BACHELOR OF SCIENCE IN BIOCHEMISTRY

In pursuing the Bachelor of Science in Biochemistry, students will first build a strong foundation in general chemistry, general biology, physical, and organic chemistry prior to choosing directed and professional electives that will allow them the flexibility to pursue topics that will be relevant to their future career tracks in biochemistry, biotechnology, chemistry or health.

Required Courses

APM 205	Calculus I:Science & Engr	4
APM 206	Calculus II:Science & Engr	4
EFB 101	Gen Bio I:Organismal Bio&Ecol	3
EFB 102	General Biology I Laboratory	1
EFB 103	Gen Bio II:Cell Bio & Genetics	3
EFB 104	General Biology II Laboratory	1
EWP 190	Writing And The Envrnment	3
EWP 290	Research Writing & Humanities	3
ESF 200	Information Literacy	1
FCH 132	Orientation Seminar:FCH	1
FCH 150	General Chemistry I	3
FCH 151	General Chemistry I Lab	1
FCH 152	General Chemistry II	3
FCH 153	General Chemistry II Lab	1
FCH 221	Organic Chemistry 1	3
FCH 222	Organic Chemistry Lab 1	1
FCH 223	Organic Chemistry II	3
FCH 224	Organic Chemistry Lab II	1
FCH 232	Career Skills for Chemists	1
PHY 211	General Physics I	0 - 8
PHY 212	General Physics II	0 - 8

PHY 221	General Physics I Laboratory	0 - 8
PHY 222	General Physics II Laboratory	0 - 8

Elective

Course Name	Codes*	Credits
Math Elective (Calculus III [APM307] or Statistics [APM391])		3
Free Elective		9
General Education Course in two of the following categories: US History & Civic Engagement, The Arts, Social Sciences, World History and Global Awareness, World Languages		6
General Education Course in Diversity, Equity, Inclusion and Social Justice	G	3

Upper Division Required Courses

EFB 307	Principles Of Genetics	3
EWP 407	Writing/Env & Sci Professionls	3
FCH 360	Physical Chemistry I	3
FCH 361	Physical Chemistry II	3
FCH 380	Analytical Chemistry I	2
FCH 382	Analytical Chemistry I Lab	1
FCH 430 OR FCH 530	Biochemistry I Biochemistry I	3 3
FCH 431 OR FCH 531	Biochemistry Laboratory Biochemistry Laboratory	3 3
FCH 432	Biochemistry II	3

OR

FCH 532	Biochemistry II	3
FCH 495	Intro/Professional Chem	1
FCH 497	Undergraduate Seminar	1

Upper Division Electives

Students will take 24 credits of Professional Electives.

1. At least one Professional Elective must have a laboratory component. This course can also count as a Biochemistry-focused Elective if chosen from one of the laboratory courses listed below.
2. At least one Professional Elective must be a biology (EFB or BIO) course and at least one Professional Elective must be a chemistry (FCH or CHE) course. These courses can also count as biochemistry- focused professional electives if chosen from the list below.
3. Of the 24 credits of Professional Electives, at least 12 credits must be chosen from the following short list of biochemistry-focused professional electives.

Coursework suitable for meeting the biochemistry-focused professional electives:

BIO 409	General Microbiology	0 - 8
BTC 401	Molecular Biol Techniques	3
EFB 303	Intro Envrn Microbiology	4
EFB 308	Prin Of Genetics Lab	1
EFB 325	Cell Biology	3
EFB 400	Toxic Health Hazards	3
EFB 462	Animal Physiol:Envrn&Ecol	4
FCH 325	Organic Chemistry III	4
FCH 390	Drugs From The Wild	3
FCH 410	Inorganic Chemistry	3
FCH 420	Internship in Chemistry (biochemistry focused)	1 - 5
FCH 498	Introduction To Research	1 - 5
FCH 524	Topics Nat Product Chem	3
FCH 535	Plant Biochemistry	3
FCH 584	Spectro ID/Organic Compounds	3

CHE 412	Metals in Medicine	0 - 8
CHE 414	Intro to Medicinal Chemistry	0 - 8
CHE 427	Org Chem of Biological Molecul	0 - 8
CHE 474	Structural&Physical Biochem	0 - 8
CHE OR BCH 477	Preparation & Analysis of Proteins / Nucleic Acids Lab	3

(list not exhaustive; any science, math, or engineering course at least 300-level counts as PE)

Suggested other Professional Electives (PEs) not considered as a biochemistry-focused electives:

BIO 355	General Physiology	0 - 8
BIO 422	Bioinformatics for Life Scient	0 - 8
BIO 464	Applied Biotechnology	0 - 8
BTC 425	Plant Biotechnology	3
BTC 426	Plant Tissue Culture Methods	3
BPE 300	Intro/Industrial Bioprocessing	3
BPE 420	Bioseparations Engineering	3
BPE 421	Bioprocess Kinetics&Systm Eng	3
BPE 430	Process Operations Laboratory	3
BPE 440	Bioproc Kinetics&Sys Engr Lab	3
BPE 481	Bioprocess Eng Design	3
EFB 303	Intro Envrn Microbiology	4
EFB 311	Principles of Evolution	3
EFB 320	General Ecology	4
EFB 400	Toxic Health Hazards	3
EFB 415	Ecological Biogeochemistry	3
EFB 435	Flowering Plnts:Div,Evol&Systm	3
EFB 462	Animal Physiol:Envrn&Ecol	4

EFB 505	Microbial Ecology	3
EFB 570	Insect Physiology	3
EFB 530	Plant Physiology	3
FCH 296	Special Topics in Chemistry	1 - 3
FCH 381	Analytical Chemistry II	3
FCH 496	Special Problems In Chem	1 - 3
FCH 510	Environmental Chemistry I	3
FCH 511	Atmospheric Chemistry	3
FCH 515	Meth/Envrn Chem Analysis	3
FCH 520	Marine Biogeochemistry	3
FCH 525	Oceanography	3
FCH 550	Polymer Sci:Synth&Mech	3
FCH 551	Polymer Techniques	3
FCH 552	Polymer Sci:Prop&Tech	3
FCH 560	Chromatog/Separation Tech	3
PSE 223	Intro to Lignocellulosics	4

Total Minimum Credits For Degree: 120