

BIOLOGY (AST)

Program Code: AS.TBIOLOGY

Are you interested in better understanding how life works? Biology is the study of living and once-living organisms, and an understanding of biological principles can be applied to a wide range of fields such as bioinformatics, ecology, education, marine biology, medicine, molecular biology, veterinary medicine, and more. Biology majors develop critical thinking and problem-solving skills that allow them to ask questions that lead to a better understanding of the natural world. As part of the life, physical, and social science occupations, the Bureau of Labor Statistics anticipates continued job market growth with median annual wages greater than \$60,000.

The Biology Major Transfer Map (MTM) outlines Oregon community colleges coursework to complete in order to transfer seamlessly to any Oregon four-year public university to earn a bachelor of science (B.S.) in biology. The Biology MTM is intended for students who know they want to transfer and earn a B.S. in biology, but who are unsure of their intended transfer destination. Students should work with an advisor to ensure they properly fulfill the requirements of this Biology MTM.

Outcomes

Program Outcomes

Upon successful completion of this program, students should be able to:

- apply the process of science to biological phenomenon;
- use quantitative reasoning to present evidence-based arguments;
- communicate an emerging understanding of the impact of scientific discovery and research on society.

Requirements

Complete 90 credits from the following:

Foundational Skills

Writing

- 2 courses
- Information literacy will be included in the Writing requirement
- OSU accepts WR-122Z Composition II and WR-227Z Technical Writing but recommends WR-227Z Technical Writing
- WOU & UO accept WR-122Z Composition II and WR-227Z Technical Writing but recommend WR-122Z Composition II

Code	Title	Credits
WR-121Z	Composition I	4.00
WR-122Z or WR-227Z	Composition II Technical Writing	4.00

Mathematics

- 2 courses
- Students who test out of MTH-111Z Precalculus I: Functions should take MTH-112Z Precalculus II: Trigonometry
- Students who test out of MTH-112Z Precalculus II: Trigonometry may substitute a recommended elective with a **MTH** prefix (see recommended electives below)

Code	Title	Credits
MTH-111Z	Precalculus I: Functions	4.00
MTH-112Z	Precalculus II: Trigonometry	4.00

Biology

- 3 courses
- Each course must be at least 4 credits

Code	Title	Credits
BI-211	General Biology for Science Majors (Cellular Biology)	5.00
BI-212	General Biology for Science Majors (Animal Biology)	5.00
BI-213	General Biology for Science Majors (Plant Biology & Ecology)	5.00

Chemistry

- 3-course sequence with lab
- Each course must be at least 4 credits

Code	Title	Credits
CH-221	General Chemistry	5.00
CH-222	General Chemistry	5.00
CH-223	General Chemistry	5.00

Physics/Math/Chemistry

- 2 sequences
- Strongly recommend seeing an advisor for assistance with choosing sequences that best match your specific academic, pre-professional, and career goals

Code	Title	Credits
Physics Sequence 1		
PH-201	General Physics	5.00
PH-202	General Physics	5.00
PH-203	General Physics	5.00
Physics Sequence 2		
PH-211	General Physics With Calculus	5.00
PH-212	General Physics With Calculus	5.00
PH-213	General Physics With Calculus	5.00
Math Sequence ^{1,2}		
MTH-251	Calculus I	5.00
MTH-252	Calculus II	5.00
Chemistry Sequence ^{3,4}		
CH-241	Organic Chemistry I	5.00
CH-242	Organic Chemistry II	5.00
CH-243	Organic Chemistry III	5.00

¹ Students transferring to PSU may substitute STAT-243Z Elementary Statistics I & MTH-244 Statistics II for MTH-251 Calculus I & MTH-252 Calculus II.

² Students transferring to EOU are required to take MATH-241 instead of MTH-251 Calculus I and MTH-252 Calculus II. MTH-251 Calculus I may serve as a substitute for MATH-241.

