BIOCHEMISTRY, B.S. TO CHEMICAL BIOLOGY, M.S. ACCELERATED PROGRAM

Saint Louis University's bachelor's-to-master's program in chemical biology provides a strong foundation in chemistry and branches out into medicinal chemistry, pharmacology and molecular biology.

A five-year course schedule is provided to SLU undergraduates that demonstrates how to complete the undergraduate B.S. degree in biochemistry or biology together with a master's degree in chemical biology. The master's degree can either be a coursework-based 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:

Biochemistry, B.S. (https://catalog.slu.edu/colleges-schools/science-engineering/chemistry/biochemistry-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/)

Accreditation

The Bachelor of Science in Biochemistry has been continuously certified by the American Chemical Society since 2004.

Requirements

Existing SLU undergraduates pursuing a B.S. in biochemistry 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 1130 & CHEM 1115	General Chemistry 1 for Majors and General Chemistry 1 Laboratory	4
MATH 1510	Calculus I	4
A&S Core		3
	Credits	**15**
Spring		
! BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
! CHEM 1140 & CHEM 1125	General Chemistry 2 for Majors and General Chemistry 2 Laboratory	4
MATH 1520	Calculus II	4
A&S Core		3
	Credits	**15**
Year Two		
Fall		
! CHEM 2200 & CHEM 2205	Analytical Chemistry 1 and Analytical Chemistry 1 Laboratory	4
! CHEM 2430 & CHEM 2435	Organic Chemistry 1 for Majors and Organic Chemistry 1 Lab for Majors	4
! PHYS 1310 & PHYS 1320	College Physics I and College Physics I Laboratory	4
A&S Core		3
	Credits	**15**
Spring		
! CHEM 2440 & CHEM 2445	Organic Chemistry 2 for Majors and Organic Chemistry 2 Laboratory for Majors	4
! PHYS 1330 & PHYS 1340	College Physics II and College Physics II Laboratory	4
A&S Core		6
	Credits	**14**
Year Three		
Fall		
! CHEB 3970	Undergraduate Research	1
CHEM 3100	The Chemical Literature	1
CHEM 3330	Physical Chemistry 1	3
! CHEM 4610 & CHEM 4615	Biochemistry 1 and Biochemistry 1 Laboratory	4

A&S Core		6
	Credits	**15**
Spring		
! CHEB 3970	Undergraduate Research	1
! CHEM 3340 & CHEM 3345	Physical Chemistry 2 and Physical Chemistry Laboratory	4
! CHEM 4620 & CHEM 4625	Biochemistry 2 and Biochemistry 2 Laboratory	4
A&S Core		6
	Credits	**15**
Year Four		
Fall		
! CHEB 3970	Undergraduate Research	1
! CHEB-5630	Chemical Biology & Biotech	3
BIOL 3030	Principles of Genetics	3
CHEM 5500 or CHEM 4500	Inorganic Chemistry or Inorganic Chemistry	3
A&S Core		6
	Credits	**16**
Spring		
! CHEB 3970	Undergraduate Research	1
CHEM 5470	Principles of Medicinal Chemistry	3
PPY 5410	Molecular Pharmacology	3
Elective or A&S Core (if needed)		9
	Credits	**16**
Summer		
! CHEB-5980	Graduate Reading	3
	Credits	**3**
Year Five		
Fall		
CHEB 5970	Research Topics	3
BIOL 5700	Advanced Molecular Biology	3
Graduate Elective †		3
	Credits	**9**
Spring		
Oral Examination		
! Graduate Elective †		9
	Credits	**9**
	Total Credits	**142**

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 1130 & CHEM 1115	General Chemistry 1 for Majors and General Chemistry 1 Laboratory	4
MATH 1510	Calculus I	4
A&S Core		3
	Credits	**15**
Spring		
! BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
! CHEM 1140 & CHEM 1125	General Chemistry 2 for Majors and General Chemistry 2 Laboratory	4
MATH 1520	Calculus II	4
A&S Core		3
	Credits	**15**
Year Two		
Fall		
! CHEM 2200 & CHEM 2205	Analytical Chemistry 1 and Analytical Chemistry 1 Laboratory	4
! CHEM 2430 & CHEM 2435	Organic Chemistry 1 for Majors and Organic Chemistry 1 Lab for Majors	4
! PHYS 1310 & PHYS 1320 or PHYS 1610 ***and*** PHYS 1620	College Physics I or University Physics I ***and*** University Physics I Laboratory	4
A&S Core		3
	Credits	**15**
Spring		
! CHEM 2440 & CHEM 2445	Organic Chemistry 2 for Majors and Organic Chemistry 2 Laboratory for Majors	4
! PHYS 1330 & PHYS 1340 or PHYS 1610 ***and*** PHYS 1640	College Physics II or University Physics I ***and*** University Physics II Laboratory	4
A&S Core		6
	Credits	**14**
Year Three		
Fall		
CHEM 3100	The Chemical Literature	1
CHEM 3330	Physical Chemistry 1	3
CHEM 3970	Undergraduate Research	1
! CHEM 4610 & CHEM 4615	Biochemistry 1 and Biochemistry 1 Laboratory	4
A&S Core		6
	Credits	**15**
Spring		
! CHEM 3340 & CHEM 3345	Physical Chemistry 2 and Physical Chemistry Laboratory	4
CHEM 3970	Undergraduate Research	1
! CHEM 4620 & CHEM 4625	Biochemistry 2 and Biochemistry 2 Laboratory	4
A&S Core		6
	Credits	**15**
Summer		
! CHEB 5110	Intro to Chemical Biology Research I	1
	Credits	**1**

Year Four		
Fall		
BIOL 3030	Principles of Genetics	3
BIOL 5700	Advanced Molecular Biology	3
! CHEB-5630	Chemical Biology & Biotech	3
CHEM 3970	Undergraduate Research	1
CHEM 5500 or CHEM 4500	Inorganic Chemistry or Inorganic Chemistry	3
A&S Core		3
	Credits	**16**
Spring		
! CHEB 5120	Intro to Chemical Biology Research II	2
CHEM 3970	Undergraduate Research	1
PPY 5410	Molecular Pharmacology	3
Elective or A&S Core (if needed)		9
	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	**139**

† Elective must be selected from a 5000+ course. Electives should be selected in consultation with the chemical biology program coordinator from the chemistry, biology, pharmacology or biochemistry departments.