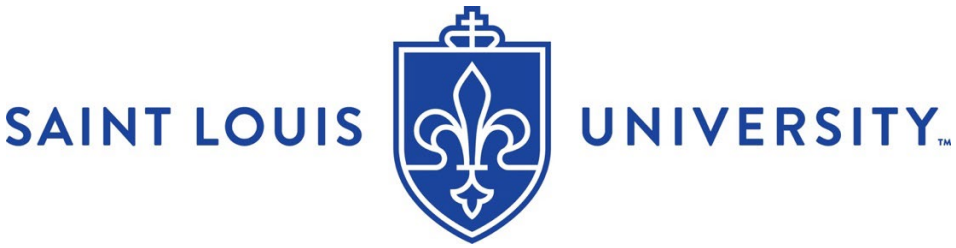
Chemical Biology Program Handbook

Master's Degree



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Note: A revised handbook is still being formed to reflect changes due to the formation of the new School of Science & Engineering

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For all general policy pertaining to graduate education at SLU, please consult the Graduate Education Catalog at http://www.slu.edu/graduate-education/current-students.

A. General Program Overview

A Master's degree in Chemical Biology will provide advanced instruction and training in synthetic organic chemistry, biology and pharmacology. The core of such a degree will include organic & medicinal chemistry, molecular biology and pharmacology and can be tailored to match the student's particular interests within chemical biology. As such, a Master's degree in Chemical Biology would provide excellent preparation for further studies towards a PhD or transitioning to a professional career the life sciences industry. Employment opportunities include a variety of jobs in the pharmaceutical, biotechnology, and materials industries. This Master's degree in Chemical Biology is offered in the following ways:

1. **Thesis-based Master's program (M.S. in Chemical Biology).** Requires 30 credit hours at the graduate level, primarily in chemistry, biology and pharmacology. The MS degree is designed for full-time students who will be doing research in a participating SLU department as well as writing and defending a thesis. In general, the thesis-based M.S. program is for full-time research students who want to finish with a master's degree after 2 years.
2. **Non-thesis Master's program (M.A. in Chemical Biology).** Requires 30 credit hours at the graduate level, primarily in chemistry, biology and pharmacology. This degree is intended for either (1) part-time students who want a coursework masters, which can be partially completed at night, or (2) full-time research students who want to eventually transition into a SLU Ph.D. program. The M.A. program does not require thesis research or the writing of a thesis. Students transitioning into a SLU Ph.D. program prior to completion of all the M.A. requirements are NOT awarded Master's degrees.
3. **Accelerated Bachelor's/Master's (ABM) program (M.S./M.A. in Chemical Biology).** 5-year course schedules are available to SLU undergraduates that demonstrate how to complete an undergraduate degree in Biochemistry or Biology, together with a Master's degree in Chemical Biology. For example, a Biochemistry major completing a 4 year BS degree could obtain a MA in Chemical Biology by completing appropriate coursework in years 4 and 5.

B. Program-Level Student Learning Outcomes

SLU graduates with a M.S. degree in Chemical Biology will be able to:

1. Assess relevant literature in chemical biology.
2. Apply the major practices, theories, or research methodologies in chemical biology.
3. Apply chemistry principles to biology.
4. Articulate arguments or explanations in both oral and written forms.
5. Evidence scholarly and professional integrity in chemical biology.

SLU graduates with a M.A. degree in Chemical Biology will be able to:

1. Assess relevant literature in chemical biology.
2. Apply chemistry principles to biology.
3. Articulate arguments or explanations in both oral and written forms.
4. Evidence scholarly and professional integrity in chemical biology.

C. Admission Details

(1) Procedure

Applicants for either Master's degree must submit a formal application through Graduate Admissions. The admission requirements and procedures are detailed in the Graduate Education Catalog. The Office of Graduate Education will forward the application materials to the Graduate Program Coordinator. The Coordinator will then call a meeting of the Department Admissions Committee to review the application and make a recommendation to the Associate Vice President for Graduate Education about acceptance and a recommendation to the Coordinator about whether the candidate should be eligible for an assistantship.

