BIOLOGY, MS

Natural Sciences, Mathematics, and Engineering (nsme) (https://catalog.csusb.edu/general-information/csusb-information/school-natural-sciences-mathematics-engineering/)

Department of Biology (https://catalog.csusb.edu/general-information/csusb-information/school-natural-sciences-mathematics-engineering/department-biology/)

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Email: vmayorga@csusb.edu
www.csusb.edu/Biology (http://www.csusb.edu/Biology/)

Program Maps for Natural Sciences, Mathematics, and Engineering (https://programmap.csusb.edu/academics/interest-clusters/4e942a6e-b8e4-4b60-a1ae-334235acc581/)

Program Description
The Department of Biology offers a graduate program leading to a Master of Science in Biology degree. The Master of Science with a thesis option is intended to prepare students for professional positions in state and federal agencies, the environmental consulting industry, and for further graduate studies. The Master of Science with a non-thesis option is intended for working professionals, especially high school teachers, and emphasizes course work. A broad range of research interests, easy access to diverse biological environments, and a range of modern research facilities permit the student to select from a broad spectrum of research topics.

Faculty interests include field biology, conservation biology, physiology, comparative morphology, plant ecophysiology, plant anatomy, plant pathology, micro- and molecular biology, molecular evolution, ecology, systematics, and behavior.

Admission Requirements
Application Process and Program Requirements
Application for the Master of Science in Biology
Persons seeking an MS in Biology must apply to both the university and to the MS Biology graduate program for admission to this specific graduate program. Students will be admitted into the MS in Biology program with either conditionally classified status or classified status.

Admissions Requirements for the Master of Science in Biology
An earned bachelor's degree in the biological sciences or a bachelor's degree in a related science with a grade of a C or higher in course work equivalent to

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIOL 3010</td>
<td>General Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 3020</td>
<td>General Physiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 3110</td>
<td>General Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

1. An undergraduate GPA of at least 3.0 in the last 90 quarter or 60 semester units of course work.
2. Graduate Records Examination (GRE) scores of greater than the 50th percentile in both the verbal and quantitative sections of the exam.
4. Formal decision by the Departmental Graduate Committee to accept the student into the graduate program. The decision will be based on a formal application procedure, which includes evaluation of GPA, GRE scores, letters of recommendation, and other materials that may be required by the Committee and/or offered by the student.

Transfer credits and Out-of-program units
A maximum of 9 semester units may be applied toward the fulfillment of requirements of the MS Biology program at the time that a student enters the MS Biology program. This includes units from another accredited college or university, from CSUB Open University, or out-of-program units taken at CSUB. Out-of-program units include any units taken while a student does not have graduate standing within the MS Biology program. These units must be declared at the time that a student applies to the CSUB MS Biology program and their ability to be applied toward the graduate program will be assessed as part of application review. Once admitted to the MS Biology program, no new or additional transfer or out-of-program units are permitted to be applied toward degree requirements, including courses taken through CSUB Open University.

Graduate Student Classifications
Classified Graduate Student
Acceptance as a Classified Graduate Student indicates that space has been made available for the student within the program and that the student has met the minimum preparation requirements to commence the program as listed below.

1. An acceptable baccalaureate degree from an accredited institution and a grade of a C or higher in course work equivalent to

<table>
<thead>
<tr>
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<td>BIOL 3110</td>
<td>General Ecology</td>
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<tr>
<td>BIOL 3120</td>
<td>Research Design and Analysis</td>
<td>4</td>
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<tr>
<td>BIOL 4100</td>
<td>Evolution</td>
<td>3</td>
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</table>

2. An undergraduate GPA of at least 3.0 in the last 90 quarter or 60 semester units of course work.
3. Graduate Records Examination scores of greater than the 50th percentile in both the verbal and quantitative sections of the exam.
4. Acceptance into an academic advising relationship with a departmental faculty member (thesis-option only).
5. Acceptance will only be granted if space is available for the student in the program.

