

# MASTER OF SCIENCE IN BIOLOGY: CONCENTRATION IN CELL AND MOLECULAR BIOLOGY

A student interested in pursuing an advanced degree in any of these programs must meet the general requirements as outlined as well as any additional requirements specified by the major field of study.

For current advising information, including research and funding opportunities, consult the SF State Biology Department website at [biology.sfsu.edu](http://biology.sfsu.edu). (<http://biology.sfsu.edu>)

## General Admission Requirements

An applicant must have a baccalaureate degree from an accredited institution and the equivalent major coursework for the program area to which application is made. To evaluate an applicant, the biology department requires the following:

1. transcripts of all undergraduate work;
2. Graduate Record Examination scores for the general test;
3. a statement of purpose;
4. two or more letters of recommendation, preferably from science faculty.

When the department receives this information, the completed file is forwarded to the faculty coordinator of the program area chosen by the applicant. The faculty in the program area evaluate the applicant's file and recommend admission or denial based on the following criteria:

- Grade point average in the undergraduate major—minimum required GPA in science courses is 3.0
- Statement of purpose
- GRE scores
- Letters of recommendation

Denial of admission may be based on inadequacy in any of the above criteria, if an applicant's interests are not represented by current faculty, or if faculty in the applicant's area of interest are unable to support additional students.

## Program Learning Outcomes

1. Critically read and evaluate the significance and validity of peer-reviewed publications to develop a comprehensive knowledge of research in their field of expertise and to be able to clearly articulate such knowledge.
2. Conduct original research in a biological sub#discipline, including the design of experiments, development and testing of hypotheses, and application of quantitative analyses to visualize and interpret data and derive conclusions.
3. Develop effective writing skills for both informal and formal professional communications that include a written thesis, scientific proposal, or scientific manuscript.

4. Develop skills to orally present scientific material to a broad range of audiences, including in courses and an oral thesis defense.

5. Practice the responsible and ethical conduct of research and professional integrity in carrying out scientific investigation.

## Written English Proficiency Requirement

The University has a requirement for written English proficiency that is to be assessed at two levels.

### Level One

The student must pass a proctored essay test administered by the department at the beginning of the first semester.

### Level Two

Prior to filing the Advancement to Candidacy (ATC), the student must prepare a thesis prospectus for approval by the student's thesis committee.

## Biology (M.S.): Concentration in Cell and Molecular Biology – 30 units

### Required Courses (13 units)

Code	Title	Units
BIOL 700	Introduction to Research Skills	3
BIOL 861	Advances in Cell and Molecular Biology	2
BIOL 870	Biology Colloquium	2
BIOL 897	Research	6

### Electives (13 units)

The elective course requirements shall be determined by the student's committee and are based upon considerations such as goals, interests, and undergraduate preparation. Upper-division Biology courses are acceptable with the approval of the graduate advisor. Students are reminded to check the individual concentrations for additional requirements.

### Culminating Experience (4 units)

Select one:

Code	Title	Units
BIOL 895	Research Project	4
BIOL 898	Master's Thesis	4

- All courses taken to satisfy conditional requirements or listed on the Advancement to Candidacy (ATC) must be completed with a letter grade. The culminating experience courses, BIOL 895 and BIOL 898, are the exception and will be graded on a CR/NC basis.
- A minimum of 30 units of upper-division and/or graduate credit. May include up to 6 units of experimental courses in Biology.
- A minimum of 21 units of the 30 total must be from graduate-level or paired courses. Six units may be from paired courses.
- A maximum of 6 units of BIOL 897 is allowed when filling for Advancement to Candidacy (ATC).
- A maximum of 2 units of BIOL 881 is allowed when filling for Advancement to Candidacy (ATC).

- An oral defense of the thesis or research project is required.