

BB482/582 MOLECULAR BIOPHYSICS

INSTRUCTOR	Dr. Afua Nyarko 2101 Ag. Life Sci. Bldg. (ALS) (541) 737-4486; nyarkoa@oregonstate.edu
TIME AND LOCATION	MWF 13:00 – 13:50 WNGR 275 Office Hours: By appointment
COURSE OBJECTIVES	Lectures and hands-on projects using a few important biophysical techniques for studying biomolecules and their interactions. Topics will cover the basic principles, and experimental design, with major emphasis on data handling and analysis. Graduate students will receive additional experience in instrumentation and data collection.
LEARNING RESOURCES	Assigned readings and articles from the literature Principles of Physical Biochemistry, 2nd Ed.” by van Holde, Johnson, and Ho (recommended)
PREREQUISITE	BB 481/581 (D- or better), CH440 (D- or better)
LEARNING OUTCOMES	After completing this course, students will be able to <ul style="list-style-type: none">– Explain the key concepts for six biophysical used to investigate biomolecular structures and interactions.– Design appropriate experiments to investigate ligand-macromolecule interactions– Critically evaluate and analyze primary literature using the selected biophysical techniques– Analyze two and three dimensional NMR data and use the NMR visualization program SPARKY to sequentially assign protein backbone resonances– Determine the structure of a protein from NMR chemical shifts <p>Additional Learning Outcomes for BB 593 graduate students</p> <ul style="list-style-type: none">– Students gain additional experience in critical analysis and problem solving skills through a literature-based term paper.– Students will be able to setup and collect data on a JASCO 720 spectropolarimeter, a Microcal VP-ITC or a Horiba/Jobin Yvon Fluorolog-3 spectrofluorometer.
TOPICS COVERED	Biophysical Methods Covered include <ul style="list-style-type: none">• Surface plasmon resonance and interferometry-based biosensors• Isothermal titration calorimetry• Analytical ultracentrifugation• NMR (data analysis)• Circular dichroism• Fluorescence spectroscopy

LEARNER
EXPECTATIONS

Active interaction with peers and your instructor is essential to succeed in this course.

Pay particular attention to the following:

- Review the readings and other instructional materials for each week and come prepared to participate in class discussions
- Be respectful to others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.
- Students are expected to arrive to class on time.
- No cell phone usage in class.

COURSE
EVALUATION

Your grade will be based on the following scale:

A = 93-100% A- = 90-92% B+ = 87-89% B = 83-86% B- = 80-82% C+ = 77-79%
C = 73-76% C- = 70-72% D+ = 67-69% D = 63-66% D- = 60-62% F = below 60%

Distribution of points (BB 482 and BB 582 students):

1. Midterm exam (TBA): 100 points
2. Group-led discussions of primary research articles: 40 points.
3. NMR-based group project: 60 points
4. Final exam (comprehensive) - Monday, March 16th, 12:00 pm: 100 points

BB 582 students:

5. Term paper and data collection project (Due March 13th, 2020): 50 points each

UNIVERSITY
POLICY

Regarding Students with Disabilities:

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Student Conduct Expectations:

Students are expected to adhere to the OSU Student Conduct Regulations described at <http://studentlife.oregonstate.edu/code>

Reach Out for Success:

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.