Conditionally Classified Graduate Student
Students who fail to meet entirely one or more of the criteria for admission as a Classified Graduate Student may, at the discretion of the Biology Graduate Admissions Committee, be admitted as a Conditionally Classified Graduate Student. These conditions may include, but are not limited to, specific prerequisite courses, GPA, GRE scores, etc. Once
the student has met all conditions specified by the Biology Graduate Admissions Committee, the student can apply to the Graduate Committee to have their classification changed to Classified Graduate Student. A student may receive credit toward program requirements for no more than 10 units of graduate applicable coursework taken prior to a student successfully advancing to Classified standing. This 10-unit limit includes all coursework taken prior to obtaining Classified standing, including transfer and out-of-program units and units taken while a conditionally classified student within the MS Biology program. The transition to Classified Status must be accomplished within one semester after acceptance as a Conditionally Classified Graduate Student. Students that do not meet this requirement will not be permitted to remain enrolled in the program.

Students admitted as a Conditionally Classified Graduate Student are not allowed to enroll in any 6000-level courses. They are restricted to 5000- and 4000-level courses for which they have met prerequisites.

**Advancement to Candidate Status**

Acceptance as a candidate indicates that the student has completed at least 16 semester units within their approved Plan of Study and that there is a reasonable expectation that the student will complete all remaining requirements within one year. Classified Graduate Students will be advanced to Candidate Status when they have met the following criteria:

1. Completion of all requirements for Classified Status.
2. Completion of at least 16 semester units of courses applicable to the Master of Science Degree in Biology with a grade of "B" or better in all courses within the Plan of Study and graduate GPA of at least 3.0. **Students in the thesis track must also:**
3. Obtain approval of the student's Master's thesis research topic by the Departmental Graduate Program Director and the student's Thesis Committee.
4. Obtain certification by the student's thesis advisor that there is a reasonable expectation that the student will satisfactorily complete the Master's thesis within one year.

Time limits have been set for completion of requirements at each level of status. Admission to Classified Status must be accomplished within one semester after acceptance as a Conditionally Classified Graduate Student. No more than 10 semester units may be taken for graduate credit until all requirements for Conditionally Classified students have been satisfied. Admission to Candidate Status must be attained within two calendar years after acceptance as a Classified Graduate Student. All requirements and graduation are to be completed within five calendar years after acceptance into the MS Biology program. The five-year time limit can be extended by petition to and approval from the Departmental Graduate Committee, but may not exceed seven calendar years after acceptance into the program.

Completion of all requirements for the Master of Science in Biology require satisfactory completion of all courses in an approved Plan of Study with a grade of "B" or better and satisfactory completion of an exit examination or thesis, including oral examination and any revisions required by the Thesis Committee or Departmental Graduate Committee, and maintaining a 3.0 GPA.

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### Program Requirements

#### Requirements for Thesis Option (30 Units)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>Thesis-Option</td>
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</tr>
<tr>
<td>BIOL 5100</td>
<td>Advanced Experimental Design and Analysis</td>
<td>4</td>
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<tr>
<td>BIOL 5010</td>
<td>Current Topics in Biology</td>
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<tr>
<td>BIOL 6010</td>
<td>Seminar in Biology</td>
<td>2</td>
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<tr>
<td>BIOL 6911</td>
<td>Thesis</td>
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<tr>
<td>BIOL 6921</td>
<td>Thesis Defense</td>
<td>1</td>
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</table>

