

ECOLOGY EMPHASIS (WITH A 3+2 MASTER OF SCIENCE IN ECOLOGY)

The Ecology emphasis allows students to complete the B.S. in Biology and the Master of Science in Ecology (Ecology MS) at Western in five years. To remain qualified for the 3+2, after 67 credits each student must have:

- maintained a 3.0 cumulative GPA and a 3.25 GPA within the major;
- completed BIOL 150, BIOL 151, BIOL 301, and MATH 213
- fulfilled the 3-credit Internship or employment requirement with a B or above and positive letter from the project sponsor;
- provided three letters of recommendation, at least one of which is to be a professional reference and at least one of which is to be an academic reference from the student's major at Western;
- confirmed acceptance by an Ecology MS faculty advisor;
- written a Statement of Purpose to the Ecology MS program, detailing early career ambitions and ideas/connections for the eventual Master's Project.

At this point, if any aspect of a student's performance is found to be insufficient, the Ecology MS Coordinator will recommend denial of acceptance to the Graduate Studies Dean and the Clark Family School of ENVIS Dean, in which case the student will need to find a new emphasis or minor in order to complete the undergraduate degree. In addition to meeting the requirements above, after Junior Year (holding to the same GPA standards as outlined above) and completion of BIOL nucleus plus one systems and application course and one organismal course in the requirements (94 credits in this plan—see "Degree Plan" tab), if the student is accepted by a faculty advisor into the program, the School of Graduate Studies will designate the student as an "Ecology MS candidate with provisional acceptance." At this point the student must also declare their MS emphasis. Upon completion of the final 26 to 28 credits of the Western B.S. after Year Four of this plan, the School of Graduate Studies may designate the student as an "Ecology MS degree seeking student." After Year Four, students who have completed all other requirements of the 3+2 program and all Western undergraduate requirements (120 total credits, 40 upper-division credits, general education requirements, the BIOL undergraduate courses listed under the Ecology emphasis, and the 18 credits of Ecology MS emphasis courses that come from the MS in Year 4), yet choose to leave the Ecology MS program before Year 5, will still have completed the BIOL undergraduate emphasis in Ecology and have earned the 120 credits necessary for a Western undergraduate degree.

The Ecology Emphasis requires a minimum of 78 credits, including the 26-credit Biology Nucleus, a minimum of 16 additional credits in Biology, 18 credits of supporting courses, and 18 credits of Ecology MS coursework. In the fifth year, a minimum of 21 additional credits of Ecology MS coursework results in the MS in Ecology degree.

All Biology majors require the 26-credit Biology Nucleus.

Code	Title	Credits
Biology Nucleus		
BIOL 150	Biological Principles (with laboratory) (GT-SC1)	4
BIOL 151	Diversity and Patterns of Life (with laboratory)	4
BIOL 301	GENERAL ECOLOGY	3
BIOL 310	Cell Biology	3
BIOL 312	Genetics (with recitation)	4
CHEM 111	General Chemistry I (GT-SC2)	3
CHEM 112	General Chemistry Laboratory I (GT-SC1)	1
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Laboratory II	1
Total Credits		26

Code	Title	Credits
Required Biology Courses		
BIOL 302	Ecology Laboratory and Recitation	2
At least 6 credits in two or more of the following systems and applications courses:		6
BIOL 362	EVOLUTION	
BIOL 430	Wildlife Ecology and Management (with laboratory)	
BIOL 431	Wildlife Techniques Workshop	
BIOL 440	Conservation Biology	
BIOL 476	Aquatic Ecology (with laboratory)	
BIOL 477	Plant Ecology (with laboratory)	
BIOL 481	Forest Ecology (with laboratory)	
Select two of the following organismal courses:		6-8
BIOL 320	Ornithology (with laboratory and recitation)	
BIOL 322	Mammalogy (with laboratory and recitation)	
BIOL 327	Field Entomology (with laboratory)	
BIOL 352	Botany (with laboratory)	
BIOL 353	Rocky Mountain Flora	
BIOL 467	Biology of Fishes	
Select at least two credits of Capstone Experience courses:		2
BIOL 495	Senior Seminar	
BIOL 496	Senior Thesis	
Total Credits		16-18

