

# BIOPHYSICS (BIOPHYSICS)

## BIOPHYSICS 204A Macromolecular Structure and Interactions (4 Units) Fall

*Instructor(s):* Robert Stroud, Andrej Sali  
*Prerequisite(s):* None.

*Restrictions:* First year Biophysics and CCB students

*Activities:* Lecture, Project, Lab science

In this course, we will pursue a qualitative & quantitative understanding of the physical basis of macromolecular function. We will examine: the nature & quantification of the forces that drive macromolecular interactions, both intramolecular (macromolecular folding), & with other proteins and ligands; diffusion & active transport of macromolecules; the structural underpinnings of the kinetics & thermodynamics of macromolecular reactions; & the physical basis of important biophysical methods.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** Letter Grade

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** No

## BIOPHYSICS 204B Methods in Macromolecular Structure (4 Units) Winter

*Instructor(s):* John Gross, Aashish Manglik, Kliment Verba  
*Prerequisite(s):* None

*Restrictions:* None

*Activities:* Lecture, Fieldwork, Project, Lab science

This is a team-based class where students work in small groups develop their own analysis of real data that they have collected. Statistical aspects of rigor and reproducibility in structural biology will be emphasized throughout lectures, journal club presentations, and hands-on activities.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** Letter Grade

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** No

## BIOPHYSICS 205B Complex Biological Systems B (2.5-4 Units) Winter

*Instructor(s):* Hani Goodarzi, Luke Gilbert  
*Prerequisite(s):* None

*Restrictions:* None

*Activities:* Lecture, Project, Lab science

This course will teach the fundamentals of dissecting and understanding complex biological systems using didactic instruction in addition to practical lab experience in the context of a team based project. For each project, students will learn and use modern genomic and proteomic tools to characterize transcriptional circuits within a model organism. This course is a continuation of material introduced in 205A.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** Letter Grade, P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** No

## BIOPHYSICS 215 Laboratory Rotation (1-8 Units) Fall, Winter, Spring, Summer

*Instructor(s):* Staff  
*Prerequisite(s):* None

*Restrictions:* None

*Activities:* Lab science

An introduction to the specific research currently underway within a faculty member's laboratory.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** Yes

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** Letter Grade, P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** Yes

## BIOPHYSICS 219 Special Topics in Biophysics (3 Units) Fall, Spring

*Instructor(s):* Staff

*Prerequisite(s):* None.

*Restrictions:* First-year graduate students; other graduate and professional students with permission of instructor.

*Activities:* Lecture, Independent Study

Each course offering will focus on the literature of a current important area of Biophysics. Students will be expected to read assigned papers critically before class and to present and discuss papers in class. Students will also be expected to write and present a brief research proposal based upon their reading. Topics in Molecular, Cellular, Developmental Systems and Computational Biology will be covered in individual courses.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** Yes

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** Yes

## BIOPHYSICS 220 Biophysics Seminar (1 Units) Fall, Winter, Spring

*Instructor(s):* Alan Frankel

*Prerequisite(s):* None.

*Restrictions:* n/a

*Activities:* Lecture

This course consists of presentation and discussion of research in quantitative biology and biophysics by outside speakers.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** Yes

## BIOPHYSICS 223 Scientific Communication Seminar (1 Units) Fall, Winter, Spring

*Instructor(s):* Aashish Manglik, Daniele Canzio, Allison Williams

*Prerequisite(s):* None

*Restrictions:* None

*Activities:* Seminar

This seminar will provide graduate students with a forum in which to develop seminar and poster presentation skills; critically organize and critically review scientific data; and analyze and question oral scientific presentations.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** No

## BIOPHYSICS 224 Critical Topics in Biophysics (1 Units) Fall, Winter, Spring

*Instructor(s):* Jim Wells, Lani Wu

*Prerequisite(s):* None

*Restrictions:* None

*Activities:* Lecture

Critical review of published scientific papers from scholarly journals, including comprehension, analysis and evaluation of published scientific data.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** No

**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** Yes

**BIOPHYSICS 241 Physical Biology (5 Units) Fall***Instructor(s):* Michael Grabe

Prerequisite(s): none

Restrictions: none

Activities: Lecture

This is a course on molecular thermodynamics and statistical mechanics. It covers the concepts of entropy, enthalpy, heat capacity, free energy, ligand binding, solvation, the properties of water, the hydrophobic effect, solution electrostatics, adsorption, and physical and chemical kinetics.

