
Term paper		15 %
Total	100%	100%

Grading is on a curve of normalization. Academic warning will be sent out after the Mid-term I and Mid-term II. Please note, **for graduate students, the course will be Incomplete if a term paper not finished or submitted.**

A	**>= 90%**
B+	**>= 85%**
B	**>= 80%**
C+	**>= 75%**
C	**>= 65%**
D	**>= 55%**
F	**<55%**

Pre-lecture/on-lecture quizzes are used to help students to review and prepare the contents that are going to be discussed in the coming week. Quiz question will be posted on the sakai 48 hours prior the lecture. Students are required to complete the quizzes questions and submit the printed copy to the instructor on every **Tuesday** lecture. **Fail to submit the quiz on time will result in the loss of points no matter what the excuse is.**

Term paper is required for graduate students. Each graduate student needs to schedule an appointment with the instructor to discuss the topic of the term papers. The term paper is around **5-page, 12-font size, and single space**. It should include A title, an abstract (less than 300 words), introduction, discussion section, conclusion and future perspective. Figures should be cited appropriately with indicating the original source. At least **20** references should be cited in the term paper. Reference must be formatted carefully, ACS (American Chemical Society) format is recommended. It is highly suggested that the students first submit a draft for instructor's comments prior to the final submission (at least a week before).

Cheating is strictly prohibited from the class: If a cheating case is confirmed (either in exams or term paper), it will be reported to the Dean and result immediate failure of the class.

Academic Plagiarism: You cannot copy verbatim from any source, including other individuals in the term paper. Any infractions to this rule are considered as academic plagiarism. You must cite references that you have used in preparing your term papers. **Chat GPT** is prohibited to use for

writing term papers and other assignments. For example, you cannot ask Chat GPT to write a paragraph of certain subjects, and simply copy and paste it into your term paper.

Absences from exams: If student has an emergency that prevent him or her from taking the exam, Dr. Fu must be notified **48-hour in advance**. Valid excuses include medical emergency (physician's approval of absence), family funeral, and other compelling circumstances. Proofs must be submitted to the instructor for validating the excuse. Makeup exams will be required to receive a letter grade. **Unexcused absence from exams will result in 0 point.** If a student needs to temporarily leave the exam, it must get permission from the instructor.

Week	Date	Lecture Topic	Material Covered
1	1/16,1/18	Course Intro, Metabolism	Lecture 1
2	1/23	Glycolysis	Lecture 2
	1/25	Glycolysis	Lecture 2
3	1/30	Catabolic fate of pyruvate	Lecture 3
	2/1	Pyruvate to CO_2	Lecture 4
4	2/6	Electron Transport and Oxidative Phosphorylation	Lecture 5
	2/8	Spatial organization/ Transport through membrane	Lecture 6&7
5	2/13	Transport through membrane	Lecture 7
	2/15	Storage of glucose, Pentose Phosphate Pathway	Lecture 9
6	2/20	*Special topic: Bionanotechnology and Nanomedicine*	Lecture 8
	2/22	Review	
7	2/27	**Midterm I**	
	2/29	Breakdown of fat	Lecture 10
8	3/5	The storage of fat, Amino acid metabolism	Lecture 10, 11
	3/7	*Self-learning: Next generation of diagnosis (no class)*	Lecture 14
9	3/12. 14	Spring Break	
10	3/19	Nucleotide metabolism	Lecture 12
	3/21	Enzyme regulation	Lecture 13
11	3/26	Molecular Motors	Lecture 15
	3/28	**Review**	
12	4/2	**Midterm II**	
	4/4	DNA replication, transcription and translation	Lecture 16
13	4/9	Photosynthesis	Lecture 17
	4/11	Photosynthesis	Lecture 17
14	4/16	Energy Metabolism	Lecture 18
	4/18	Energy Metabolism	Lecture 18
15	4/23	*Special topic: Synthetic Biology (Self learning)*	Lecture 19
	4/25	**Final Review**	
	4/29	End of Classes	
	TBN	**Final Exam**	11:30am-2:20pm

Note: Times are ***just an estimate***. The actual pace of the course may be slightly different. **The exams, however, will occur on the dates shown**. Note that the reading and assigned quizzes are due on every Tuesday before the lecture on the subject.