

MAJOR IN FISH, WILDLIFE, AND CONSERVATION BIOLOGY, FISHERIES AND AQUATIC SCIENCES CONCENTRATION

The Fisheries and Aquatic Sciences concentration allows students to develop a strong background in basic fishery ecology, management, and conservation, which includes knowledge of the ecosystems that support aquatic species and an understanding of the linkages between land and water.

Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 80 hours of paid or non-paid employment related to fishery and aquatic biology.

Requirements Effective Fall 2024

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting these requirements.

Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 80 clock hours in an internship experience related to fishery and aquatic biology.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	3A	3
FW 179	New-to-the-Major Seminar		1
Select one group from the following:			8
Group A:			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Group B:			
LIFE 102 ¹	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103 ¹	Biology of Organisms-Animals and Plants (GT-SC1)	3A	
Select one group of chemistry and physics courses from the following:			13-15
Group A:			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
CHEM 113	General Chemistry II		
CHEM 114	General Chemistry Lab II		
PH 110	Physics of Everyday Phenomena (GT-SC2)	3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)	3A	
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3

Total Credits

31-33

Sophomore

FW 204	Introduction to Fishery Biology		3
FW 260	Principles of Wildlife Management		3
LIFE 320	Ecology		3
STAT 301 or 307	Introduction to Applied Statistical Methods Introduction to Biostatistics		3
Select one course from the following:			3-4
BZ 220	Introduction to Evolution		

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BZ 350	Molecular and General Genetics		
SOCR 330	Principles of Genetics		
Select one course from the following:			3
HONR 499 ²	Senior Honors Thesis		
SPCM 200 ²	Public Speaking		
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)			3C 3
Total Credits			25-26
Summer			
NR 220	Natural Resource Ecology and Measurements		5
Total Credits			5
Junior			
FW 300	Biology and Diversity of Fishes		2
FW 301	Ichthyology Laboratory		1
FW 370	Design of Fish and Wildlife Projects	4A,4B	3
FW 487 ³	Internship		1
Select one group from the following:			4-7
Group A:			
BSPM 302	Applied and General Entomology		
BSPM 303A	Entomology Laboratory: General		
Group B:			
BZ 212	Animal Biology-Invertebrates		
NR 312	Applied Insect Ecology		
Select one course from the following:			3-4
BZ 214	Animal Biology-Vertebrates		
BZ 329	Herpetology		
BZ 330	Mammalogy		
BZ 335	Ornithology		
Select one Plant Biology course from the following:			3-4
BZ 223	Plant Identification		
BZ 325	Plant Systematics		
BZ 450	Plant Ecology		
F 311	Forest Ecology		
RS 300	Rangeland Conservation and Stewardship		
RS 313/F 313	Dendrology and Herbaceous Plant ID		
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301A	Writing in the Disciplines: Arts and Humanities (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
CO 301C	Writing in the Disciplines: Social Sciences (GT-CO3)	2	
CO 301D	Writing in the Disciplines: Education (GT-CO3)	2	
JTC 300	Strategic Writing and Communication (GT-CO3)	2	
Select four credits from the following: ⁴			4
FW 325	Spatial Ecology--Applications with R		
GEOL 120	Geology and Society (GT-SC2)	3A	
GEOL 121	Experiential Geoscience Laboratory (GT-SC1)	3A	
GEOL 122	Geoscience--Climate and Environmental Change (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	

GEOL 150	Physical Geology for Scientists and Engineers	3A	
GR 204/WR 204	Sustainable Watersheds (GT-SC2)	3A	
NR 319	Introduction to Geospatial Science		
SOCR 240	Introductory Soil Science		
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Total Credits			27-32
Senior			
FW 401	Fishery Science	4C	3
Select one group not taken elsewhere from the following:			3-4
Group A:			
BZ 471	Stream Biology and Ecology		
BZ 472	Stream Biology and Ecology Laboratory		
Group B:			
ESS 474	Limnology		
Group C:			
FW 430	Waterfowl Ecology and Management		
Group D:			
FW 568/BZ 568	Sustaining River Ecosystems in Changing World		
Group E:			
NR 370	Coastal Environmental Ecology		
Select two courses from the following:			6-7
FW 400 ¹	Conservation of Fish in Aquatic Ecosystems		
FW 402	Fish Culture		
FW 405	Fish Physiology		
Select one Human Dimensions course not taken elsewhere from the following:			3
FW 310	Mapping Diverse Perspectives in Conservation		
FW 472	Issues in Animal Conservation and Management		
HIST 355 ⁵	American Environmental History		
NR 320	Natural Resources History and Policy		
NR 400	Public Communication in Natural Resources		
NRRT 320	International Issues-Recreation and Tourism		
NRRT 330	Social Aspects of Natural Resource Management		
NRRT 400 ⁵	Environmental Governance		
NRRT 440 ⁵	Applications in Environmental Communication		
PHIL 320	Ethics of Sustainability		
PHIL 345	Environmental Ethics		
POLS 361	U.S. Environmental Politics and Policy		
SOC 320	Population-Natural Resources and Environment		
SOC 322	Environmental Justice		
SOC 460	Environmental and Natural Resource Sociology		
SOC 461	Water and Social Justice		
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	6
Guided Electives ⁶			3
Electives ⁷			0-3
Total Credits			24-28
Program Total Credits:			120

¹ Students taking this biology selection should choose a botany-related course in the department elective options to meet botany/plant course

requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.
² Students in the Honors Track 1 program must take HONR 499.

