

Biology

LOWER-DIVISION TRANSFER PATTERN California State University (CSU) Statewide Pattern

The Lower-Division Transfer Pattern (LDTP) consists of the CSU statewide pattern of coursework outlined below, plus campus-specific coursework, bringing the total pattern to at least 60 but no more than 70 transferable semester units for students to complete at a California Community College (CCC).

The CSU statewide pattern of coursework for CCC students who plan to major in Biology at any CSU campus offering the major includes:

- Completion of most lower-division general education requirements: Areas A, B, C, and D of the CSU General Education Breadth (GE-Breadth) pattern;
- Completion of the CSU graduation requirements in United States History, Constitution and American Ideals; and
- Completion of 15 additional semester units as specified in (3) below.

CSU Statewide Pattern	Semester Unit Requirement
<p>(1) Complete lower-division general education requirements.</p> <p>Obtain <i>certification of completion</i> of GE-Breadth by the California Community College before transferring to a CSU campus. <i>Whether or not Area E must be completed before transfer will be specified in the campus-specific requirement.</i></p> <p>While completing general education, follow the course pattern stated below.</p>	<p>36 units</p> <p>Minimum grades of C are required in courses used to meet GE-Breadth Areas A and B4.</p>
<p>(2) Complete the graduation requirements in United States History, Constitution and American Ideals.¹</p> <p>These are typically completed with one course each in American government and American history, or a sequence of courses that integrate the history and government topics.</p> <p>Students should ordinarily use these courses to satisfy 6 units of GE-Breadth Area D.</p>	<p>0 units</p>
<p>(3) Complete the following courses: CAN BIOL SEQ A CAN CHEM SEQ A Calculus, 1st Semester [CAN MATH 18] or Calculus for the Life and Social Sciences, 1st Semester [CAN MATH 30] One math course, one biology course and one chemistry course will be used to meet GE-Breadth Area B.</p>	<p>15 units</p>
<p>Total Semester Units Required for Statewide LDTP Pattern</p>	<p>51 Units</p>

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¹ CCC courses that fulfill general education and graduation requirements in United States History, Constitution and American Ideals are listed at www.assist.org.

**LOWER-DIVISION TRANSFER PATTERN
CSU Bakersfield**

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • GE-Breadth Area E 	0-3 units
(2) Complete additional coursework to bring total to 60 transferable semester units	6-9 units
Total Semester Units Required for CSU Bakersfield	9 units

**Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Channel Islands**

In addition to the statewide pattern of 51 units the following are campus requirements for the B.S.:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Organic Chemistry or Physics 	0-8 units
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for the B.S. at CSU Channel Islands	9 units

In addition to the statewide pattern of 51 units the following are campus requirements for the B.A.:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Organic Chemistry and • GE-Breadth Area E 	0-8 units 0-3 units
Total Semester Units Required for the B.A. at CSU Channel Islands	11 units

**Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Chico**

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general	

education and/or major preparation requirements), complete:	
• General Physics I [CAN PHYS 2] and	0-4 units
• General Physics II [CAN PHYS 4]	0-4 units
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for CSU Chico	9 units

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LOWER-DIVISION TRANSFER PATTERN
CSU Dominguez Hills

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete:	
• CAN Physics Sequence A or	0-8 units
• CAN Physics Sequence B	0-9 units
(2) Complete additional coursework to bring total to 60 transferable semester units	0-9 units
Total Semester Units Required for CSU Dominguez Hills	9 units

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LOWER-DIVISION TRANSFER PATTERN
CSU East Bay

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete:	
• GE-Breadth Area E	0-3 units
(2) Complete additional coursework to bring total to 60 transferable semester units	6-9 units
Total Semester Units Required for CSU East Bay	9 units

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Fresno

In addition to the statewide pattern of 51 units the following are campus requirements for the **Organismic and Ecology option**:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • One semester of Organic Chemistry lecture with no lab [CSUF CHEM 8] and • Introduction to Statistics in Psychology [CAN PSY 6, CSUF PSYCH 42] and • Physics (Algebra/Trig based) [CAN PHYS 2, CSUF PHYS 2A] or Physical Geology [CAN GEOL 6, CSUF GEOL 1] 	<p style="text-align: center;">0-3 units</p> <p style="text-align: center;">0-3 units</p> <p style="text-align: center;">0-3 units</p>
Total Semester Units Required for the Organismic and Ecology Option at CSU Fresno	9 units