**Electives Courses**

Select two of the following: 8

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIOL 4310</td>
<td>Conservation Biology</td>
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<tr>
<td>BIOL 4320</td>
<td>Population and Community Ecology</td>
<td></td>
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<tr>
<td>BIOL 4330</td>
<td>Behavioral Ecology</td>
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<tr>
<td>BIOL 4340</td>
<td>Chemical Ecology</td>
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<tr>
<td>BIOL 4350</td>
<td>Environmental Microbiology</td>
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<tr>
<td>BIOL 4360</td>
<td>Aquatic Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOL 4410</td>
<td>Entomology</td>
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<tr>
<td>BIOL 4420</td>
<td>Plant Diversity</td>
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</tr>
<tr>
<td>BIOL 4430</td>
<td>Wildlife Biology</td>
<td></td>
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<tr>
<td>BIOL 4440</td>
<td>Molecular Genetics</td>
<td></td>
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<tr>
<td>BIOL 4450</td>
<td>Genomics and Bioinformatics</td>
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<tr>
<td>BIOL 4460</td>
<td>Evolutionary Genetics</td>
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</tr>
<tr>
<td>BIOL 4510</td>
<td>Comparative Vertebrate Structure</td>
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</tr>
<tr>
<td>BIOL 4520</td>
<td>Early Life on Earth</td>
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<tr>
<td>BIOL 4530</td>
<td>Terrestrial Ecosystem Ecology</td>
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<tr>
<td>BIOL 4540</td>
<td>Physiological Plant Ecology</td>
<td></td>
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<tr>
<td>BIOL 4550</td>
<td>Plant Structure and Function</td>
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<tr>
<td>BIOL 4560</td>
<td>Plant Pathology</td>
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<tr>
<td>BIOL 4700</td>
<td>Special Topics in Biology</td>
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<tr>
<td>BIOL 5010</td>
<td>Current Topics in Biology</td>
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<tr>
<td>BIOL 5710</td>
<td>Advanced Topics in Biology</td>
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<tr>
<td>BIOL 5901</td>
<td>Research</td>
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<tr>
<td>BIOL 5911</td>
<td>Graduate Practicum in the Teaching of Biology</td>
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<tr>
<td>GEOL 4050</td>
<td>GIS for Natural Sciences</td>
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<tr>
<td>GEOL 4770</td>
<td>Special Topics in Geology</td>
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<td>GEOL 4771</td>
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<td>GEOL 5070</td>
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<td>GEOL 5770</td>
<td>Advanced Topics</td>
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<td>GEOL 5771</td>
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<td>GEOL 6770</td>
<td>Advanced Topics</td>
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<tr>
<td>MATH 5210</td>
<td>Applied Statistical Computing and Multivariate Methods</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total Units** 30

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1. 2 units each and repeated three times
2. taken over multiple semesters in 1-3 unit increments
3. 4000-, 5000-, or 6000-level courses. Selection of elective courses must be approved by Graduate Director (non-thesis option) or Thesis Committee (thesis option). Selection of elective courses must be approved by Graduate Director (non-thesis option) or Thesis Committee (thesis option)
4. may be repeated for credit
Families, as well as members of the local community, are welcome to visit the CSUB campus.

### Code Title Units

**Choose one of the following:**

- ACCT 2000 Introduction to Financial Reporting and Accounting 3
- ACCT 2100 Introduction to Managerial Accounting 3
- ACCT 2350 Business Law 3
- ACCT 3000 Intermediate Accounting I 3
- ACCT 3010 Intermediate Accounting II 3
- ACCT 4000 Advanced and International Accounting 3

**Total Units: 3**

### Code Title Units

**General Education Requirements**

- First-Year Seminar 2 3
- Lower Division Area A: Foundational Skills 9
- Lower Division Area B: Natural Sciences 1 6
- Lower Division Area C: Arts and Humanities 6
- Lower Division Area D: Social and Behavioral Sciences 1 0
- Lower Division Area E: Student Enrichment and Lifelong Learning (SELF) 1 0
- Lower Division Area F: Ethnic Studies 3
- American Institutions: Government and History 6
- Junior Year Diversity & Reflection (JYDR) 1 0
- Graduation Writing Assessment Requirement (GWAR) 3
- Upper Division Thematic Area B and C 6
- General Education Capstone 1 0

**General Education Subtotal:** 39

### Code Title Units

**Major Requirements**

- **Required Lower Division Foundation Core**
  - BA 1028 First Year Seminar for Business Majors 2 3
  - BA 1000 Introduction to Business 3 3
  - ACCT 2200 Introduction to Financial Reporting and Accounting 3
  - ACCT 2210 Introduction to Managerial Accounting 3
  - ECON 2018 Essentials of Micro-Economics 3
  - ECON 2028 Essentials of Macro-Economics 3
  - BA 2200 Quantitative Tools for Business and Economists 4
  - MATH 2200 Introduction to Statistical Concepts and Methods 4
  - MIS 2000 Software Productivity Tools 1
  - BA 2100 Legal Environment of Domestic and International Business 4

- **Required Upper Division Core Courses**
  - BA 3008 Diversity in Business Organizations 3

**Total Units:** 118-123

1. Areas B4, D (3 units), SELF, JYDR, and Capstone are satisfied via major requirements.
2. BA 1028 First Year Seminar for Business Majors counts for FYS.
3. These courses cannot be double counted in the concentrations.
4. Some General Education requirements are included in major.
5. The recommended internship can count towards additional units needed towards graduation.

