**Biochemistry BS/ACS Accredited Curriculum**, Catalog Years 2022 - current (Minimum: 180 total credits, 60 upper division credits)

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| **Fall** | **Winter** | **Spring** |
| * USEM 101 University Seminar (4)
* *CH 195 Chemical Problem Solving***§** *(1)*
* CH 221 General Chemistry I (3)
* CH 227 General Chemistry Lab (2)
* CH 227R General Chemistry Lab Recit (0)
* BI 211 Principles of Biology (5)
* BI 211L Principles of Biology Lab (0)
* MTH 111 Precalc I (4) *or* MTH 112 Precalc II (4) *or* MTH 251 Calc I (4) (math placement test)\*

**Total: 19 credits** | * USEM 102 University Seminar (4)
* *CH 196 Chemical Problem Solving***§** *(1)*
* CH 222 General Chemistry II (3)
* CH 228 General Chemistry Lab (2)
* CH 228R General Chemistry Lab Recit. (0)
* BI 212 Principles of Biology (5)
* BI 212L Principles of Biology Lab (0)
* MTH 112 Precalc II (4) *or* MTH 251 Calc I (4)

**Total: 19 credits** | * USEM 103 University Seminar (4)
* *CH 197 Chemical Problem Solving***§** *(1)*
* CH 223 General Chemistry III (3)
* CH 229 General Chemistry Lab (2)
* CH 229R General Chemistry Lab Recit. (0)
* BI 213 Principles of Biology (5)
* BI 213L Principles of Biology Lab (0)
* MTH 251 Calc I (4) *or* MTH 252 Calc II (4)

**Total: 19 credits** |
| * CH 334 Organic Chemistry (3)
* *CH 344 Organic Chemistry Workshop§§ (1)*
* CH 337 Intro to Organic Chemistry Lab (2)
* CH 337R Intro Organic Lab Recitation (0)
* MTH 252 Calc II (4) or Explorations E/F/G (4)
* PH 221 General Physics I (4)
* PH 221R General Physics Recitation (0)
* PH 224 General Physics Lab I (2)

**Total: 16 credits** | * CH 335 Organic Chemistry (3)
* *CH 345 Organic Chemistry Workshop§§ (1)*
* CH 340 Organic Spectroscopy (4)
* CH 340L Organic Spectroscopy Lab (0)
* Explorations E/F/G (4)
* PH 222 General Physics II (4)
* PH 222R General Physics Recitation (0)
* PH 225 General Physics Lab II (2)

**Total: 18 credits** | * CH 336 Organic Chemistry (3)
* C*H 346 Organic Chemistry Workshop§§ (1)*
* CH 341 Organic Chemistry Lab (2)
* CH 341R Intro Organic Lab Recitation (0)
* MTH 253 Calc III (4) or Exploration E/F/G (4)
* PH 223 General Physics III (4)
* PH 223R General Physics Recitation (0)
* PH 226 General Physics Lab III (2)

Total: 16 credits |
| * CH 314 Chemical Research Communication (1)
* CH 421 Analytical Chemistry (3)
* CH 422 Analytical Chemistry Lab (2)
* CH 422R Analytical Chemistry Lab Recitation (0)
* CH 451 Biochemistry (3)
* BI 341 Genetics (4)
* BI 341L Genetics Lab (0)

**Total: 13 credits** | * CH 315 Chemical Research Communication (1)
* CH 425 Instrumental Analysis (3)
* CH 426 Instrumental Analysis Lab (2)
* CH 426R Instrumental Analysis Lab Recitation (0)
* CH 452 Biochemistry (3)
* CH 454 Biochemistry Lab (2)
* Exploration E/F/G (4) or Strand H/I/J (4)
* Total: 15 credits
 | * CH 316 Chemical Research Communication (1)
* CH 453 Biochemistry (3)
* CH 455 Biochemistry Lab (2)
* Exploration E/F/G (4) or Integration H/I/J (4)
* CH 427 Advanced Instrumental (2)
* Total: 12 credits
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| * CH 497 Senior Project (1)
* CH 441 Physical Chemistry (3)
* CH 375 Computational Methods (2)
* Exploration E/F/G (4) or Integration H/I/J (4)
* Exploration E/F/G (4) or Integration H/I/J (4)

