

SYLLABUS
Introduction to Biophysics (Phys 3730)

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Office hours: by appointment

Lectures:
Tuesdays and Thursdays 12:00 – 1:15pm 219 Alumni Hall

COURSE DESCRIPTION

The aim of this course is to introduce some of the most important advances achieved in the field of biological physics in recent years. In addition, it aims to train you in reading research papers and analyze them critically in order to prepare you for graduate level research, and introduce to you some of the important open questions in the field.

The first month of teaching will be dedicated to covering important biological background as well as experimental techniques commonly used in the field, and that are required for understanding the material. After that, you will be required every week to read a manuscript recently published in a peer-reviewed journal, which will then be discussed in the class. The discussion will be led by one of you that will present the paper and summarize its main points. Prior to discussing a new topic, however, I will give an introductory lecture summarizing the biological background required to understand the manuscript discussed that week, and describe the experimental and/or theoretical (including computational) methods utilized in that study. The topics that we will cover in this course:

- Molecular motors
- Genetic switches
- Phenotypic variability
- Epigenetic dynamics
- Development
- Photosynthesis
- Evolution
- Protein folding and disorder
- Computational methods in biology
- Signal transduction networks

The last four topics will be presented by four colleagues from the Department of Computational and Systems Biology, whom I invited to present their own research in order to also inform you of the research areas at the university. Prior to their presentation however, I will give an introductory lecture as before to prepare you and help you better understand the research described by the invited speaker.

FINAL GRADE

The final grade will be based on your presentations and your participation in the discussions in class.