# BIOLOGY, B.S. TO M.A. IN CHEMICAL BIOLOGY ACCELERATED PROGRAM

Complete a bachelor's degree in biology and a master's degree in chemical biology in five years through Saint Louis University's B.S. in Biology to M.S./M.A. in Chemical Biology accelerated program.

This multi-disciplinary program in chemical biology provides a strong foundation in chemistry and branches out into medicinal chemistry, pharmacology and molecular biology. The master's degree can either be a coursework M.A. degree or a thesis-based M.S. degree. This program provides excellent preparation for a career in the pharmaceutical and biotech industries.

For additional information, see the catalog entries for the following programs:

Biology, B.S. (https://catalog.slu.edu/colleges-schools/arts-sciences/biology/biology-bs/)

Chemical Biology, M.A. (https://catalog.slu.edu/colleges-schools/science-engineering/chemistry/chemical-biology-ma/)

Chemical Biology, M.S. (https://catalog.slu.edu/colleges-schools/science-engineering/chemistry/chemical-biology-ms/)

## Requirements

Existing SLU undergraduates pursuing a B.S. in biology-biological chemistry may apply to the accelerated bachelor's-master's (ABM) program after completing 75 credits (typically during the spring semester of their third year) if they have a GPA of 3.00 or higher, commensurate with the admission standards for the master's program in chemical biology. The application will include a personal statement and three letters of support, of which at least two must be from members of the SLU faculty.

If accepted into the program, students who have completed 90 undergraduate credits (typically during their fourth year) may apply up to 15 credits of graduate-level courses (5000-level and up) towards both the undergraduate and graduate degree requirements, assuming a grade of "B" or better. Students targeting a coursework-based M.A. degree will be mentored by the chemical biology program coordinator. Students targeting a thesis-based M.S. will take CHEB-5110 in the summer after having completed 90 credits (typically between years three and four) and select a research mentor.

Prior to 120 credits, students enrolled in the program will need to adhere to the continuation standards of their undergraduate major. After 120 credits (typically the fifth year), the chemical biology master's level program continuation requirements apply.

## Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

### M.A. in Chemical Biology Option

| Course | Title | Credits |
|---|---|---|
| **Year One** | | |
| **Fall** | | |
| BIOL 1240 & BIOL 1245 | General Biology: Information Flow and Evolution and Principles of Biology I Laboratory | 4 |
| CHEM 1110 & CHEM 1115 | General Chemistry 1 and General Chemistry 1 Laboratory | 4 |
| A&S Core | | 6 |
| | **Credits** | **14** |
| **Spring** | | |
| BIOL 1260 & BIOL 1265 | General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory | 4 |
| CHEM 1120 & CHEM 1125 | General Chemistry 2 and General Chemistry 2 Laboratory | 4 |
| MATH 1510 | Calculus I | 4 |
| A&S Core | | 3 |
| | **Credits** | **15** |
| **Year Two** | | |
| **Fall** | | |
| BIOL 3020 | Biochemistry and Molecular Biology | 3 |
| CHEM 2410 & CHEM 2415 | Organic Chemistry 1 and Organic Chemistry 1 Laboratory | 4 |
| A&S Core | | 10 |
| | **Credits** | **17** |
| **Spring** | | |
| BIOL 3040 | Cell Structure & Function | 3 |
| BIOL 4790 | Biometry | 4 |
| CHEM 2440 & CHEM 2445 | Organic Chemistry 2 for Majors and Organic Chemistry 2 Laboratory for Majors | 4 |
| A&S Core | | 6 |
| | **Credits** | **17** |
| **Year Three** | | |
| **Fall** | | |
| BIOL 3030 | Principles of Genetics | 3 |
| A&S Core | | 3 |
| BIOL 4980 | Advanced Independent Study | 1 |
| PHYS 1310 & PHYS 1320 | College Physics I and College Physics I Laboratory | 4 |
| A&S Core | | 3 |
| | **Credits** | **14** |
| **Spring** | | |
| BIOL 4070 | Advanced Biological Chemistry | 3 |
| BIOL Elective | | 3 |
| PHYS 1330 & PHYS 1340 | College Physics II and College Physics II Laboratory | 4 |

