

# MOLECULAR BIOPHYSICS - GRADUATE CERTIFICATE

This program introduces graduate students to the field of biophysics, its methodologies and the state-of-the-art biophysical research efforts being carried out in diverse laboratories and departments on the CU Boulder campus. It creates interdepartmental connections that provide the breadth of training needed to develop biophysical scholars.

Students must be admitted through the regular admissions process to a PhD program in one of the following departments:

- Biochemistry
- Chemical and Biological Engineering
- Chemistry
- Molecular, Cellular and Developmental Biology
- Physics

They must satisfy all of their home department's requirements to receive a PhD as well as the additional requirements of the certificate program. For more information, visit the program's Molecular Biophysics Training Program: Certificate Option (<http://www.colorado.edu/biophysics/certificate/>) webpage.

## Requirements

- Participation in one to three laboratory rotations outside the thesis lab, which provide experience with a range of biophysical methods. Subsequently the student joins one of the member laboratories of the training program for thesis work.
- Completion of two courses chosen from the list of approved courses below.
- Annual meeting with a faculty advisory committee that provides helpful feedback on the thesis research.
- Students are expected to take part in a seminar series, which presents internationally renowned speakers and their research. They also are required to participate in supergroup meetings and symposia, which provide forums for them to present their own research in front of their colleagues and advisory committee.

## Approved Course List

Code	Title	Credit Hours
APPM 5390	Modeling in Mathematical Biology	3
APPM 5720	Open Topics in Applied Mathematics	1-3
BCHM 5491	Modern Biophysical Methods	3
BCHM 5776	Scientific Ethics and Responsible Conduct in Research	1
BCHM 5801	Advanced Signal Transduction and Cell Cycle Regulation	3
BCHM 5811	Advanced Methods in Protein Sequencing and Analysis	3
BCHM 6601	Biochemistry Seminar	1
BCHM 6711	Advanced Topics in Biochemistry	3-6
CHEM 5321	Advanced Physical Organic Chemistry	3
CHEM 5331	Advanced Spectroscopic Techniques in Organic Chemistry	3
CHEM 5531	Statistical Mechanics	3

CHEM 5541	Chemical Dynamics	3
CHEM 5591	Advanced Molecular Spectroscopy	3
CHEN 5150	Biomolecular Kinetics, Transport, and Thermodynamics	3
CHEN 5210	Transport Phenomena	4
CHEN 5805	Biological Interactions to Biomaterials	3
CHEN 5900	Pharmaceutical Biotechnology	3
CHEN 6820	Biochemical Engineering Fundamentals	3
ECEN 5126	Computational Optical Imaging	3
MATH 5030	Intermediate Mathematical Physics 1	3
MCDB 5312	Quantitative Optical Imaging	3-4
MCDB 5350	Microbial Diversity and the Biosphere	3
MCDB 5520	Bioinformatics and Genomics	3
MCDB 5550	Cells, Molecules and Tissues: A Biophysical Approach	3
MCDB 5560	Introduction to Biophysics	3
MCDB 5776	Scientific Ethics and Responsible Conduct in Research	1
PHYS 5030	Intermediate Mathematical Physics 1	3
PHYS 5040	Intermediate Mathematical Physics 2	3
PHYS 5250	Introduction to Quantum Mechanics 1	3
PHYS 5260	Introduction to Quantum Mechanics 2	3
PHYS 5550	Cells, Molecules and Tissues: A Biophysical Approach	3
PHYS 5560	Introduction to Biophysics	3
PHYS 7810	Special Topics in Physics	1-3