

Biophysics Major - Requirements

Gateway Courses (not required, but highly recommended):

Biophysics 116 (Intro to Medical Imaging)
 Biophysics 117 (Intro to Programming in the Sciences)
 Biophysics 120 (Mysteries of the Double Helix)
 Biophysics 130 (DNA Origami)

BIOLOGICAL PHYSICS TRACK

Prerequisites:

MATH 115 and 116
 MATH 215 and 216; or CHEM 262
 CHEM 210/211 and 215
 PHYSICS 135/136 and 235/236 or 140/141 and 240/241
 BIO 171 or 172 or 174 or 195

NOTE: students with Math AP credit are advised to take the Math 215/216 sequence

Core:

BIOPHYS 290 (Phys of the Body & Mind)
 BIOPHYS 370 (Phys & Chemical Properties)
 BIOPHYS 417 (Dynamical Processes)
 BIOPHYS 450 (Intro to Biophys Lab)
 BIOPHYS 454 (Macromolecular Structure)
 BIOPHYS 495 (Senior Seminar)

Outside Core:

CHEM 351
 BIO 305

Elective*:

One of:

BIOPHYS 430 (Medical Physics)
 BIOPHYS 433 (Biocomplexity)
 BIOPHYS 435 (Biophysical Modeling)
 BIOPHYS 440 (Biophysics of Diseases)
 BIOPHYS 463 (Math. Modeling in Biology)
 MCDB 411 (Protein Struc & Function)

STRUCTURAL BIOLOGY TRACK

Prerequisites:

MATH 115 and 116
 CHEM 262
 CHEM 210/211 and 215
 PHYSICS 135/136 and 235/236 or 140/141 and 240/241
 BIO 171; and 172 or 174 or 195

Core:

BIOPHYS 370 (Phys & Chemical Properties)
 BIOPHYS 420 (Structural Biology I)
 BIOPHYS 421 (Structural Biology II)
 BIOPHYS 450 (Intro to Biophys Lab)
 BIOPHYS 495 (Senior Seminar)

Outside Core:

CHEM 351 or MCDB 310 or BIOLCHEM 415
 BIO 305

Elective*:

One of:

BIOPHYS 430 (Medical Physics)
 BIOPHYS 435 (Biophysical Modeling)
 BIOPHYS 440 (Biophysics of Diseases)
 BIOPHYS 454 (Macromolecular Structure)
 BIOPHYS 463 (Math. Modeling in Biology)
 BIOPHYS 520 (Theory & Methods Bioph Chem)
 BIOPHYS 521 (Techniques in Biophys Chem)
 MCDB 411 (Protein Struc & Function)

**Other 400-level Physics, Chemistry or Biology courses may be accepted, per approval of the Undergraduate Chair*

Cognate*:

One of:

MATH 404
MATH 471
PHYSICS 406
PHYSICS 453
CHEM 451
MCDB 427
MCDB 428

Research:

At least **two credits** of BIOPHYS 399. Students wishing to do research in a laboratory outside the Program must identify a co-sponsor.

Cognate*:

One of:

CHEM 451
MCDB 427
MCDB 428
BIOLCHEM 530
BIOLCHEM 550

Research:

At least **two credits** of BIOPHYS 399. Students wishing to do research in a laboratory outside the Program must identify a co-sponsor.

**Other 400-level Physics, Chemistry or Biology courses may be accepted, per approval of the Undergraduate Chair*

Honors Concentration: In addition to completing all the Biophysics concentration requirements (in either track), a concentration GPA of at least 3.4 and the completion of an honors thesis (BIOPHYS 499) with a grade B or better, and a **second Biophysics elective** are required. Approved honors electives are all Biophysics and cognate electives above; and CHEM 453, MCDB 422 and PHYSICS 402. Other 400-level electives may be accepted, per approval of the Undergraduate Chair.

Minor in Biophysics:

At least 15 credits from the following courses are required:

PHYSICS 340 or CHEM 210
BIOLOGY 305 or MCDB 310 or CHEM 351
BIOPHYS 370 or 417
BIOPHYS 290 or 440
BIOPHYS 450

- Only ONE COURSE may be double-counted towards both the student's major and minor
- For more information on double-counting rules, please refer to the LSA Course Guide or speak with an advisor.

Suggested 4-Year Course Plan – BIOLOGICAL PHYSICS TRACK

Year 1	Hours Pre-req (req. / recomm.)	Major Hours Dept. (req. / recomm.)	Major Hours non-Dept.	Total Hours
Math 115 (4) Chem 210 (4) Chem 211 (1) Language (4) <i>Biophys 120</i> (3)	9/0	0/3		16
Math 116 (4) Chem 215 (3) Physics 135 (4) Physics 136 (1) Language (4)	12/0			16
Year 2				
Physics 235 (4) Physics 236 (1) Language (4)	5/4			13
Bio 172 (4) Biophys 290 (3) Language (4)	4/0	3		16
Year 3				
Chem 262 (4) Chem 351 (4) Biophys 370 (3) Distribution (3) LS&A Elective (3)	4	7/0	4	17
Bio 305 (3) Biophys 417 (3) Biophys 450 (3) Distribution (3) LS&A Elective (3)		9/0	3	15
Year 4				
Biophys 495 (3) Biop. Cognate (3) Biophys 399 (2) Distribution (3) Distribution (3)		8/0	3	14
Biophys 454 (3) <i>Biophys 498</i> (2) Biop. Elective (3) Distribution (3) LS&A Elective (3)		6/2	0	14
	34/4	33/5	10	121

Bold: Required for Major *Italic:* Recommended for Major

Suggested 4-Year Course Plan – STRUCTURAL BIOLOGY TRACK

Year 1	Hours Pre-req (req. / recomm.)	Major Hours Dept. (req. / recomm.)	Major Hours non-Dept.	Total Hours
Math 115 (4) Chem 210 (4) Chem 211 (1) Language (4) <i>Biophys 120</i> (3)	9/0	0/3		16
Math 116 (4) Chem 215 (3) Physics 135 (4) Physics 136 (1) Language (4)	12/0			16
Year 2				
Chem 262 (4) Physics 235 (4) Physics 236 (1) Bio 171 (4) Language (4)	9/4			17
Bio 172 (4) Bio 305 (3) Language (4)	4/0	3		11
Year 3				
Chem 351 (4) Biophys 370 (3) BIOPHYS 399 (2) Distribution (3) LS&A Elective (3)	7	9/0	4	15
Biophys 420 (3) Biophys 450 (3) Distribution (3) LS&A Elective (3)		6/0	3	12
Year 4				
Biophys 421 (3) Biophys 495 (3) Biop. Cognate (3) Distribution (3) Distribution (3)		9/0	3	15
Biop. Elective (3) <i>Biophys 498</i> (2) Distribution (3) LS&A Elective (3)		3/2	0	11
	41/4	30/5	10	113

Bold: Required for Major *Italic:* Recommended for Major