**Note:** An internship is recommended.

### Code Title Units

**General Education Requirements**

- First-Year Seminar 2 3
- Lower Division Area A: Foundational Skills 9
- Lower Division Area B: Natural Sciences 1 6
- Lower Division Area C: Arts and Humanities 6
- Lower Division Area D: Social and Behavioral Sciences 1 0
- Lower Division Area E: Student Enrichment and Lifelong Learning (SELF) 1 0
- Lower Division Area F: Ethnic Studies 3
- American Institutions: Government and History 6
- Junior Year Diversity & Reflection (JYDR) 1 0
- Graduation Writing Assessment Requirement (GWAR) 3
- Upper Division Thematic Area B and C 6
- General Education Capstone 1 0

**General Education Subtotal:** 39

### Code Title Units

**Major Requirements**

- **Required Lower Division Foundation Core**
  - BA 1028 First Year Seminar for Business Majors 2 3
BA 1000 Introduction to Business 3  
ACCT 2200 Introduction to Financial Reporting and Accounting 3  
ACCT 2210 Introduction to Managerial Accounting 3  
ECON 2018 Essentials of Micro-Economics 3  
ECON 2028 Essentials of Macro-Economics 3  
BA 2200 Quantitative Tools for Business and Economists 4  
or ECON 2200 Quantitative Tools for Business and Economists 4  
MATH 2200 Introduction to Statistical Concepts and Methods 4  
MIS 2000 Software Productivity Tools 1  
BA 2100 Legal Environment of Domestic and International Business 4  

Required Upper Division Core Courses  
BA 3008 Diversity in Business Organizations 3  
or ECON 3008 Gender and Diversity in Workplace 3  
BA 3010 Data Analysis & Decision Making 3  
BA 3108 Business And Society 3  
BA 4908 Senior Seminar 1  
FIN 3000 Financial Management 3  
MGMT 3000 Organizational Behavior 3  
MGMT 3020 Introduction to Operations Management 3  
MGMT 4000 Strategic Management 3  
MKTG 3000 Marketing Principles 3  
MIS 3000 Management Information Systems: Concepts and Applications 5  

MGMT 3100 Human Resource Management 3  
or ECON 4510 Managerial Economics 3  

Core Subtotal 15  
Concentration 76  

Additional Units Needed Towards Graduation 5 3-8  

Total Units 118-123  

1 Areas B4, D (3 units), SELF, JYDR, and Capstone are satisfied via major requirements.  
2 BA 1028 First Year Seminar for Business Majors counts for FYS.  
3 These courses cannot be double counted in the concentrations.  
4 Some General Education requirements are included in major.  
5 The recommended internship can count towards additional units needed towards graduation.  

Note: An internship is recommended  
1. one  
2. two  
3. three  

use the bulleted list  
• b1  
• b2  
• b3  

Subheading  
more content here...  

Links  
CSUB (https://www.csub.edu)  
Graduate Programs (https://catalog.csub.edu/academic-degrees-programs/graduate-programs/)  
Registrar (registrar@csub.edu)  

MGMT 3000 Organizational Behavior is a great course.  
MGMT 3020 Introduction to Operations Management is a great course.  
MGMT 3030 is a great course.  

Tables  

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>MGMT 3000</td>
<td>Organizational Behavior (Fall only)</td>
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<td>MKTG 3000</td>
<td>Marketing Principles</td>
<td>6</td>
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<tr>
<td>&amp; MGMT 3400</td>
<td>and Entrepreneurship</td>
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<td>MGMT 3020/3450</td>
<td>Introduction to Operations Management</td>
<td>3</td>
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<td>MGMT 3090</td>
<td>Career and Managerial Skills</td>
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<tr>
<td>MGMT 3100</td>
<td>Human Resource Management</td>
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Total Units 15  

1 This is my footnote.  

Shared Content  
Course Lists by Attribute  

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<thead>
<tr>
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<tr>
<td>THTR 1008</td>
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<tr>
<td>THTR 1019</td>
<td>Dynamic Leadership through Improvisation</td>
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