Existing SLU undergraduates may apply to the Accelerated Bachelor's Master's (ABM) program after having completed 75 credit hours (typically during the Spring semester of their third year) if they have an overall GPA of 3.0 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 are from members of the SLU Faculty. If accepted into the program, students who have completed 90 undergraduate credit hours (typically during their fourth year) may apply up to 15 credit hours of graduate-level courses (5000+) towards both the undergraduate and graduate degree requirements, assuming a grade of B or better. Students targeting a coursework MA degree will be mentored by the Chemical Biology Program Coordinator. Students targeting a thesis-based MS will take CHEB-5110 in the summer after having completed 90 credit hours (typically between years 3 and 4) and select a research mentor. Prior to 120 credit hours, students enrolled in the program will need to adhere to the continuation standards of their undergraduate major. After 120 credit hours, (typically the 5th year), the Chemical Biology Master's level program continuation requirements apply. (Note: Undergraduates who are NOT in the ABM program are limited to a maximum of 6 credit hours of graduate-level coursework and those credits are applicable ONLY towards the undergraduate degree).

(2) Application Requirements

Admissions to either Master's degree program will be on a rolling basis. The application must include:

1. an application form with application fee
2. official transcripts from all colleges and universities attended (if the college or university is located outside of the US, an external equivalency evaluation from a company like ECE (www.ece.org) will be required)
3. three (3) letters of recommendation
4. a curriculum vitae
5. a professional goals statement
6. TOEFL scores (for international applicants)

(3) Prerequisites for Admission

The Admissions Committee will ensure that the applicant possesses a minimum of a baccalaureate degree from an accredited, recognized college or university in chemistry, biochemistry, biology or related disciplines, and a minimum GPA of 3.0. Previous coursework should include the following (minimum credit hours in parentheses):

- Calculus (4)
- Physics + Labs (4)
- Organic Chemistry 1&2 + Labs (8)
- Physical Chemistry (3)
- Biochemistry (3)
- Biology coursework (6)

Students who have most, but not all of the above prerequisite course may be admitted on conditional admission status and take the appropriate prerequisite courses during the first semester. A typical example would be a student with a chemistry BA/BS degree who lacks sufficient biology coursework.

The admissions committee will evaluate each applicant's academic background with respect to the proposed area of graduate work. While there are no specific prerequisites for admission, the committee may recommend additional training to be completed as a condition of admission.

In addition, international students must submit a completed Declaration of Financial Support packet with all accompanying documents and TOEFL or IELTS scores.

(4) Program Admission Requirements

The Admissions Committee will ensure that the applicant's previous academic record indicates the ability needed to pursue advanced studies. The Admissions Committee will then make an admissions recommendation to the Office of Graduate Education, which is responsible for making and communicating the final admissions decision to both Program Coordinator and the applicant.

Student's admission can come in three types. Classified admissions are regular admissions to the program. There may or may not be additional pre-requisite courses that need to be completed once they are in the program. Students can also be admitted on conditional status. Probationary status will include a list of requirements that the student must meet in order to get re-classified (typically, successful completion of certain courses or an overall GPA). A typical example would be a student with a chemistry BA/BS degree but lacking sufficient biology coursework. Such students may be admitted on conditional status and take the appropriate prerequisite courses during the first 1-2 semesters. Students wanting to just take a course or two, but not work toward a degree can apply for unclassified admission.

D. Graduate Student Advising

It is expected that all new students will identify their research mentor during the first month of their admission to the program. Part-time M.A. students and students without a mentor will be advised by the Program Coordinator. However, students with a research mentor will be advised by the research mentor. Students will choose a research mentor by interviewing at least 4 research active faculty from the chemical biology disciplines (chemistry, biology and pharmacology). After meeting with at least 4 of the research active faculty, they will contact the Program Coordinator and notify him/her of their top 3 choices for a research mentor. The Program Coordinator will meet with the faculty mentors to place the student and then notify the student of their assigned research mentor.

E. Definition of Full-time Graduate Students

(a) All enrolled students holding fellowships, teaching, or research assistantships are defined as full time students regardless of hours registered.
(b) Students who are not on an assistantship and have not yet passed their oral examinations must enroll in 6 or more hours during a regular semester (fall or spring) and 3 or more hours during the summer semester.

F. Continuous Registration

All graduate students who are pursuing a degree are required to register *every* semester (*including* the summer session).

G. Selection of Oral Exam Committee

During the first semester of the second year of their master's program, a **thesis-based M.S. student,** with the agreement of their faculty mentor, should choose the two additional members of their oral exam committee. At least one member of the committee must be selected from outside of the department that the student is doing research in. For example, if a student selects a research mentor who has a primary appointment in the biology department, at least one committee member must be selected from outside the Biology department.

