

# BIOLOGY, B.S. TO MASTERS 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. A 5-year course schedule is provided to a SLU undergraduate that demonstrates how to complete an undergraduate BS degree in biology, together with a master's degree in chemical biology. The master's degree can either be a coursework M.A. degree or a thesis-based M.S. degree. This program will provide 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. (<http://catalog.slu.edu/colleges-schools/arts-sciences/biology/biology-bs>)

Chemical Biology, M.A. (<http://catalog.slu.edu/colleges-schools/arts-sciences/chemistry/chemical-biology-ma>)

Chemical Biology, M.S. (<http://catalog.slu.edu/colleges-schools/arts-sciences/chemistry/chemical-biology-ms>)

## Requirements

Existing SLU undergraduates pursuing a B.S. in biochemistry or B.S. in biology-biological chemistry and molecular biology majors 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 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
<b>Year One</b>		
<b>Fall</b>		
! BIOL 1240 & BIOL 1245	Principles of Biology I and Principles of Biology I Laboratory	4
! CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
A&S Core		6
		<b>Credits</b>
		<b>14</b>
<b>Spring</b>		
! BIOL 1260 & BIOL 1265	Principles of Biology II 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
		<b>Credits</b>
		<b>15</b>
<b>Year Two</b>		
<b>Fall</b>		
!BIOL 3020	Biochemistry and Molecular Biology	3
!BIOL 4790	Biometry	4
! CHEM 2410 & CHEM 2415	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
A&S Core		6
		<b>Credits</b>
		<b>17</b>
<b>Spring</b>		
!BIOL 3040	Cell Structure & Function	3
! CHEM 2440 & CHEM 2445	Organic Chemistry 2 for Majors and Organic Chemistry 2 Laboratory for Majors	4
A&S Core		9
		<b>Credits</b>
		<b>16</b>
<b>Year Three</b>		
<b>Fall</b>		
!BIOL 3030	Principles of Genetics	3
!BIOL 3260	Biology of Plants & Fungi	4
!BIOL 4960	Independent Research	1
! PHYS 1310 & PHYS 1320	Physics I and Physics I Laboratory	4
A&S Core		3
		<b>Credits</b>
		<b>15</b>
<b>Spring</b>		
!BIOL 3060	Cell Structure & Function Laboratory	1
!BIOL 4070	Advanced Biological Chemistry	3
! BIOL Elective		3
! PHYS 1330 & PHYS 1340	Physics II and Physics II Laboratory	4
A&S Core		3
		<b>Credits</b>
		<b>14</b>

**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
Elective or A&S Core (if needed)		6
Credits		14

**Summer**

! CHEB-5980	Graduate Reading	3
Credits		3

**Year Five****Fall**

!PPY 5110	Introduction to Pharmacology	1
!PPY 5120	Systems Physiology and Pharmacology I	2
Graduate Elective <sup>†</sup>		6
Credits		9

**Spring**

CHEB 5970	Research Topics	3
! Graduate Elective <sup>†</sup>		6
Oral examination		
Credits		9
Total Credits		141

**M.S. in Chemical Biology Option**

Course	Title	Credits
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**Year One****Fall**

! BIOL 1240 & BIOL 1245	Principles of Biology I 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	Principles of Biology II 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
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!BIOL 4790	Biometry	4
! CHEM 2410 & CHEM 2415	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
A&S Core		6
Credits		17

**Spring**

!BIOL 3040	Cell Structure & Function	3
! CHEM 2440 & CHEM 2445	Organic Chemistry 2 for Majors and Organic Chemistry 2 Laboratory for Majors	4
A&S Core		9
Credits		16

**Year Three****Fall**

!BIOL 3030	Principles of Genetics	3
!BIOL 3260	Biology of Plants & Fungi	4
!BIOL 4960	Independent Research	1
! PHYS 1310 & PHYS 1320	Physics I and Physics I Laboratory	4
A&S Core		3
Credits		15

**Spring**

!BIOL 3060	Cell Structure & Function Laboratory	1
!BIOL 4070	Advanced Biological Chemistry	3
! BIOL Elective		3
! PHYS 1330 & PHYS 1340	Physics II and Physics II Laboratory	4
A&S Core		3
Credits		14

**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
!CHEM 5470	Principles of Medicinal Chemistry	3
Elective or A&S Core (if needed)		6
Credits		15

**Summer**

! CHEB 5970	Research Topics	3
Credits		3

**Year Five****Fall**

!PPY 5110	Introduction to Pharmacology	1
!PPY 5120	Systems Physiology and Pharmacology I	2
! CHEB 5990	Thesis Research	3
Graduate Elective <sup>†</sup>		3
! Submit Research Progress Report		
Credits		9

**Spring**

! CHEB 5990	Thesis Research	3
! Graduate Elective <sup>†</sup>		3
Submit and defend Master's Thesis		
Credits		6
Total Credits		140