In addition to the statewide pattern of 51 units the following are campus requirements for the **MCD and Physiology option**:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Chemistry Sequence A with no lab [CSUF CHEM 28A and B] and • CAN Physics Sequence A [CSUF PHYS 2A and B] 	<p style="text-align: center;">0-6 units</p> <p style="text-align: center;">0-8 units</p>
Total Semester Units Required for the MCD and Physiology Option CSU Fresno	14 units

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LOWER-DIVISION TRANSFER PATTERN

CSU Fullerton

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • A course that introduces mechanics and thermodynamics. Elementary Physics with Lab [CSUF PHYS 211 and 211L] and • A course that introduces electricity and magnetism, wave motion and optics. Elementary Physics with Lab [CSUF PHYS 212 and 212 L] 	<p style="text-align: center;">0-4 units</p> <p style="text-align: center;">0-4 units</p>
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for CSU Fullerton	9 units

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LOWER-DIVISION TRANSFER PATTERN Humboldt State University

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • GE-Breadth Area E 	0-3 units
(2) Complete additional coursework to bring total to 60 transferable semester units	6-9 units
Total Semester Units Required for Humboldt State University	9 units

Biology LOWER-DIVISION TRANSFER PATTERN CSU Long Beach

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Calculus, 2nd Semester [CAN MATH 20] or Calculus for the Life and Social Sciences, 2nd Semester [CAN MATH 32] and • GE-Breadth Area E and • 3 additional units for the Biology, Chemistry, and Math courses 	3-5 units 0-3 units 0-3 units
(2) Complete additional coursework to bring total to 60 transferable semester units	0-3 units
Total Semester Units Required for CSU Long Beach	9 units

Biology LOWER-DIVISION TRANSFER PATTERN CSU Los Angeles

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Physics [CAN PHYS SEQ A] and • GE-Breadth Area E and • A second semester of expository writing that emphasizes exposition, research, and critical thinking, typically called “Writing and Critical Thinking” (as opposed to “Literature and Composition”) 	8 units 3 units 0-3 units
(2) Complete additional coursework to bring total to 60 transferable	0-3 units

semester units	
Total Semester Units Required for CSU Los Angeles	14 units

Biology
LOWER-DIVISION TRANSFER PATTERN
California Maritime Academy

This campus does not have a major, concentration, or option in Biology.

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Monterey Bay

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • GE-Breadth Area E • Recommended: Foreign language courses* 	0-3 units
(2) Complete additional coursework to bring total to 60 transferable semester units	6-9 units
Total Semester Units Required for CSU Monterey Bay	9 units

**Students transferring into Biology at CSUMB are encouraged to begin or complete their language study. (At CSUMB, one of the four GLOs is intermediate proficiency in a language). For students who begin but do not complete their language requirement prior to transferring, the following languages are offered at CSUMB: American Sign Language, Italian, Japanese, and Spanish. In addition, French can be completed at a nearby community college.*

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Northridge

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A 	0-8 units
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for CSU Northridge	9 units

Biology
LOWER-DIVISION TRANSFER PATTERN
Cal Poly Pomona

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A and • Statistics [CAN STAT 2] 	0-8 units 0-3 units
Total Semester Units Required for Cal Poly Pomona	11 units

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Sacramento

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Statistics [CAN STAT 2] and • GE-Breadth Area E 	0-3 units 0-3 units
(2) Complete additional coursework to bring total to 60 transferable semester units	3-9 units
Total Semester Units Required for CSU Sacramento	9 units

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU San Bernardino

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A 	0-8 units
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for CSU San Bernardino	9 units

Biology
LOWER-DIVISION TRANSFER PATTERN
San Diego State University

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A and • Calculus for the Life and Social Sciences, 2nd Semester [CAN MATH 32] if Calculus for the Life and Social Sciences, 1st Semester [CAN MATH 30] is applied to Area B requirement and • GE-Breadth Area E 	 0-8 units 0-3 units 0-3 units
Total Semester Units Required for San Diego State University	14 units