The student will be responsible for scheduling the final oral examination and any other committee exams. They will also be responsible for ensuring that they provide copies of their thesis to their committee at least 10 days before the exam to ensure that the committee has sufficient time to review before the oral examination. The student is also responsible for contacting the Chemistry Administrative Secretary to have flyers advertising their thesis defense seminar posted. The student should register for graduation in their final semester and complete necessary forms.

Part-time/Coursework M.A. students will choose an Oral Exam Committee Chair and two additional Oral Exam Committee members during their final semester of courses. The Chair will be responsible for handling the graduate education paperwork. The student will be responsible for scheduling the final oral examination. The student should choose faculty members that the student has had for classes in the program and should include faculty from more than one department. This exam will be focused on all coursework taken at Saint Louis University. The student should register for graduation in their final semester and complete necessary forms.

Full-time M.A. students who plan to transition into a SLU Ph.D. program will choose, with the agreement of their faculty mentor, two additional oral exam committee members during the first semester of their second year in the master's program. Students wanting to petition into a SLU Ph.D. program should see Ph.D. transitioning methodology specific to the department where they would like to obtain their PhD. To ensure a smooth transition into the Ph.D. program, there are additional requirements that must take place during a student's time in the Master's program.

H. Review of Student Progress

Each student's progress will be rated annually by the Program Coordinator in collaboration with the research mentor. In order to be "satisfactory", ALL requirements below must be met. Students deemed unsatisfactory will not be eligible for assistantships (covered in section I).

A "satisfactory" rating requires:

- Maintained ≥3.0 GPA in lecture coursework (neither Intro to Research or Research Topics count as lecture coursework)
- Have no more than 2 grades of B- or below
- Maintained research effort expected in a 40 hour minimum work week resulting in, or appearing to show promise in leading to either (1) a publication in a peer-reviewed journal and/or (2) public presentation of results at a professional scientific conference. Note: this is not applicable to the coursework M.A.
- Maintained cordial and constructive relationship with primary and secondary mentors.
- Fulfilled teaching assistant responsibilities (for those on a TA).

An "unsatisfactory" rating will be given for any of the following:

- Cumulative GPA <3.0 in lecture coursework.
- More than 2 grades of B- or below.
- Clear lack of research ability. Note: this is not applicable to the coursework M.A.
- Lack of significant research progress.
- Failure to fulfill Teaching Assistant responsibilities.

I. Assistantships and Fellowships

For more information, see the graduate catalog and the "*Policies and Procedures Manual for Graduate Assistantships and Fellows*," available on the Office of Graduate Education website (https://www.slu.edu/academics/graduate).

(a) Teaching Assistantships

Persons holding a teaching assistantship may work with students in small groups, lead group discussions, monitor examinations and grade papers, help prepare lectures, conduct laboratory sessions, or even be responsible for a course as the primary instructor. Under the close supervision of the faculty, the teaching assistant concurrently develops teaching skills and a deeper understanding of the discipline.

An 11-month award includes a stipend, a health insurance package for the student (plus the option to purchase family coverage), and a tuition scholarship of 18 hours during the regular academic year and three hours during the summer session. (Summer attendance is also mandatory.) These awards begin on July 1, at which time the student is **required** to be in residence. Upon petition to the Program Coordinator, under certain circumstances the start date may be delayed. The student is expected to begin preparing for laboratory/coursework duties during July and August. After the 1st year, a 12-month award is issued, with support for June coming in the form of research support

(from the research advisor) or additional teaching duties over the summer.

(i) *Length of Support*

As required by the Office of Graduate Education, the maximum number of years that a graduate student may hold an assistantship is for not more than two years **total** (for the M.S. degree). Note that grant-based assistantships contribute to the total number of years of assistantship support allowed. A third year of funding is possible under extraordinary circumstances. Appeals for a third year of funding must be submitted by the Department during the spring semester of the second year of funding for the M.S. to the Associate Dean for Graduate Education for approval.

(ii) *Applicant Qualification*

Normally, students applying for admission are considered for Teaching Assistantships at the same time, if they so desire. The final decision on awarding an Assistantship rests with the Associate Dean for Graduate Affairs in Arts & Sciences. The appointment to a Teaching Assistantship will be by contract offered by the Associate Dean for Graduate Affairs in Arts & Sciences to the nominated individual.

