

# BIOLOGY, A.S.-T

An A.S.-T in Biology for Transfer will fulfill the requirements for students to transfer to a CSU institution as a Biology major. The courses in the A.S.-T in Biology for Transfer provide students with an intensive modern biology study designed to prepare students for upper-division science courses. Topics include the biochemistry, genetics, biodiversity, anatomy, physiology, and ecology of cells and organisms in an evolutionary context. Students will apply their understanding of biology concepts in the laboratory to develop an understanding of the methods of scientific inquiry, experimental design, and analysis of results.

AS.BIOL.OPTBAST or AS.BIOL.OPTCAST

## Program Map

### Design Your Future!

Begin by exploring MSJC program maps to find career or transfer (<https://msjc.emsicc.com/?radius=&region=All%20Regions>) opportunities. Program maps show the recommended course sequence that leads to graduation or transfer. The maps were developed by program experts to give you the skills and knowledge you need to succeed.

- **Starting in Spring?** Choose Fall Semester 1 courses.
- **Are you a part-time student?** Start Fall Semester 1 courses and follow the course sequence.

## CSU: General Education Option B

Fall Semester 1		Units
ENGL-101	College Composition	3
MATH-211	Analytic Geometry and Calculus I	4
BIOL-150	General Biology I	4
COMM-100	Public Speaking	3
<b>Units</b>		<b>14</b>
Spring Semester 1		Units
ART-100	Art Appreciation	3
MATH-212	Analytic Geometry and Calculus II	4
CHEM-101	General Chemistry I <sup>1</sup>	5
BIOL-151	General Biology II	4
<b>Units</b>		<b>16</b>
Summer 1		Units
PS-101	Introduction to American Government and Politics	3
CHEM-102	General Chemistry II	5
<b>Units</b>		<b>8</b>
Fall Semester 2		Units
PHIL-101 or HIST-102	Introduction to Philosophy I or Western Civilization Since 1650 (formerly Western Civilization II: From 1500 to the Present Era)	3
PHY-201	Mechanics and Wave Motion	4
ENVS-101 or CHEM-112	Environmental Science or Organic Chemistry I	3-5
ENGL-103	Critical Thinking and Writing	3
<b>Units</b>		<b>13-15</b>

### Spring Semester 2

PHY-202	Electricity and Magnetism	4
Select one of the following:		3
HIST/ETHS-160	Black History in the American Context	
LIT/ETHS-275	Latinx/Chicanx Literature	
LIT-280/280	Multiethnic Literature (formerly ENGL-280)	
PS/ETHS-103	Ethnic Politics in America	
HIST-112	U.S. History Since 1865	3
Optional:		
PHY-203 or CHEM-113	Optics and Modern Physics or Organic Chemistry II	4-5
<b>Units</b>		<b>14-15</b>
<b>Total Units</b>		<b>65-68</b>

<sup>1</sup> CHEM 101 has a prerequisite of CHEM 100 or 1 year high school Chemistry with a C or better.

**Recommended:** Students should take courses the summer before the Fall start of the semester.

**CSUSM:** The Mission of the Department of Biological Sciences is to provide students a top-rate education in the biological sciences. Central to our goal is the incorporation of a laboratory-rich experience linked to traditional and innovative classroom pedagogy and technology. This combination of laboratory and classroom activities engages students in the processes of biological inquiry and critical thinking, provides students hands-on experiences with biological principles, and trains students in modern technological methods. Students completing our program are well educated in the practice and knowledge of science and are well prepared to be productive members of society.

## UC: General Education Option C

Fall Semester 1		Units
ENGL-101	College Composition	3
MATH-211	Analytic Geometry and Calculus I	4
BIOL-150	General Biology I	4
COMM-100	Public Speaking	3
<b>Units</b>		<b>14</b>
Spring Semester 1		Units
CHEM-101	General Chemistry I	5
BIOL-151	General Biology II	4
MATH-212	Analytic Geometry and Calculus II	4
ART-100	Art Appreciation	3
<b>Units</b>		<b>16</b>
Summer 1		Units
PS-101 or HIST-111 or HIST-112	Introduction to American Government and Politics or U.S. History to 1877 or U.S. History Since 1865	3
CHEM-102	General Chemistry II	5
<b>Units</b>		<b>8</b>
Fall Semester 2		Units
ENGL-103	Critical Thinking and Writing	3
PHY-201	Mechanics and Wave Motion	4

SPAN-101 or FREN-101 or ASL-100	Elementary Spanish I or Elementary French I or American Sign Language I	4
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Optional:

ENVS-101 or CHEM-112	Environmental Science or Organic Chemistry I	3-5
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**Units 14-16****Spring Semester 2**

HIST-107 or HIST-117 or HIST-140	The History of East Asia Before 1600 or History of India or History of Mexico	3
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PHY-202	Electricity and Magnetism	4
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Select one of the following: 3

PS/ETHS-103	Ethnic Politics in America	
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HIST/ETHS-160	Black History in the American Context	
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LIT/ETHS-240	American Indian Literature (formerly ENGL-240)	
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LIT/ETHS-275	Latinx/Chicanx Literature	
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LIT/ETHS-280	Multiethnic Literature (formerly ENGL-280)	
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Optional:

PHY-203 or CHEM-113	Optics and Modern Physics or Organic Chemistry II	4-5
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**Units 14-15****Total Units 66-69****Recommended:** Students should take courses the summer before the Fall start of the semester.

**NOTE:** For students who did not meet the LOTE requirement in high school, they may fulfill Area 6 by demonstrating proficiency by completing ASL-100 American Sign Language I, FREN-101 Elementary French I or SPAN-101 Elementary Spanish I with a grade C or better. Languages other than English for Native Speakers are also acceptable for meeting this requirement.