Biology
LOWER-DIVISION TRANSFER PATTERN
San Francisco State University

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A and • GE-Breadth Area E and • If possible, College Composition, 1st semester [CAN ENGL 2, SFSU ENG 114] and College Composition and Literature, 2nd semester [CAN ENGL 4, SFSU ENG 214] should be completed as part of GE Breadth in the statewide pattern. 	 0-8 units 0-3 units
Total Semester Units Required for San Francisco State University	11 units

Students interested in demonstrating competency for the single subject credential in Science: (Concentration in Biological Sciences) for teaching at the K-12 levels should consider completing lower-division courses with lab that cover the geosciences breadth requirements (astronomy, geology, meteorology, and oceanography). The equivalent courses at SFSU include:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • A course that covers Stonehenge; solar system; sun, stars and stellar evolution, pulsars; black holes; nebulae; galaxies, quasars, big bang, and expanding universe; search for extraterrestrial life. Introduction to Astronomy with Lab [SFSU ASTR 115/116] 	0-4 units

<ul style="list-style-type: none"> • A course that covers the principles of geological interpretation; earth materials, crustal history of the earth, origin and evolution of life; geologic time, evolution of landscape. Introduction to Geology with Lab [SFSU GEOL 100/101] 	0-4 units
<ul style="list-style-type: none"> • A course that covers the principles and components of the dynamic ocean system; formation of ocean basins, oceanic influences on climate; currents; waves and tides; human relationship to and impact on the ocean; resources. Introduction to Oceanography with Lab [SFSU GEOL 102/103] 	0-4 units
<ul style="list-style-type: none"> • A course that covers composition, structure, and evolution of the earth; earth materials; tectonic and hydrologic systems; land form development; relation of geologic systems to the human environment. Physical Geology [SFSU GEOL 110] 	0-4 units
<ul style="list-style-type: none"> • A course that covers the causes and nature of weather and its elements, including winds, storms, precipitation, and clouds; interrelationships between human activity and weather, simple weather maps and weather forecasting. Introduction to Meteorology with Lab [SFSU METR 100/101] 	0-4 units
Total Semester Units Required for the Single Subject Credential in Science at San Francisco State University	20 units

Biology
LOWER-DIVISION TRANSFER PATTERN
San Jose State University

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A and • GE-Breadth Area E 	0-8 units 0-3 units
Total Semester Units Required for San Jose State University	11 units

Biology
LOWER-DIVISION TRANSFER PATTERN
Cal Poly San Luis Obispo

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • CAN Physics Sequence A 	0-8 units
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for Cal Poly San Luis Obispo	9 units

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU San Marcos

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Organic Chemistry for Science Majors w/ Lab, 1st Semester [CAN CHEM 22] and • Organic Chemistry for Science Majors, 2nd Semester (lab not required) [CAN CHEM 24] and • CAN PHYS SEQ B 	0-5 units 0-3 units 0-8 units
Total Semester Units Required for CSU San Marcos	16 units

Biology
LOWER-DIVISION TRANSFER PATTERN
Sonoma State University

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
(1) If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Statistics [CAN STAT 2] and • Organic Chemistry for Science majors with Lab, 1st semester [CAN CHEM 22] 	0-3 units 0-5 units
(2) Complete additional coursework to bring total to 60 transferable semester units	1-9 units
Total Semester Units Required for Sonoma State University	9 units

Biology
LOWER-DIVISION TRANSFER PATTERN
CSU Stanislaus

In addition to the statewide pattern of 51 units the following are campus requirements:

Campus-Specific Pattern	Semester Unit Requirement
If not taken as part of the statewide pattern (including general education and/or major preparation requirements), complete: <ul style="list-style-type: none"> • Pre-Calculus [CAN MATH 16] or Statistics [CAN STAT 2] and 	0-3 units 0-3 units

<ul style="list-style-type: none"> • E.1 A Computer Science course and • E.2 Physical Education Activity or, if exempt (e.g. age of 25+ years), an elective course and 	0-1 unit
<p>Complete Area D of CSU-Stanislaus GE requirements (9 units are already required in the statewide pattern; this requires completion of the remaining 3 units) The CSU-Stanislaus categories (3 units each) are:</p> <ul style="list-style-type: none"> • D.1.a. United States History • D.1.b. United States Government and California State and local government • D.2.a. Human Institutions: Structures and Processes • D.2.b. Society and Culture 	0-3 units
Total Semester Units Required for CSU Stanislaus	10 units