Code	Title	Credits
Minimum supporting courses		
CHEM 231	Introduction to Organic Chemistry and Biochemistry	3
CHEM 234	Introductory Organic and Biochemistry Laboratory	1
GEOL 101	Physical Geology (GT-SC2)	3
GEOL 105	Physical Geology Laboratory (GT-SC1)	1
MATH 213	Probability and Statistics (GT-MA1)	3
PHYS 140	Introductory Physics (with laboratory) (GT-SC1)	4
At least three credits of Internship courses		3
SCI 499	Internship in Science	
Total Credits		18

Code	Title	Credits
Core Ecology MS courses, to be taken in Year 4 of 3+2 (Year 1 of MS):		

2 Ecology Emphasis (with a 3+2 Master of Science in Ecology)

BIOL 606	Ecological Research Methods	3
BIOL 613	Advanced Ecological Analysis	3
BIOL 690	Ecology MS Proposal Development	3

One or more of the following to be taken in Fall Year 4 of 3+2 (Fall 1 of MS):

Biology Elective (620 or above, excluding 690, 695, 696)		
ENVS 608	ENVIRONMENTL POLITICS & POLICY	
ENVS 611	Integrative Skills for Environmental Management	
ENVS 623	Studies in Environmental Management	
ENVS 625	Studies in Integrative and Public Land Management	

One or more of the following to be taken in Spring Year 4 of 3+2 (Spring 1 of MS):

Biology Elective (620 or above, excluding 690, 695, 696)		
ENVS 615	From Climate Science to Action	
ENVS 618	PUBLIC LANDS MANAGEMENT	
ENVS 623	Studies in Environmental Management	
ENVS 625	Studies in Integrative and Public Land Management	

Total Credits 15-17

Upon successful completion of the prescribed courses listed above, University defined General Education, and elective requirements totaling 120 credits (with 40 at the 300-level or higher), students are eligible for their B.A. (ENVS) or B.S. (BIOL) conferral. Students electing to complete the M.S. in Ecology must follow the balance of their declared emphasis curriculum.

Upon the acceptance of MS proposals (BIOL 690), MS candidates must be continuously enrolled for at least 1 credit of BIOL 695 or 696 until successful thesis defense.

For a full description of the required Graduate coursework, please see the appropriate MS program in the Western Graduate Catalog (<https://catalog.western.edu/graduate/programs/ecology/>).

Code	Title	Credits
21 credits of the following:		
Biology elective (620 or above, excluding 690, 695, 696)		3-4
ENVS 608	ENVIRONMENTL POLITICS & POLICY	3
ENVS 611	Integrative Skills for Environmental Management	3
ENVS 615	From Climate Science to Action	3
ENVS 618	PUBLIC LANDS MANAGEMENT	3
ENVS 623	Studies in Environmental Management	1-6
ENVS 625	Studies in Integrative and Public Land Management	3
Including at least 6 credits of the following:		6
BIOL 695	Ecology/ Conservation Thesis Research	
BIOL 696	Fisheries/ Wildlife Thesis Research	

Total Credits 25-31

Capstone Course Requirement

The following courses in the Biology Major fulfill the capstone course requirement: BIOL 495 (<https://western-preview.courseleaf.com/search/?P=BIOL%20495>) SENIOR SEMINAR, BIOL 496, or EDUC 409 (<https://western-preview.courseleaf.com/search/?P=EDUC%20409>) SECONDARY STUDENT TEACHING.