| | | |
|---|---|---|
| BIOL 3260 | Biology of Plants & Fungi | 4 |
| | **Credits** | **14** |
| **Year Four** | | |
| **Fall** | | |
| BIOL 4050 | Molecular Technique Lab | 2 |
| BIOL 4980 | Advanced Independent Study | 1 |
| BIOL 5700 | Advanced Molecular Biology | 3 |
| CHEB 5630 | Chemical Biology & Biotech | 3 |
| A&S Core | | 6 |
| | **Credits** | **15** |
| **Spring** | | |
| BIOL 3010 | Evolutionary Biology | 3 |
| BIOL 3060 | Cell Structure & Function Laboratory | 1 |
| BIOL 4980 | Advanced Independent Study | 1 |
| CHEM 5470 | Principles of Medicinal Chemistry | 3 |
| PPY 5410 | Molecular Pharmacology | 3 |
| Elective or A&S Core (if needed) | | 6 |
| | **Credits** | **17** |
| **Summer** | | |
| CHEB-5980 | Graduate Reading | 3 |
| | **Credits** | **3** |
| **Year Five** | | |
| **Fall** | | |
| CHEB 5970 | Research Topics | 3 |
| ! Graduate Elective † | | 6 |
| | **Credits** | **9** |
| **Spring** | | |
| CHEB 5970 | Research Topics | 3 |
| Graduate Elective † | | 6 |
| Oral examination | | |
| | **Credits** | **9** |
| | **Total Credits** | **144** |

## M.S. in Chemical Biology Option

| Course | Title | Credits |
|---|---|---|
| **Year One** | | |
| **Fall** | | |
| BIOL 1240 & BIOL 1245 | General Biology: Information Flow and Evolution and Principles of Biology I Laboratory | 4 |
| CHEM 1110 & CHEM 1115 | General Chemistry 1 and General Chemistry 1 Laboratory | 4 |
| A&S Core | | 6 |
| | **Credits** | **14** |
| **Spring** | | |
| BIOL 1260 & BIOL 1265 | General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory | 4 |
| CHEM 1120 & CHEM 1125 | General Chemistry 2 and General Chemistry 2 Laboratory | 4 |
| MATH 1510 | Calculus I | 4 |
| A&S Core | | 3 |
| | **Credits** | **15** |
| **Year Two** | | |
| **Fall** | | |
| BIOL 3020 | Biochemistry and Molecular Biology | 3 |
| CHEM 2410 & CHEM 2415 | Organic Chemistry 1 and Organic Chemistry 1 Laboratory | 4 |
| A&S Core | | 9 |
| | **Credits** | **16** |
| **Spring** | | |
| BIOL 3040 | Cell Structure & Function | 3 |
| BIOL 4790 | Biometry | 4 |
| CHEM 2440 & CHEM 2445 | Organic Chemistry 2 for Majors and Organic Chemistry 2 Laboratory for Majors | 4 |
| A&S Core | | 6 |
| | **Credits** | **17** |
| **Year Three** | | |
| **Fall** | | |
| BIOL 3030 | Principles of Genetics | 3 |
| BIOL 4980 | Advanced Independent Study | 1 |
| PHYS 1310 & PHYS 1320 | College Physics I and College Physics I Laboratory | 4 |
| A&S Core | | 6 |
| | **Credits** | **14** |
| **Spring** | | |
| BIOL 3060 | Cell Structure & Function Laboratory | 1 |
| BIOL 3260 | Biology of Plants & Fungi | 4 |
| BIOL 4070 | Advanced Biological Chemistry | 3 |
| BIOL Elective | | 3 |
| PHYS 1330 & PHYS 1340 | College Physics II and College Physics II Laboratory | 4 |
| | **Credits** | **15** |
| **Summer** | | |
| CHEB 5110 | Intro to Chemical Biology Research I | 1 |
| | **Credits** | **1** |
| **Year Four** | | |
| **Fall** | | |
| BIOL 4050 | Molecular Technique Lab | 2 |
| BIOL 4980 | Advanced Independent Study | 1 |
| BIOL 5700 | Advanced Molecular Biology | 3 |
| CHEB 5630 | Chemical Biology & Biotech | 3 |
| A&S Core | | 6 |
| | **Credits** | **15** |
| **Spring** | | |
| BIOL 3010 | Evolutionary Biology | 3 |
| BIOL 4980 | Advanced Independent Study | 1 |
| CHEB 5120 | Intro to Chemical Biology Research II | 2 |
| PPY 5410 | Molecular Pharmacology | 3 |
| Elective or A&S Core (if needed) | | 6 |
| | **Credits** | **15** |
| **Summer** | | |
| CHEB 5970 | Research Topics | 3 |
| | **Credits** | **3** |

| | | |
|---|---|---|
| **Year Five** | | |
| **Fall** | | |
| CHEB 5990 | Thesis Research | 3 |
| Graduate Elective [†] | | 6 |
| Submit Research Progress Report | | |
| | **Credits** | **9** |
| **Spring** | | |
| CHEM 5470 | Principles of Medicinal Chemistry | 3 |
| CHEB 5990 | Thesis Research | 3 |
| Submit and defend Master's Thesis | | |
| | **Credits** | **6** |
| | **Total Credits** | **140** |