³ Students transferring to OSU are strongly recommended to take the Organic Chemistry sequence. For upper-level transfer students must pass the ACS Organic exam. Please work with an advisor.

⁴ Students considering pre-medical, pre-dental, and pre-pharmacy programs should consider taking the Organic Chemistry sequence. Courses in sequence must be taken at the same institution.

General Education Distribution Areas

Arts & Letters

- 2 courses
- Each course must be at least 3 credits

Arts & Letters Course List

Code	Title	Credits
ART-101	Art Appreciation	3.00
ART-115	Basic Design: 2-Dimensional Design	4.00
ART-117	Basic Design: 3-Dimensional Composition	4.00
ART-131	Introduction to Drawing	4.00
ART-204	History of Art/Ancient Through Medieval	4.00
ART-205	History of Art/Romanesque Through Baroque	4.00
ART-206	History of Art/Enlightenment Through Contemporary	4.00
ART-232	Life Drawing (Figure Emphasis)	4.00
ART-233	Drawing for Comics	4.00
ART-250	Ceramics/Beginning	4.00
ART-251	Ceramics/Hand-Building I	4.00
ART-252	Ceramics/Wheel-Throwing I	4.00
ART-253	Ceramics/Intermediate	4.00
ART-254	Ceramics/Hand-Building II	4.00
ART-255	Ceramics/Wheel-Throwing II	4.00
ART-257	Metalsmithing/Jewelry	4.00
ART-281	Painting: Still Life/Beginning	4.00
ART-282	Painting: The Figure/Beginning	4.00
ART-283	Painting: Landscapes/Beginning	4.00
ART-284	Painting: Still Life/Intermediate	4.00
ART-285	Painting: The Figure/Intermediate	4.00
ART-286	Painting: Landscapes/Intermediate	4.00
ART-291	Sculpture	4.00
ART-292	Sculpture (Figure Emphasis)	4.00
ART-293	Sculpture (Metal Emphasis)	4.00
ASL-201	Second-Year American Sign Language I	4.00
ASL-202	Second-Year American Sign Language II	4.00
ASL-203	Second-Year American Sign Language III	4.00
COMM-112	Persuasive Speaking	4.00
COMM-126	Intro to Communication, Gender, and Sexuality	4.00
COMM-140	Introduction to Intercultural Communication	4.00
COMM-212	Mass Media & Society	4.00
COMM-218Z	Interpersonal Communication	4.00
COMM-219	Small Group Discussion	4.00
COMM-227	Nonverbal Communication	4.00
ENG-104Z	Introduction to Fiction	4.00
ENG-105Z	Introduction to Drama	4.00
ENG-106Z	Introduction to Poetry	4.00
ENG-107	World Literature: Ancient Through Classical Times	4.00

