BIOLOGY - ASSOCIATE OF SCIENCE TRANSFER (AST)

Description

The Associate of Science Transfer degree in Biology is designed for students who plan to transfer to a four-year university to complete a Bachelor's of Science (B.S.) degree with a major in Biology. The degree meets lower-division general education requirements for transfer to an Oregon public institution, and students who successfully complete the courses and program GPA requirements will transfer in with junior standing in the major. Admission to an Oregon public institution is not guaranteed. The AST in Biology may be the best degree option for students who know they want to pursue a B.S. in Biology, Zoology, Marine Biology, Microbiology, or Plant Science leading potentially to post-baccalaureate graduate-level programs in research, human or veterinary medicine, or dentistry.

This degree is part of a statewide Major Transfer Map (MTM) agreement that identifies the community college courses needed to transfer to any Oregon public university as a junior seeking a Bachelor of Science in Biology.

Program Learning Outcomes

Upon successful completion of the degree, students will be able to:

1. Use scientific processes to gather data and draw evidence-based conclusions.
2. Solve problems using scientific information.
3. Communicate scientific information in written and graphical formats.
4. Examine the influence of scientific knowledge on human society and the environment.

ENTRANCE REQUIREMENTS

While this degree has no formal entrace requirements, individual courses may have prerequisites which must be met before enrollment.

Course Requirements

Course	Title	Credits
Core Transfer Requirements		
Cultural Literacy:		
One course from the following categories must be designated as cultural literacy on the Discipline Studies list (credits count once).		
Arts and Letters:		
Choose two courses		6-8
Mathematics:		
MTH 111Z	Precalculus I: Functions [1]	4
Social Science:		
Choose two courses		6-8
Science/Math/Computer Science: [2]		
BI 221Z	Principles of Biology: Cells	5
BI 222Z	Principles of Biology: Organisms	5
Writing:		
WR 121Z	Composition I	4
Additional Major Transfer Map Courses		
BI 223Z	Principles of Biology: Ecology and Evolution [2]	5
CH 221Z & CH 227Z	General Chemistry I and General Chemistry I Laboratory	5
CH 222Z & CH 228Z	General Chemistry II and General Chemistry II Laboratory	5
CH 223Z & CH 229Z	General Chemistry III and General Chemistry III Laboratory	5
MTH 112Z	Precalculus II: Trigonometry [3]	4
Pick two sequences: [4, 5]		23-30
Sequence 1		
PH 201 & PH 202 & PH 203	General Physics I and General Physics II and General Physics III	
or PH 211 & PH 212 & PH 213	General Physics I and General Physics II and General Physics III	
Sequence 2		
MTH 251Z & MTH 252Z	Differential Calculus and Integral Calculus	
Sequence 3		
CH 241 & CH 242 & CH 243	Organic Chemistry I and Organic Chemistry II and Organic Chemistry III	
WR 122Z	Composition II [6]	4
or WR 227Z	Technical Writing	
Electives:		**9**
Choose any course numbered 100 or above that brings the total credits to 90 quarter hours. [7]		
This may include up to 12 credits of career and technical education (CTE) courses designated by COCC as acceptable.		
Total Credits		**90-101**

1. Students who test out of MTH 111Z Precalculus I: Functions should take MTH 112Z Precalculus II: Trigonometry.
2. Principles of Biology Sequence should be started in Fall term with BI 223Z Principles of Biology: Ecology and Evolution, alternatively students may start in Winter Term with BI 221Z Principles of Biology: Cells.
3. Students who test out of MTH 112Z Precalculus II: Trigonometry may substitute a recommended elective.
4. **EOU:** Required to take MTH 241 Calculus for Management/Social Science instead of MTH 251Z and MTH 252Z. MTH 251Z may serve as a substitute for MTH 241 Calculus for Management/Social Science.
   OSU: are strongly recommended to take the Organic Chemistry sequence.
   PSU: May substitute STAT 243Z Elementary Statistics I and MTH 244 Introduction to Probability and Statistics 2 for MTH 251Z and MTH 252Z.
5. Students considering pre-medical, pre-dental, and pre-pharmacy programs should consider Organic Chemistry sequence. Courses in sequence must be taken at the same institution.
6. **OSU:** accepts either but recommends WR 227Z Technical Writing.
   WOU/ UO: accepts either, but recommends WR 122Z Composition II.
7. Recommended electives include:
   EOU/ SOU/ PSU: STAT 243Z Elementary Statistics I. Pick a third sequence from physics, math or chemistry.

OIT: 4-6 credits social science. 1-3 credits humanities. 2 credits lower division health biology.
OSU: COMM 111Z Public Speaking. 3 credits fitness. Pick a third sequence from physics, math or chemistry series.
UO/ WOU: WR 122Z Composition II. Pick a third sequence from physics, math or chemistry.