(iii) *Criteria for Assignment of Teaching Assistantships*

The Graduate Affairs Committee uses the following criteria in nominating individuals for Teaching Assistantships:

For students currently holding an Assistantship:

Graduate students currently with an Assistantship (Teaching or Research) are normally awarded an assistantship the following year, provided the student has not exceeded the years of Teaching/Research Assistantship support described above in part "i" of this section. **However**, the student may fail to receive an assistantship for one of the following reasons:

- *Students with a GPA of less than 3.0 are not eligible for assistantships*
- *Poor teaching evaluations*
- *Inadequate research progress*
- *Multiple missing or incomplete grades*

Continuation is dependent on good academic standing (minimum of 3.0 GPA). Adequate research progress is also a condition of continuing an assistantship. This includes maintaining research effort expected in a 40 hr. work week resulting in, or appearing to show promise in 1) a publication in a peer-reviewed journal and/or 2) public presentation of results at a professional scientific conference. Continuation is also dependent upon satisfactory performance of the assigned teaching responsibilities. Teaching evaluations provided by the classroom mentor and undergraduate students will play a primary role in determining whether a Teaching Assistantship is renewed. Based upon evaluations, the Program Coordinator may recommend that the student not receive Teaching Assistantship the following year. Alternatively, the Program Coordinator may recommend a course of action that may improve performance of the student as a TA (e.g., enrollment in the Certificate in University Teaching Skills (CUTS) program administered by the

Center for Transformative Teaching and Learning (CTTL) or acquisition of a faculty teaching advisor).

- *"Unsatisfactory" rating on the student's progress*

Student progress will be rated each year. An "unsatisfactory" rating may preclude a student from receiving an assistantship renewal and may lead to termination from the program altogether. This includes research progress. It is expected that the student make significant research progress towards their degree. It is the expectation that by the end of the 2nd year, the student should have 1 published paper. An unsatisfactory rating may be given if this is not the case and the student's committee feels that the student has made inadequate research progress.

For incoming students and/or students without a prior Assistantship

1. English-speaking ability (as determined by the ESL Program). This aspect is required for effective teaching of undergraduate students as part of the Teaching Assistant's duties.
2. Academic standing. Includes undergraduate grade point average (GPA) and Graduate Record Examination (GRE) General Test scores.
3. Letters of reference and any additional materials (publications, presentations, etc.).
4. Students currently enrolled in the graduate program, but not supported by an assistantship, are in competition with the current applicant pool for Teaching Assistantship awards. In other words, that student does not receive priority simply due to being enrolled in the graduate program. However, the committee will solicit a letter from the student's mentor and examine current academic standing to aid in the decision process.

(iv) *Teaching Assistant Duties*

Teaching Assistants will be assigned by the Program Coordinator and Chairperson of the department to instructional duties in the courses, lectures, and laboratories offered by the department. The appointment is half-time, and teaching duties will not require more than 20 hours per week (thus allowing the student to spend substantial time in laboratory research). The duties will include instructional time in the classroom or laboratory, necessary preparation for class or lab, marking papers, and other instructional activities as required. Teaching Assistants must also arrange for reasonable "office hours" for meeting with undergraduate students, and inform their students of the time and place of office hours. The department will provide a suitable office or other place for Teaching Assistants to meet with their students.

Students who begin their assistantships/fellowships during the summer are required to begin their residence at this time. Students may be assigned teaching responsibilities. Students should contact the Program Coordinator to arrange their summer schedule as soon as they are notified that they have received an assistantship.

(v) *Teaching Assistantship evaluations*

Semester evaluations are to be completed by both faculty instructors overseeing the Teaching Assistant as well as by students being taught by the Teaching Assistant. All evaluations will be turned in to the department office to be included in the graduate student's file.

(vi) *Graduate Student Orientation*
All new teaching assistants are required to attend the Graduate Assistants Orientation at the beginning of the fall semester. Announcements of the time and place will be sent to each new assistant in the summer preceding their first semester at Saint Louis University.

(b) Research Assistantships

A research assistant is assigned a range of duties such as library searches, field work, laboratory experiences, and preparation of research proposals and grants so as to gain professional skills in research which complement the student's graduate education.

