BIOPHYSICS (BPH)

College of Agricultural & Environmental Sciences

BPH 200A — Current Techniques in Biophysics (3 units)

Course Description: Current Techniques in Biophysics. Topics include mathematical methods, modeling, mass spectrometry, stochastic process, scanning probe microscopy, electron microscopy, fluorescence, membrane diffusion/mechanics, and single particle tracking.
Prerequisite(s): BIS 102; CHE 110A; or equivalents.
Learning Activities: Lecture 3 hour(s).
Grade Mode: Satisfactory/Unsatisfactory only.

BPH 200B — Current Techniques in Biophysics (3 units)

Course Description: Current Techniques in Biophysics. Topics include protein folding, membrane structure and dynamics, Raman spectroscopy, fluorescence resonance energy transfer, time resolved fluorescence, quantum dot, fluorescence imaging,esr, high resolution nmr, and in vivo nmr.
Prerequisite(s): CHE 110A; BIS 102; or equivalent of BIS 102.
Learning Activities: Lecture 3 hour(s).
Grade Mode: Satisfactory/Unsatisfactory only.

BPH 200LA — Biophysics Laboratory (3 units)

Course Description: One five-week laboratory assignment in the research laboratory of a Biophysics Graduate Group faculty member. Individual research problems with emphasis on methodological/procedural experience and experimental design.
Prerequisite(s): BPH 200 (can be concurrent).
Learning Activities: Laboratory 18 hour(s).
Repeat Credit: May be repeated 4 time(s).
Grade Mode: Letter.

BPH 200LB — Biophysics Laboratory (6 units)

Course Description: Two five-week laboratory assignments in the research laboratories of Biophysics Graduate Group faculty members. Individual research problems with emphasis on methodological/procedural experience and experimental design.
Prerequisite(s): BPH 200 (can be concurrent).
Learning Activities: Laboratory.
Repeat Credit: May be repeated 2 time(s).
Grade Mode: Letter.

BPH 231 — Biological Nuclear Magnetic Resonance (3 units)

Course Description: Principles and applications of magnetic resonance in biomedicine. Fundamental concepts and the biophysical basis for magnetic resonance applications in areas of tissue characterization/imaging, metabolic regulation, and cellular bioenergetics.
Prerequisite(s): MCB 221A; or consent of instructor, or the equivalent.
Learning Activities: Lecture 3 hour(s).
Cross Listing: BCM 231.
Grade Mode: Letter.

BPH 241 — Membrane Biology (3 units)

Course Description: Advanced topics on membrane biochemistry and biophysics. Relationship of the unique properties of biomembranes to their roles in cell biology and physiology.
Prerequisite(s): BIS 102; BIS 103; BIS 104; or consent of instructor.
Learning Activities: Lecture 3 hour(s).
Grade Mode: Letter.

BPH 255 — Nanoscale Imaging for Molecular Medicine (3 units)

Course Description: Current and emerging technologies to visualize biological structures and processes at size scales = 100 nanometers — and their application towards the advancement of molecular medicine. Technologies include superresolution optical microscopy electron microscopy and tomography. Emphasis on quantitative imaging.
Prerequisite(s): BIM 202 highly recommended; graduate standing.
Learning Activities: Lecture/Discussion 3 hour(s).
Cross Listing: BIM 255.
Grade Mode: Letter.

BPH 271 — Optical Methods in Biophysics (4 units)

Course Description: Principal optical techniques used to study biological structures and their related functions. Specific optical techniques useful in the studies of protein-nucleic acid, protein-membrane and protein-protein interactions. Biomedical applications of optical techniques.
Prerequisite(s): BIS 102; EAD 108B; CHE 110A; or equivalents.
Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 1 hour(s).
Grade Mode: Letter.

BPH 288 — Living Matter: Physical Biology of the Cell (3 units)

Course Description: Introduction to the origin, maintenance, and regulation of the dynamic architecture of the cell, including cellular modes of organization, dynamics and energy dissipation, molecular transport, motility, regulation, and adaptability.
Learning Activities: Lecture 3 hour(s).
Enrollment Restriction(s): Open to any student possessing general background in any disciplines of physical or biological sciences and engineering.
Cross Listing: BIM 288, EMS 288.
Grade Mode: Letter.

BPH 290 — Biophysics Seminar (1 unit)

Course Description: Presentation of current research by experts in biophysics.
Prerequisite(s): Graduate standing or consent of instructor.
Learning Activities: Seminar 1 hour(s).
Repeat Credit: May be repeated.
Grade Mode: Satisfactory/Unsatisfactory only.

BPH 290C — Research Conference in Biophysics (1 unit)

Course Description: Presentation and discussion of faculty and graduate-student research in biophysics.
Prerequisite(s): BPH 299 (can be concurrent); graduate standing in Biophysics and/or consent of instructor.
Learning Activities: Discussion 1 hour(s).
Repeat Credit: May be repeated.
Grade Mode: Satisfactory/Unsatisfactory only.

BPH 293 — Introduction to Research Topics (1 unit)

Course Description: Presentation of current research activities of the Biophysics Graduate Group faculty. Facilitation of students in developing their research interest, and promoting collegial interactions.
Learning Activities: Seminar 1 hour(s).
Repeat Credit: May be repeated 1 time(s) when topics differ.
Grade Mode: Satisfactory/Unsatisfactory only.

BPH 298 — Group Study (1-5 units)

Course Description: Group study.
Learning Activities: Variable 1-5 hour(s).
Grade Mode: Satisfactory/Unsatisfactory only.

BPH 299 — Research (1-12 units)

Course Description: Research.
Learning Activities: Variable 3-36 hour(s).
Grade Mode: Satisfactory/Unsatisfactory only.