Performance Standards

- Academic Requirements:
  - Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.
  - All courses in the program must be completed with a grade of C or higher.

Advising notes

- Oregon public universities with majors in Biology include: Eastern Oregon University (EOU), Oregon Institute of Technology (OIT), Oregon State University (OSU), Portland State University (PSU), Southern Oregon University (SOU), University of Oregon (UO), Western Oregon University (WOU).
- Students planning to attend SOU, PSU, or WOU may take statistics STAT 243Z instead of Calculus, consult your advisor for best math option for your path.
- Check with advisor and transfer institution prior to choosing either Organic Chemistry (CH 241, CH 242, CH 243 or Physics (PH 201, PH 202, PH 203 or PH 211, PH 212, PH 213)
- If intending to transfer to OSU choose WR 227Z Technical Writing in Foundational Requirements

Sample Plan

First Year		
First Term		**Credits**
MTH 111Z	Precalculus I: Functions [1]	4
	Credits	**4**
Second Term		
CH 221Z & CH 227Z	General Chemistry I and General Chemistry I Laboratory	5
Elective: [7]		3
MTH 112Z	Precalculus II: Trigonometry [3]	4
WR 121Z	Composition I	4
	Credits	**16**
Third Term		
CH 222Z & CH 228Z	General Chemistry II and General Chemistry II Laboratory	5
Elective: [7]		3
Physics/Math/Chemistry (consider MTH 251Z) [3,4]		4
WR 122Z or WR 227Z	Composition II [6] or Technical Writing	4
	Credits	**16**
Fourth Term		
CH 223Z & CH 229Z	General Chemistry III and General Chemistry III Laboratory	5
Elective: [7]		3
Physics/Math/Chemistry (consider MTH 252Z) [3,4]		4
Social Science:		3-4
	Credits	**15-16**
Second Year		
First Term		
Arts and Letters:		3-4
BI 223Z	Principles of Biology: Ecology and Evolution [2]	5
Physics/Math/Chemistry (consider CH 241 or PH 201) [4,5]		5
	Credits	**13-14**
Second Term		
Arts and Letters:		3-4
BI 221Z	Principles of Biology: Cells [2]	5
Physics/Math/Chemistry (consider CH 242 or PH 202 or PH 211) [4,5]		5
	Credits	**13-14**
Third Term		
BI 222Z	Principles of Biology: Organisms [2]	5
Physics/Math/Chemistry (consider CH 243 or PH 203 or PH 212) [4,5]		5
Social Science:		3-4
	Credits	**13-14**
Fourth Term		
Physics/Math/Chemistry (consider PH 213) [8]		5
	Credits	**5**
	Total Credits	**95-99**

1. Students who did not complete Precalculus I in high school should take MTH 111Z Precalculus I: Functions summer term prior to starting the General Chemistry sequence. Students who test out of MTH 111Z Precalculus I: Functions can wait to take MTH 112Z Precalculus II: Trigonometry in their first full term at COCC and may substitute a recommended elective during their program, refer to footnote 7.
2. Principles of Biology Sequence should be started in Fall term with BI 223Z Principles of Biology: Ecology and Evolution, alternatively students may start in Winter Term with BI 221Z Principles of Biology: Cells.
3. Students who test out of MTH 112Z Precalculus II: Trigonometry may substitute a recommended elective, refer to footnote 5.
4. **EOU:** Required to take MTH 241 Calculus for Management/Social Science instead of MTH 251Z and MTH 252Z. MTH 251Z may serve as a substitute for MTH 241 Calculus for Management/Social Science.
   OSU: are strongly recommended to take the Organic Chemistry sequence.
   PSU: May substitute STAT 243Z Elementary Statistics I and MTH 244 Introduction to Probability and Statistics 2 for MTH 251Z and MTH 252Z.
5. Students considering pre-medical, pre-dental, and pre-pharmacy programs should consider Organic Chemistry sequence. Courses in sequence must be taken at the same institution.
6. **OSU:** accepts either but recommends WR 227Z Technical Writing.
   WOU/ UO: accepts either, but recommends WR 122Z Composition II.
7. Recommended electives include:
   EOU/ SOU/ PSU: STAT 243Z Elementary Statistics I. Pick a third sequence from physics, math or chemistry.
   OIT: 4-6 credits social science. 1-3 credits humanities. 2 credits lower division health biology.

OSU: COMM 111Z Public Speaking. 3 credits fitness. Pick a third sequence from physics, math or chemistry series.
UO/ WOU: WR 122Z Composition II. Pick a third sequence from physics, math or chemistry.

[8] Third year PH 213 General Physics III only required if students choose calculus based physics starting in term 2 of year two.