Research assistantships (RAs) can be for a variety of time periods from 1 month to 12 months and can include a stipend, a health insurance package (plus the option to purchase family coverage), and a tuition scholarship. These RAs are usually assigned at the discretion of the research advisor, as the funding for the RAs come from individual research grants. There are normally no instructional duties associated with appointment to a Research Assistantship.

Instead, the Research Assistant is assigned to a faculty sponsor responsible for directing research duties of the student. Unless otherwise indicated, the terms of appointment (including GPA requirements), continuation, and maximum support are the same as for teaching assistantships. Normally, once appointed to a Research or Teaching Assistantship, a student will be eligible for reappointment for the maximum period permitted. However, that support may switch between a Research Assistantship and a Teaching Assistantship in any given semester.

J. Degree Requirements

Both the thesis M.S. and non-thesis M.A. degrees offer specialization in chemical biology, with cross-disciplinary activity encouraged. The Master's degree requires a minimum of 30 hours of post-baccalaureate credit. At least one year must be completed in residence, and 80% of coursework must be completed at SLU. Students in the M.A. program who transition into a Ph.D. program do so prior to completion of these requirements and are not awarded Master's degrees. These students complete a minimum of 39 hours of post-baccalaureate credit as part of their Ph.D. degree, 24 of which are completed during the M.A. program.

The requirements for the **thesis-based M.S**. **degree** include:

- A minimum of 24 hours of post-baccalaureate coursework (exclusive of thesis research)
- 6 hours of Thesis Research (CHEB 5990)
- A thesis
- A public oral presentation and a private oral examination

The requirements for the **M.A. degree** include:

- A minimum of 30 hours of post-baccalaureate coursework
- A private oral examination

More details on each degree are given below. See the attached worksheets for the different Master's routes. It is highly suggested that students complete their appropriate worksheet each

semester. In addition, a completed worksheet must be included with the student's annual evaluation by the research mentor.

Thesis-based M.S. Degree Requirements

The requirements for a **thesis-based M.S. degree** in Chemical Biology include:

1. Core Requirements (18 credit hours)
    a. CHEB 5110 – Introduction to Chemical Biology Research I (1)
    b. CHEB 5120 – Introduction to Chemical Biology Research II (2)
    c. CHEB 5630 – Introduction to Chemical Biology and Biotechnology (3)
    d. CHEM 5470 – Introduction to Medicinal Chemistry (3)
    e. BIOL 5700 – Advanced Molecular Biology (3)
    f. PPY 5410 – Molecular Pharmacology (3) OR PPY 5110 – Introduction to Pharmacology (1) plus PPY 5120 – Systems Physiology and Pharmacology I (2)
    g. Research Topics: CHEB-5970 (3)
2. Electives (6 credit hours) selected from 5000 level courses in consultation with student's research mentor. Electives should be selected from Chemistry, Biology, Pharmacology or Biochemistry Departments.
3. Thesis Research (6 credit hours) – CHEB 5990
4. A thesis
5. Public oral presentation and a private oral examination

The required coursework provides flexibility to tailor towards the students' interests. See corresponding worksheet for more details.

Additionally, by November 1st of their second year in the program, the student should form a 3-person committee and submit a 2-3 page written document that outlines the student's research project. The student's name, committee, and desired degree should be clearly denoted. This update should include an introduction and an overview of the results obtained to date. Figures may also be included. Any submitted papers (or soon to be submitted papers) should be clearly denoted, as well as any presentations (completed or scheduled). The student's committee will review the document and give the mentor feedback on the student's progress by November 15th. The mentor will communicate these findings to the student both verbally and by email, with the entire committee being copied on the email. The purpose of this update is to give the student feedback on their research and academic standing well before scheduling their M.S. defense in the spring.

Part-time M.A. Degree Requirements

The requirements for a **part-time M.A. degree** (typically industry students) in Chemical Biology include:

1. Core Requirements (18 credit hours)
    a. CHEB 5630 – Introduction to Chemical Biology and Biotechnology (3)
    b. CHEM 5470 – Introduction to Medicinal Chemistry (3)
    c. BIOL 5700 – Advanced Molecular Biology (3)

d. PPY 5410 – Molecular Pharmacology (3) OR PPY 5110 – Introduction to Pharmacology (1) plus PPY 5120 – Systems Physiology and Pharmacology I (2)
e. Graduate Reading Course CHEB-5980 (3)
f. Research Topics CHEB-5970 (3)

2. Electives (12 credit hours) selected from 5000 level courses selected in consultation with the Program Coordinator. Electives should be selected from Chemistry, Biology, Pharmacology or Biochemistry Departments.
3. Private oral examination

This program is intended for part-time students, usually from industry, who want a coursework M.A. degree, which can be partially completed at night. See the corresponding worksheet for more details.