**School:** Graduate Division**Department:** Biophysics Program**May the student choose the instructor for this course?** No**Does enrollment in this course require instructor approval?** No**Course Grading Convention:** Letter Grade**Graduate Division course:** Yes**Is this a web-based online course?** No**Is this an Interprofessional Education (IPE) course?** No**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes**Repeat course for credit?** No**BIOPHYSICS 250 Research (1-8 Units) Fall, Winter, Spring, Summer***Instructor(s):* Staff

Prerequisite(s): BIOPHYSICS 204A, BIOPHYSICS 204B

Restrictions: NA

Activities: Project

In this course, students will work together with a primary research advisor to select a research question and design a project workplan that will be carried out by the student. Through this activity, the student will gain experience in research strategy, learn techniques associated with modern biomedical research and practice how to interpret results. At the conclusion of the course, the student will present on their progress.

**School:** Graduate Division**Department:** Biophysics Program**May the student choose the instructor for this course?** Yes**Does enrollment in this course require instructor approval?** No**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)**Graduate Division course:** Yes**Is this a web-based online course?** No**Is this an Interprofessional Education (IPE) course?** No**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes**Repeat course for credit?** Yes**BIOPHYSICS 297 Scientific writing: applying for the NSF predoctoral fellows (1 Units) Fall***Instructor(s):* Zev Gartner

Prerequisite(s): None

Restrictions: None

Activities: Seminar, Workshop

Communicating your best ideas is critical to obtaining the resources necessary to work on them. This course prepares you to conceive, organize, and communicate scientific ideas in written form. Built around the NSF GRF application, this course covers important funding agencies and fellowship opportunities, formulating a research plan in the form of hypotheses and specific aims, organizing research proposals, and peer editing. Course culminates in submission of materials to NSF and other agencies

**School:** Graduate Division**Department:** Biophysics Program**May the student choose the instructor for this course?** No**Does enrollment in this course require instructor approval?** No**Course Grading Convention:** Letter Grade**Graduate Division course:** Yes**Is this a web-based online course?** No**Is this an Interprofessional Education (IPE) course?** No**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes**Repeat course for credit?** No**BIOPHYSICS 299 Dissertation (0 Units) Fall, Winter, Spring, Summer***Instructor(s):* Staff

Prerequisite(s): Advancement to candidacy and permission of the graduate adviser

Restrictions: Graduate students after advancement to candidacy

For graduate students engaged in writing the dissertation for the PhD degree.

**School:** Graduate Division**Department:** Biophysics Program**May the student choose the instructor for this course?** Yes**Does enrollment in this course require instructor approval?** No**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)**Graduate Division course:** Yes**Is this a web-based online course?** No**Is this an Interprofessional Education (IPE) course?** No**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes**Repeat course for credit?** No

## **BIOPHYSICS 311 Curricular Development and Academic Leadership (0.5-4 Units) Fall, Winter, Spring**

*Instructor(s):* Tanja Kortemme

*Prerequisite(s):* None

*Restrictions:* Biophysics students only

*Activities:* Seminar, Workshop, Lab skills, Discussion

The Curricular Development & Academic Leadership course will offer training and leadership to prepare graduate students in scientific leadership roles in the classroom and beyond. Students will have a hands-on approach to structuring and executing a curriculum. Students must submit an application prior to course enrollment.

**School:** Graduate Division

**Department:** Biophysics Program

**May the student choose the instructor for this course?** No

**Does enrollment in this course require instructor approval?** Yes

**Course Grading Convention:** P/NP (Pass/Not Pass) or S/U (Satisfactory/Unsatisfactory)

**Graduate Division course:** Yes

**Is this a web-based online course?** No

**Is this an Interprofessional Education (IPE) course?** No

**May students in the Graduate Division (i.e. pursuing Master or PhD) enroll in this course?** Yes

**Repeat course for credit?** No