## Requirements

Course	Title	Credits
<b>Required Core Courses</b>		
BIOL-150 or BIOL-150H	General Biology I Honors General Biology I	4
BIOL-151 or BIOL-151H	General Biology II Honors General Biology II	4
<b>List A</b>		
CHEM-101 or CHEM-101H	General Chemistry I Honors General Chemistry I	5
CHEM-102	General Chemistry II	5
MATH-211 or MATH-211H	Analytic Geometry and Calculus I Honors Analytic Geometry and Calculus I	4
Complete one of the following physics sequences: 8		
PHY-201 & PHY-202 or PHY-202H	Mechanics and Wave Motion and Electricity and Magnetism Honors Electricity and Magnetism	
PHY-101 & PHY-102	Basic Physics: Energy and Motion and Basic Electricity and Modern Physics <sup>1</sup>	

**List B: Optional courses that may be required for major prep at transfer institutions <sup>2</sup> 0-5**

ANAT-101	Human Anatomy & Physiology I
ANAT-102	Human Anatomy & Physiology II
BIOL-125 or BIOL-125H	Microbiology Honors Microbiology
BIOL-144	Plant Biology
CHEM-107	Chemistry of Life
CHEM-112	Organic Chemistry I
CHEM-113	Organic Chemistry II
GEOG-101	Physical Geography
MATH-135	Calculus for Social Science and Business
MATH-140 or MATH-140H	Introduction to Statistics Honors Introduction to Statistics
MATH-212 or MATH-212H	Analytic Geometry and Calculus II Honors Analytic Geometry and Calculus II

**Total Units 30-35**

Course	Title	Credits
<b>Units for Major 30-35</b>		
<b>CSU General Education for STEM or IGETC for STEM 31-33</b>		

**Possible double counting: 10****Transferable Electives (as need to reach 60 CSU transferable units)****Total Units for A.S.-T Degree: 60 units**

<sup>1</sup> Most transfer schools require Biology majors to take the calculus based physics series, PHY-201 and PHY-202. Please speak with an MSJC counselor to make sure that PHY-101 and PHY-102 will satisfy the requirements for the Biology transfer programs you are considering.

<sup>2</sup> Please speak with an MSJC counselor regarding major requirements at specific CSUs.

The STEM General Education for a **STEM Associates Degree for Transfer (ADT)** can only be applied to the **Biology, Chemistry and Environmental Science ADT Degrees**.

The overall requirements for an approved STEM Associates Degree for Transfer (ADT) can be met by completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University. Completion of California State University General Education Breadth for STEM (CSUGE) requirements or the Intersegmental General Education Transfer Curriculum for STEM requirements (IGETC).

**CSUGE Breadth for STEM (33 units):** Students are to complete all CSUGE requirements. However, the CSUGE for STEM requires:

- **AREA A-** 9 semester units/12 quarter units: one course from A1, one course from A2, and one course from A3)
- **AREA B-** 9 semester units/12 quarter units: one course from B1, one course from B2, and one course from B3 (if not met in B1/B2), and one course from B4
- **AREA C-** 6 semester units/9 quarter units: one course from C1 and one course from C2
- **AREA D-** 3 semester units/ 4 quarter units: one course

- **AREA E-** 3 semester units/ 4 quarter units: one course
- **AREA F-** 3 semester units/ 4 quarter unit: one course.

**IGETC for STEM (31 units):** Students are to complete all IGETC requirements. However, the IGETC for STEM requires:

- **AREA 1** -9 semester units/12 quarter units: one course from 1A, one course from 1B, and one course from 1C for students transferring to a CSU
- **AREA 2-** 3 semester units/4 quarter units: one course
- **AREA 3-** 6 semester units/9 quarter units: one course from 3A and one course from 3B
- **AREA 4-** 3 semester units/4 quarter units: one course
- **AREA 5-** 7 semester units/9 quarter units: one course from 5A, one course from 5B, and one course from 5C if not met in 5A/5B
- **AREA 6** (for UC schools) meeting Language other than English (LOTE) competency (by completing at minimum, elementary language course; AP exam; high school course work)
- **AREA 7-** 3 semester units/ 4 quarter units: one course.

#### Additional Requirements

- Students are to confirm that the CSU or UC major/program or college they are applying to accepts partial CSUGE and IGETC certification. Although CSUGE and IGETC for STEM is an option, it is important that students prioritize completing major-preparation courses for the specific campuses and programs students are considering.
- Completion of a minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
- Completion of a minimum grade point average of 2.0.

ADTs also require that students earn a C or better in all courses required for the major or area of emphasis. A "P" (Pass) grade is acceptable if pass is defined as a grade of C or better. ADTs are intended for students who plan to complete a bachelor's degree in a similar major at a CSU campus. A student completing an ADT is guaranteed admission to the CSU system, but not a particular campus or major. Students should meet with a Counselor to develop a comprehensive educational plan to further understand university and transfer requirements.

## Career Exploration

Discover information about careers that interest you!

1. Take a **Career Quiz** (<https://msjc.emsicc.com/assessment/>) to learn about yourself and receive career suggestions based on your interests.
2. Search available **in-demand jobs** (<https://msjc.emsicc.com/browse-careers/>) in your career areas of interest and find up-to-date salaries and education requirements.
3. Find the **MSJC Program** (<https://msjc.emsicc.com/browse-programs/>) that connects your interests to a career.

Note: There are no guaranteed positions for students completing these programs. Education and work experience required will vary by employer. The salary and benefits for specific occupations will be dependent on work experience, education, background, and employer.