

Spring 2014
Bioorganic Chemistry 18280 CHEM 6410
Co-listed: Bioorganic Chemistry 18279 CHEM 4410
Tuesday and Thursday from 3-4:15 PM in 311 Arts & Humanities

Instructors

Professor Peng George Wang: pwang11@gsu.edu (office hour: immediately after the lecture)

Professor Zhen Huang: huang@gsu.edu (office hour: immediately after the lecture)

Course Content

This course will cover the three important classes of biomolecules (Proteins, Carbohydrates, and Nucleic Acids) for drug discovery and biomedical applications.

Textbook

There is no formal textbook for this course. The course will give three sets of ppt slides, so students should carefully read and understand the slides and related information these slides request.

Midterm Exam

Midterm exam will be a written exam with 100 credits. The exam will cover the basic concepts discussed in the first 16 lectures based on the first 16 ppt slides.

Final Written Exam

Final written part of the exam will be an exam with 100 credits. The exam will cover the basic concepts discussed in the last 11 lectures based on the last 11 ppt slides.

Final Presentation Exam

Final presentation will be 5 ppt slides with notes written inside each slides and talking recorded in the slides. The total presentation time should be 5 to 6 minutes. Each presentation should be either a current chemical biology research topic chosen by the student and proved by the instructor, or a research topic given to each student by the instructor. The assignment of research topic should be finished before the midterm exam. The presentation with 100 credits will be judged based on the quality and creativity of the slide drawings, the written notes and the recorded talk. The presentation will be evaluated by all the registered students in the class.

Grading

The final grading for the course will combine Midterm (100 credits), Final written part (100 credits) and Final presentation part (100 credits) of total 300 credits.

Cutoffs: A+ >95%; A>90%; A->85%; B+ >80%; B>75%; B->70%; C+>65%; C>60%

Detailed Class Schedule

Week 1:	1/14, 1/16	PGW: Proteins
	1/14	Structures of amino acid and peptides (ppt P1)
	1/16	Solution and solid-phase synthesis of peptides (ppt P2)
Week 2:	1/21, 1/23	PGW: Proteins
	1/21	Peptide-based drugs and peptide mimetics (ppt P3)
	1/23	Protein production and protein structures (ppt P4)
Week 3:	1/28, 1/30	PGW: Proteins
	1/28	Protein posttranslational modification and protein conjugation (ppt P5)
	1/30	Proteomics and bioinformatics (ppt P6)
Week 4:	2/4, 2/6	PGW: Carbohydrates

- 2/4 Basic carbohydrate chemistry (ppt C1)
2/6 Protecting groups and glycosylation (ppt C2)
Week 5: 2/11, 2/13 PGW: Proteins/Carbohydrates
2/11 Chemical glycosylation (ppt C3)
2/13 Glycosidases (ppt C4)
Week 6: 2/18, 2/20 PGW: Carbohydrates
2/18 Glycotransferases (ppt C5)
2/20 N- and O-glycans (ppt C6)
Week 7: 2/25, 2/27 PGW: Carbohydrates
2/25 Glycoproteins (ppt C7)
2/27 Glycolipids (ppt C8)
Week 8: 3/4, 3/6 PGW: Carbohydrates
3/4 Glycoanalysis (ppt C9)
3/6 Glycan-Recognizing Proteins (ppt C10)
Week 9: 3/11, 3/13 PGW: Carbohydrates
3/11 Glycosaminoglycans (ppt C11)
3/13 Chemical glycobiology (ppt C12)

Spring Break Week 3/17 to 3/21

- Week 10: 3/25, 3/27
3/25 Mid-term exam
3/27 Nucleic Acid Introduction (ppt N1)
Week 11: 4/1, 4/3 ZH: Nucleic Acids
4/1 Nucleic Acid Structure and Function (ppt N2)
4/3 Therapeutics and Targeting RNA I (ppt N3)
Week 12: 4/8, 4/10 ZH: Nucleic Acids
4/8 Therapeutics and Targeting RNA II (ppt N4)
4/10 Therapeutics and Targeting DNA I (ppt N5)
Week 13: 4/15, 4/17 ZH: Nucleic Acids
4/15 Therapeutics and Targeting DNA II (ppt N6)
4/17 3D-Structure Study of Nucleic Acids for Drug Discovery (ppt N7)
Week 14: 4/22, 4/24
4/22 Class presentation
4/24 Class presentation
Week 15: Final exam during 4/29 to 5/2