Code	Title	Credits
ENG-108	World Literature: Early Middle Ages through the 18th Century	4.00
ENG-109	World Literature: The 19th through 21st Centuries	4.00
ENG-116	Introduction to Literature: Comics	4.00
ENG-121	Mystery Fiction	4.00
ENG-130	Leadership in Literature	4.00
ENG-194	Introduction to Film	4.00
ENG-195	American Film	4.00
ENG-201	Shakespeare	4.00
ENG-202	Shakespeare	4.00
ENG-204	British Literature: Ancient to Enlightenment	4.00
ENG-205	British Literature: Romantic to Contemporary	4.00
ENG-213	U.S. Latinx Literature	4.00
ENG-218	Arthurian Literature	4.00
ENG-226	Popular Literature	4.00
ENG-240	Native American Mythology	4.00
ENG-241	Norse Mythology	4.00
ENG-243	African Mythology	4.00
ENG-250	Greek Mythology	4.00
ENG-251	Celtic Mythology	4.00
ENG-252	Hindu Mythology	4.00
ENG-253	American Literature: Pre-Columbian to Civil War	4.00
ENG-254	American Literature: 1865 to Present	4.00
ENG-255	American Literature: Topics in American Literature	4.00
ENG-260	Introduction to Women Writers	4.00
ENG-261	Literature of Science Fiction	4.00
ENG-270	Introduction to Literary Criticism	4.00
ENG-271	World Literature: Ancient Through Classical Times	4.00
ENG-272	World Literature: Early Middle Ages through the 18th Century	4.00
ENG-273	World Literature: the 19th Through 21st Centuries	4.00
ENG-295	Revolutionary Film	4.00
ENG-296	Adaptation: Literature Into Film	4.00
FR-201	Second-Year French I	4.00
FR-202	Second-Year French II	4.00
FR-203	Second-Year French III	4.00
HUM-235	Perspectives on Terrorism	4.00
HUM-237	Perspectives on Democracy and Dialogue	4.00
J-211	Mass Media & Society	4.00
J-216	Writing for Media	4.00
MUS-105	Music Appreciation	3.00
MUS-111	Music Theory I	3.00
MUS-112	Music Theory I	3.00
MUS-113	Music Theory I	3.00
MUS-205	Music Literature: History of Jazz	4.00
MUS-206	Music Literature: History of Rock	4.00
MUS-211	Music Theory II	3.00
MUS-212	Music Theory II	3.00
MUS-213	Music Theory II	3.00
PHL-101	Philosophical Problems	4.00
PHL-102	Ethics	4.00

Code	Title	Credits
PHL-103	Critical Reasoning	4.00
PHL-205	Moral Issues	4.00
PHL-210	Philosophy of Religion	4.00
PHL-213	Asian Philosophy	4.00
PHL-216	Ancient Philosophy	4.00
R-101	Judaism and Foundations of Religion	4.00
R-102	Christianity and Islam	4.00
R-103	Asian Religions	4.00
R-204	History of Christianity	4.00
R-210	World Religions	4.00
R-211	History of the Old Testament	4.00
R-212	History of the New Testament	4.00
SPN-201	Second-Year Spanish I	4.00
SPN-202	Second-Year Spanish II	4.00
SPN-203	Second-Year Spanish III	4.00
SSC-237	Perspectives on Democracy and Dialogue	4.00
TA-101	Appreciation of Theatre	4.00
TA-102	Appreciation of Theatre	4.00
TA-103	Appreciation of Theatre	4.00
TA-111	Fundamentals of Technical Theatre	4.00
TA-122	Costuming II	3.00
TA-123	Costuming III	3.00
TA-141	Acting I	4.00
TA-142	Acting II	4.00
TA-143	Acting III	4.00
TA-153	Theatre Rehearsal & Performance	3.00
WR-240	Creative Nonfiction Writing I	4.00
WR-241	Fiction Writing I	4.00
WR-242	Poetry Writing I	4.00
WR-243	Playwriting I	4.00
WR-244	Fiction Writing II	4.00
WR-245	Poetry Writing II	4.00
WR-247	Playwriting II	4.00
WR-248	Bookmaking: Design and Layout	4.00
WR-262	Introduction to Screenwriting	4.00
WR-263	Screenwriting II	4.00
WR-265	Digital Storytelling	4.00
WR-270	Creative Nonfiction Writing II: Food Writing	4.00
WS-101	Introduction to Women's Studies	4.00

Social Science

- 2 courses
- Each course must be at least 3 credits

Social Science Course List

Code	Title	Credits
ANT-101	Physical Anthropology	4.00
ANT-102	Archaeology & Prehistory	4.00
ANT-103	Cultural Anthropology	4.00
ANT-232	Native Americans of North America	4.00
CJA-101	Criminology	4.00
CJA-201	Juvenile Delinquency	4.00