M.A. Program for students desiring to transition into a SLU Ph.D. program

This program is intended for research students who want to eventually transition into a SLU Ph.D. program. This program does not require thesis research or the writing of a thesis. Students in this program transition into the Ph.D. program prior to completing the 30 hours required for a Master's degree and are NOT awarded a Master's degree. Below is an overview of the program. Also see the corresponding worksheet.

1. Core Requirements (18 credit hours)
    a. CHEB 5110 – Introduction to Chemical Biology Research I (1)
    b. CHEB 5120 – Introduction to Chemical Biology Research II (2)
    c. CHEB 5630 – Introduction to Chemical Biology and Biotechnology (3)
    d. CHEM 5470 – Introduction to Medicinal Chemistry (3)
    e. BIOL 5700 – Advanced Molecular Biology (3)
    f. PPY 5410 – Molecular Pharmacology (3) OR PPY 5110 – Introduction to Pharmacology (1) plus PPY 5120 – Systems Physiology and Pharmacology I (2)
    g. Research Topics CHEB-5970 (3)
2. Electives (6 credit hours) selected from 5000 level courses in consultation with student's research mentor. Electives should be selected from Chemistry, Biology, Pharmacology or Biochemistry Departments.

The majority of the students doing this program usually want to transfer into a Ph.D. program at the end of their second year. The procedure for doing this is briefly outlined below. Student interested in transferring into a SLU PhD program must consult with the appropriate department where they intend to conduct their PhD studies.

1. By November 1st of their second year in the program, the student should form a 3-person committee and submit a 2-3 page written document that outlines the student's research project. The student's name, committee, and desired degree should be clearly denoted, as well as if the student is interested in transitioning to the Ph.D. program. This update should include an introduction and an overview of the results obtained to date. Figures may also be included. Any submitted papers (or soon to be submitted papers) should be clearly denoted, as well as any presentations (completed or scheduled). The student's committee will then review the document

and give the mentor feedback on the student's progress by Nov. 15th. The mentor will communicate these findings to the student both verbally and by email, with the entire committee being copied on the email. The purpose of this update is to give the student feedback on their research and academic standing before scheduling the research progress exam in March (see next point).

2. By March 15th of their second year, the student will convene a meeting of their Master's faculty committee (research advisor and two other faculty) to give an oral presentation (minimum 20 minutes) of their research performance to date. The faculty committee will evaluate the student's aptitude and their research performance for the Ph.D. program. This meeting should occur before March 15th for all second year Master's candidates wishing to transfer. The Master's committee will then submit a written recommendation to the Graduate Program Coordinator as to whether or not they recommend the Master's candidate transfer to the Ph.D. Program. There is a possibility that the committee will not recommend that the student be allowed to transition into the Ph.D. program (see #4 below).

For Chemistry, this research progress oral exam is explained in more detail in Section J of the Chemistry Ph.D. handbook.

3. If the recommendation is positive, the student should then fill out a Petition to Amend Program. The Graduate Program Coordinator will provide the form, as well as verify satisfactory graduate student status and sign the Petition.

4. If the recommendation is negative, the student may choose to complete a coursework M.A. or transition into the M.S. degree program. In order to fulfill the Master's degree required 30 credit hours, the student will register for 6 credit hours of thesis research and (i) write and defend a M.S. thesis for the M.S. degree or (ii) schedule oral exam to receive a M.A. degree.

Transfer of Credit

If a student wishes to receive credit for graduate coursework in a non-degree program at another institution, a *"Petition for Transfer of Credit"* form must be submitted, accompanied by a transcript showing the work, for approval by the mentor or advisor, Program Coordinator, and Arts and Sciences Associate Dean of the Graduate Education. The grade received must be B or better and the coursework must have been completed within five years of the date of the petition. Students can transfer a maximum of 6 credit hours of graduate credit to Saint Louis University. It is up to the Program Coordinator whether the transfer is allowed.