Course	Title	Credits
Year One		
Fall		
BIOL 150	Biological Principles (with laboratory) (GT-SC1)	4
General Education courses		3
ENG 102	Writing and Rhetoric I (GT-CO1)	3
CHEM 111	General Chemistry I (GT-SC2)	3
CHEM 112	General Chemistry Laboratory I (GT-SC1)	1
HWTR 100	First Year Seminar	1
Credits		15
Spring		
BIOL 151	Diversity and Patterns of Life (with laboratory)	4
MATH 141	Precalculus (GT-MA1)	4
General Education courses (Area I)		3
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Laboratory II	1
ENG 103	Writing and Rhetoric II (GT-CO2)	3
Credits		18
Year Two		
Fall		
BIOL 301	GENERAL ECOLOGY	3
BIOL 302	Ecology Laboratory and Recitation	2
CHEM 231	Introduction to Organic Chemistry and Biochemistry	3
CHEM 234	Introductory Organic and Biochemistry Laboratory	1
GEOL 101	Physical Geology (GT-SC2)	3
GEOL 105	Physical Geology Laboratory (GT-SC1)	1
General Education courses (Area I)		3
Credits		16
Spring		
PHYS 140	Introductory Physics (with laboratory) (GT-SC1)	4
MATH 213	Probability and Statistics (GT-MA1)	3
General Education courses		6
Elective		3
Credits		16
Year Three		
Fall		
BIOL 310	Cell Biology	3
Biology Elective (Organismal or Systems Biology Elective)		4
General Education courses		3
Elective or Biology Elective (Organismal or Systems Biology Elective)		3
Credits		13
Spring		
BIOL 312	Genetics (with recitation)	4
Biology Elective (Organismal or Systems Biology Elective)		4
General Education		3
Elective or Biology Elective (Organismal or Systems Biology Elective)		3
Credits		14
Year Four		
Fall		
BIOL 606	Ecological Research Methods	3
Two of the following:		6-7
BIOL 620-689 (Graduate Electives in Ecology)		
OR		
ENVS 608	ENVIRONMENTL POLITICS & POLICY	3
or		
ENVS 611	Integrative Skills for Environmental Management	3
or		
ENVS 623	Studies in Environmental Management	3
or		

ENVS 625	Studies in Integrative and Public Land Management	3
AND:		
BIOL 495	Senior Seminar	1
Other General Education courses		0-3
Biology Elective (Organismal or Systems Biology Elective)		3
Credits		25-29
Spring		
BIOL 613	Advanced Ecological Analysis	3
Two of the following:		6-7
BIOL 620-689 (Graduate electives in Ecology)		
OR		
ENVS 615	From Climate Science to Action	3
or		
ENVS 618	PUBLIC LANDS MANAGEMENT	3
or		
ENVS 623	Studies in Environmental Management	1-6
or		
ENVS 625	Studies in Integrative and Public Land Management	3
AND:		
BIOL 690	Ecology MS Proposal Development	3
BIOL 495	Senior Seminar	1
Other General Education courses		0-3
Credits		23-32
Summer		
BIOL 695 or BIOL 696	Ecology/ Conservation Thesis Research or Fisheries/ Wildlife Thesis Research	3
Credits		3
Year Five		
Fall		
Nine credits of the following:		9
BIOL 695	Ecology/ Conservation Thesis Research	1-9
BIOL 696	Fisheries/ Wildlife Thesis Research	1-9
BIOL 600 or above (Graduate electives in Ecology)		
ENVS 623	Studies in Environmental Management	1-6
ENVS 625	Studies in Integrative and Public Land Management	3
Credits		15-36
Spring		
Nine credits of the following:		9
BIOL 695	Ecology/ Conservation Thesis Research	1-9
BIOL 696	Fisheries/ Wildlife Thesis Research	1-9
BIOL 600 or above (Graduate electives in Ecology)		
ENVS 623	Studies in Environmental Management	1-6
ENVS 625	Studies in Integrative and Public Land Management	3
Credits		15-36
Total Credits		173-228