Code	Title	Credits
EC-200	Contemporary Economic Issues	4.00
EC-201	Principles of Economics: Micro	4.00
EC-202	Principles of Economics: Macro	4.00
ES-101	Introduction to Ethnic Studies	4.00
GEO-100	Introduction to Physical Geography	4.00
GEO-110	Cultural & Human Geography	4.00
GEO-130	Introduction to Environmental Geography	4.00
GEO-208	Geography of the United States & Canada	4.00
HST-101	History of Western Civilization	4.00
HST-102	History of Western Civilization	4.00
HST-103	History of Western Civilization	4.00
HST-130	Oddballs and Outcasts in Western Civilization	4.00
HST-131	History of Crime & Punishment in Western Civilization	4.00
HST-132	History of Language and the Written Word in Western Civilization	4.00
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4.00
HST-137	History of Science, Medicine, & Technology in Western Civilization	4.00
HST-138	History of Love, Marriage and the Family In Western Civilization	4.00
HST-201	History of the United States	4.00
HST-202	History of the United States	4.00
HST-203	History of the United States	4.00
HUM-237	Perspectives on Democracy and Dialogue	4.00
PS-200	Introduction to Political Science	4.00
PS-201	American Government and Politics	4.00
PS-203	State and Local Governments	4.00
PS-204	Introduction to Comparative Politics	4.00
PS-205	International Relations	4.00
PS-225	Introduction to Political Ideologies	4.00
PS-297	Introduction to Environmental Politics	4.00
PSY-201Z	Introduction to Psychology I	4.00
PSY-202Z	Introduction to Psychology II	4.00
PSY-215	Introduction to Developmental Psychology	4.00
PSY-219	Introduction to Abnormal Psychology	4.00
PSY-231	Introduction to Human Sexuality	4.00
SOC-204	Introduction to Sociology	4.00
SOC-205	Social Stratification & Social Systems	4.00
SOC-206	Institutions & Social Change	4.00
SOC-210	Marriage, Family, & Intimate Relations	4.00
SOC-225	Social Problems	4.00
SSC-235	Perspectives on Terrorism	4.00
SSC-237	Perspectives on Democracy and Dialogue	4.00
WS-101	Introduction to Women's Studies	4.00

Cultural Literacy

- 1 course

Cultural Literacy Course List

Code	Title	Credits
ANT-102	Archaeology & Prehistory	4.00
ANT-103	Cultural Anthropology	4.00
ANT-232	Native Americans of North America	4.00
ART-204	History of Art/Ancient Through Medieval	4.00
ART-205	History of Art/Romanesque Through Baroque	4.00
ART-206	History of Art/Enlightenment Through Contemporary	4.00
ASL-201	Second-Year American Sign Language I	4.00
ASL-202	Second-Year American Sign Language II	4.00
ASL-203	Second-Year American Sign Language III	4.00
COMM-126	Intro to Communication, Gender, and Sexuality	4.00
COMM-140	Introduction to Intercultural Communication	4.00
COMM-218Z	Interpersonal Communication	4.00
COMM-219	Small Group Discussion	4.00
ENG-107	World Literature: Ancient Through Classical Times	4.00
ENG-108	World Literature: Early Middle Ages through the 18th Century	4.00
ENG-109	World Literature: The 19th through 21st Centuries	4.00
ENG-213	U.S. Latinx Literature	4.00
ENG-240	Native American Mythology	4.00
ENG-241	Norse Mythology	4.00
ENG-243	African Mythology	4.00
ENG-250	Greek Mythology	4.00
ENG-251	Celtic Mythology	4.00
ENG-252	Hindu Mythology	4.00
ENG-261	Literature of Science Fiction	4.00
ENG-271	World Literature: Ancient Through Classical Times	4.00
ENG-272	World Literature: Early Middle Ages through the 18th Century	4.00
ENG-273	World Literature: the 19th Through 21st Centuries	4.00
ENG-295	Revolutionary Film	4.00
FR-201	Second-Year French I	4.00
FR-202	Second-Year French II	4.00
FR-203	Second-Year French III	4.00
GEO-100	Introduction to Physical Geography	4.00
GEO-110	Cultural & Human Geography	4.00
GEO-130	Introduction to Environmental Geography	4.00
GEO-208	Geography of the United States & Canada	4.00
HST-101	History of Western Civilization	4.00
HST-102	History of Western Civilization	4.00
HST-103	History of Western Civilization	4.00
HST-130	Oddballs and Outcasts in Western Civilization	4.00
HST-131	History of Crime & Punishment in Western Civilization	4.00
HST-132	History of Language and the Written Word in Western Civilization	4.00
HST-136	History of Popular Culture, Entertainment & Sports in Western Civilization	4.00
HST-137	History of Science, Medicine, & Technology in Western Civilization	4.00