K. Procedures for Academic Appeals

If a graduate student wishes to appeal any academic decision in the College of Arts and Sciences (CAS), the student should refer to the appeal policy on the CAS website (https://www.slu.edu/arts-and-sciences/student-resources/index.php).

Worksheet for thesis-based M.S. in Chemical Biology (research-based)

The M.S. degree offers specialization in the field of chemical biology, with cross-disciplinary activity encouraged. It is a 30 credit-hour program described in detail in the Chemical Biology Master's Program Handbook. See the university course catalog and departmental websites for more descriptions on the required and elective courses.

Requirement		Course Taken	Semester Completed (# credit hrs)
	Example	*CHEM-5470*	*Fall 2019 (3)*
Core **(18 credit hrs)**	Intro to Chemical Biology Research I CHEB-5110 (1)		
	Intro to Chemical Biology Research II CHEB-5120 (2)		
	Chemical Biology CHEB-5630 (3)		
	Medicinal Chemistry CHEM 5470 (3)		
	Advanced Molecular Biology BIOL 5700 (3)		
	Pharmacology PPY 5410 (3) OR PPY 5110 (1) plus PPY 5120 (2)		
	Research Topics. Must be taken during the summer between the 1st and 2nd year in the program for 3 credit hours. (CHEB-5970)		
Electives (6 credit hrs)	Selected from 5000 level courses in consultation with research mentor.		
	Elective 1 (3 credit hours)		
	Elective 2 (3 credit hours)		
Thesis Research **(6 credit hrs)**	You should take 6 hrs of thesis research (CHEB 5990). This is usually done in 3 hr increments over the course of 1 year. This should only be taken if you are finishing our program with a thesis-based M.S. degree. Do NOT take this if you want to transition into the Ph.D. program.		
		Total # of hours (should be ≥30):	

Worksheet for part-time M.A. in Chemical Biology

The part-time M.A. degree offers specialization in the field of chemical biology, with cross-disciplinary activity encouraged. It is a 30 credit-hour program designed for part-time students (not doing research) who are usually from industry and are interested in a coursework-based M.A described in detail in the Chemical Biology Master's Program Handbook. degree. See the university course catalog and departmental websites for more descriptions on the required and elective courses.

Requirement		**Course Taken**	**Semester Completed (# credit hrs)**
Example		*CHEM-5470*	*Fall 2019 (3)*
Core **(18 credit hrs)**	Chemical Biology CHEB-5630 (3)		
	Medicinal Chemistry CHEM 5470 (3)		
	Advanced Molecular Biology BIOL 5700 (3)		
	Pharmacology PPY 5410 (3) OR PPY 5110 (1) plus PPY 5120 (2)		
	Research Topics. Must be taken during the summer between the 1st and 2nd year in the program for 3 credit hours. (CHEB-5970)		
	Graduate Reading Course. Must be taken during the summer for 3 credit hours. (CHEB-5980)		
Electives **(12 credit hours)**	Selected from 5000 level courses in consultation with Program Coordinator.		
	Elective 1 (3 credit hours)		
	Elective 2 (3 credit hours)		
	Elective 3 (3 credit hours)		
	Elective 4 (3 credit hours)		
Total # of hours (should be ≥30):			

Worksheet for full-time M.A. in Chemical Biology

The majority of the students doing this program usually want to transfer into a SLU Ph.D. program at the end of their 2nd year. The procedure for doing this is outlined in the Chemical Biology Master's Program Handbook.

Requirement		Course Taken	Semester Completed (# credit hrs)
	Example	*CHEM-5470*	*Fall 2019 (3)*
Core (18 credit hrs)	Intro to Chemical Biology Research I CHEB-5110 (1)		
	Intro to Chemical Biology Research II CHEB-5120 (2)		
	Chemical Biology CHEB-5630 (3)		
	Medicinal Chemistry CHEM 5470 (3)		
	Advanced Molecular Biology BIOL 5700 (3)		
	Pharmacology PPY 5410 (3) OR PPY 5110 (1) plus PPY 5120 (2)		
	Research Topics. Must be taken during the summer between the 1st and 2nd year in the program for 3 credit hours. (CHEB-5970)		
Electives (6 credit hrs)	Selected from 5000 level courses in consultation with research mentor.		
	Elective 1 (3 credit hours)		
	Elective 2 (3 credit hours)		
	Total # of hours (should be 24):		