**Total: 14 credits** | * CH 498 Senior Project (1)
* BI 425 Molecular Biology\*\* (5)
* BI 425L Molecular Biology Lab (0)
* CH 442 Physical Chemistry (3)
* CH 444 Physical Chemical Measurements I (2)
* CH 444R Physical Chemical Lab Recitation (0)
* MTH 321 Differential Equations (4)

**Total: 15 credits**  | * CH 499 Senior Project (1)
* CH 443 Physical Chemistry (3)
* CH 411 Inorganic Chemistry (4)
* CH 414 Inorganic Chemistry Lab (1)
* Exploration E/F/G (4) or Integration H/I/J (4)
* Total: 13 credits
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**§**Required for students co-enrolled in MTH 111, highly recommended for all other students

**§§**Highly recommended for all students

\*It is recommended that students starting with MTH 111 take MTH 252 (Calc II) during the summer of their first year.

\*\*Substitutions allowed. See advisor.

#### Biology Courses

* BI 211 - Principles of Biology I
* BI 212 - Principles of Biology II
* BI 213 - Principles of Biology III
* BI 341 - Genetics
* BI 425 - Molecular Biology

#### Chemistry Courses

* CH 221 - General Chemistry I
* CH 222 - General Chemistry II
* CH 223 - General Chemistry III
* CH 227 - General Chemistry Laboratory I
* CH 228 - General Chemistry Laboratory II
* CH 229 - General Chemistry Laboratory III
* CH 314 - Chemical Research Communication I
* CH 315 - Chemical Research Communication II
* CH 316 - Chemical Research Communication III
* CH 334 - Organic Chemistry I
* CH 335 - Organic Chemistry II
* CH 336 - Organic Chemistry III
* CH 337 - Introduction to Organic Chemistry Lab
* CH 340 - Organic Spectroscopy
* CH 341 - Organic Chemistry Lab
* CH 375 - Computational Methods for Scientists
* CH 411 - Inorganic Chemistry
* CH 414 - Inorganic Chemistry Lab
* CH 421 - Analytical Chemistry
* CH 422 - Analytical Chemistry Lab
* CH 425 - Instrumental Analysis
* CH 426 - Instrumental Analysis Lab
* CH 427 - Advanced Instrumental Analysis Lab
* CH 442 - Physical Chemistry II
* CH 443 - Physical Chemistry III
* CH 444 - Physical-Chemical Measurements
* CH 451 - Biochemistry I
* CH 452 - Biochemistry II
* CH 453 - Biochemistry III
* CH 454 - Biochemistry Laboratory I
* CH 455 - Biochemistry Laboratory II
* CH 441 - Physical Chemistry I
* CH 497 - Senior Project I
* CH 498 - Senior Project II
* CH 499 - Senior Project III

#### Mathematics Courses

* MTH 251 - Calculus I
* MTH 252 - Calculus II
* MTH 253 - Calculus III
* MTH 321 - Differential Equations

#### Physics Courses:

* PH 221 - General Physics I
* PH 222 - General Physics II
* PH 223 - General Physics III
* PH 224 - General Physics Laboratory I
* PH 225 - General Physics Laboratory II
* PH 226 - General Physics Laboratory III

#### University Requirements

Foundations (A, B, &C)

* USEM 101 – University Seminar
* USEM 102 – University Seminar
* USEM 103 – University Seminar

Quantitative Reasoning (D)

* MATH 111 ***or*** MATH 112 ***or*** MTH 251

Humanities (E, 2 courses)

* Course 1:
* Course 2:

Social Sciences (F, 2 courses)

* Course 1:
* Course 2:

Science (G, 2 courses with lab)

* BI 211
* CH 221 & CH 227

Upper Division Integrations

* One Course: Citizenship and Social Responsibility Course

***or***

Science, Technology, and Society Course:

* One Course: Diversity and Global Awareness Course:

#### General Requirements

* Total Credits: 180 credits
* Upper Level Credits: 60 credits