Code	Title	Credits
HST-138	History of Love, Marriage and the Family In Western Civilization	4.00
HST-201	History of the United States	4.00
HST-202	History of the United States	4.00
HST-203	History of the United States	4.00
HUM-235	Perspectives on Terrorism	4.00
HUM-237	Perspectives on Democracy and Dialogue	4.00
MUS-206	Music Literature: History of Rock	4.00
PHL-101	Philosophical Problems	4.00
PHL-102	Ethics	4.00
PHL-103	Critical Reasoning	4.00
PHL-205	Moral Issues	4.00
PHL-210	Philosophy of Religion	4.00
PHL-213	Asian Philosophy	4.00
PHL-216	Ancient Philosophy	4.00
PS-200	Introduction to Political Science	4.00
PSY-202Z	Introduction to Psychology II	4.00
PSY-219	Introduction to Abnormal Psychology	4.00
PSY-231	Introduction to Human Sexuality	4.00
R-101	Judaism and Foundations of Religion	4.00
R-102	Christianity and Islam	4.00
R-103	Asian Religions	4.00
R-204	History of Christianity	4.00
R-210	World Religions	4.00
R-211	History of the Old Testament	4.00
R-212	History of the New Testament	4.00
SOC-204	Introduction to Sociology	4.00
SOC-205	Social Stratification & Social Systems	4.00
SOC-206	Institutions & Social Change	4.00
SOC-210	Marriage, Family, & Intimate Relations	4.00
SOC-225	Social Problems	4.00
SPN-201	Second-Year Spanish I	4.00
SPN-202	Second-Year Spanish II	4.00
SPN-203	Second-Year Spanish III	4.00
SSC-235	Perspectives on Terrorism	4.00
SSC-237	Perspectives on Democracy and Dialogue	4.00
WR-241	Fiction Writing I	4.00
WR-244	Fiction Writing II	4.00
WS-101	Introduction to Women's Studies	4.00

Other Requirements

Elective Courses

Recommended electives by transferring institution:

- **EOU:** STAT-243Z Elementary Statistics I or an additional **Physics, Math, or Chemistry sequence** (p. 1)
- **OIT:** 4-6 credits social science, 1-3 credits humanities, or 2 credits lower division health biology
- **OSU:** COMM-111Z Public Speaking, 3 credits Fitness, 1 Difference Power and Discrimination course, or an additional **Physics, Math, or Chemistry sequence** (p. 1)

- **PSU:** STAT-243Z Elementary Statistics I or an additional **Physics, Math, or Chemistry sequence** (p. 1)
- **SOU:** STAT-243Z Elementary Statistics I or an additional **Physics, Math, or Chemistry sequence** (p. 1)
- **UO:** WR-122Z Composition II or an additional **Physics, Math, or Chemistry sequence** (p. 1)
- **WOU:** WR-122Z Composition II or an additional **Physics, Math, or Chemistry sequence** (p. 1)
- Any college-level course that would bring total credits to 90 credits
- Other courses numbered 100 or above may be used in this area, which may include up to 12 credits of career technical courses
- Please refer to the **Elective Course List** for courses that may be included

Notes

- All courses must be passed with a C or better
- No course may be used to satisfy more than one requirement or distribution area