- ³ Take 1 credit of FW 487 during the semester in which you are completing the 80 h work experience requirement.
- ⁴ Students selecting GR 204/WR 204 only need select three credits. Students selecting one of the geosciences lecture courses (GEOL 120, GEOL 122, GEOL 124) also need to take GEOL 121.
- ⁵ Students will need to obtain a registration override from the appropriate department to take this course.
- ⁶ Guided Electives are courses intended to expand a student's depth and breadth in wildlife biology and include any 300- or 400-level regular course with a BC, BMS, BSPM, BZ, CHEM, ESS, F, FW, GES, MATH, MIP, NR, NRRT, PH, RS, SOCR, STAT, or WR subject code (excluding courses ending in -80 to -99); CHEM 245; CHEM 246; SOCR 240; other courses with prior approval by department and advisor. Courses may not double-count as Guided Electives and for other requirements in the major.
- ⁷ Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Sciences concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical/ statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU's Mountain Campus. Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/CHEM 108 and PH 121/PH 122 OR (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/PH 111. Students must also choose ONE biology group A) BZ 110/BZ 111/BZ 120 or B) LIFE 102/LIFE 103. Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 80 clock hours in an internship experience related to fishery and aquatic biology. Students must sign up for 1 credit of FW 487 during the semester in which they are completing their internship or work experience requirement.

Major Completion Map

Distinctive Requirements for Degree Program: The curriculum for the Fish, Wildlife and Conservation Biology major – Fisheries and Aquatic

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
FW 104	Wildlife Ecology and Conservation (GT-SC2)	X		3A	3
FW 179	New-to-the-Major Seminar	X			1
Select one group from the following:		X			4
Group A:					
BZ 110	Principles of Animal Biology (GT-SC2)			3A	
BZ 111	Animal Biology Laboratory (GT-SC1)			3A	
Group B:					
LIFE 102	Attributes of Living Systems (GT-SC1)			3A	
Select one group from the following:		X			5
Group A:					
PH 121	General Physics I (GT-SC1)			3A	
Group B:					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
Total Credits					16
Semester 2		Critical	Recommended	AUCC	Credits
Select one course from the following:		X			4
BZ 120	Principles of Plant Biology (GT-SC1)			3A	
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)			3A	
Select one group from the following:		X			8-10
Group A:					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
PH 122	General Physics II (GT-SC1)			3A	
Group B:					
CHEM 113	General Chemistry II				
CHEM 114	General Chemistry Lab II				
PH 110	Physics of Everyday Phenomena (GT-SC2)			3A	
PH 111	Physics of Everyday Phenomena Laboratory (GT-SC1)			3A	

Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)	X	1C	3
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Total Credits			15-17
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Sophomore

Semester 3	Critical	Recommended	AUCC	Credits
FW 204 Introduction to Fishery Biology	X			3
Select one course from the following:	X			3-4
BZ 220 Introduction to Evolution				
BZ 350 Molecular and General Genetics				
SOCR 330 Principles of Genetics				
Select one course from the following:	X			4
MATH 155 Calculus for Biological Scientists I (GT-MA1)			1B	
MATH 160 Calculus for Physical Scientists I (GT-MA1)			1B	
Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		X	3C	3

Total Credits			13-14
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Semester 4	Critical	Recommended	AUCC	Credits
FW 260 Principles of Wildlife Management	X			3
LIFE 320 Ecology	X			3
Select one course from the following:	X			3
HONR 499 Senior Honors Thesis				
SPCM 200 Public Speaking				
Select one course from the following:	X			3
STAT 301 Introduction to Applied Statistical Methods				
STAT 307 Introduction to Biostatistics				

Total Credits			12
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Semester 5	Critical	Recommended	AUCC	Credits
NR 220 Natural Resource Ecology and Measurements	X			5

Total Credits			5
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Junior

Semester 6	Critical	Recommended	AUCC	Credits
FW 487 Internship	X			1
Select four credits from the following:	X			4
FW 325 Spatial Ecology--Applications with R				
GEOL 120 Geology and Society (GT-SC2)			3A	
GEOL 121 Experiential Geoscience Laboratory (GT-SC1)			3A	
GEOL 122 Geoscience--Climate and Environmental Change (GT-SC2)			3A	
GEOL 124 Geology of Natural Resources (GT-SC2)			3A	
GEOL 150 Physical Geology for Scientists and Engineers			3A	
GR 204/ WR 204 Sustainable Watersheds (GT-SC2)			3A	
NR 319 Introduction to Geospatial Science				
SOCR 240 Introductory Soil Science				
Select one course from the following:	X			3
CO 300 Writing Arguments (GT-CO3)			2	
CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)			2	
CO 301B Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)			2	
CO 301D Writing in the Disciplines: Education (GT-CO3)			2	
JTC 300 Strategic Writing and Communication (GT-CO3)			2	
Select one group from the following:	X			4-7
Group A:				

BSPM 302	Applied and General Entomology	
BSPM 303A	Entomology Laboratory: General	
Group B:		
BZ 212	Animal Biology-Invertebrates	
NR 312	Applied Insect Ecology	
STAT 301 or STAT 307, FW 260, and LIFE 320 must be completed by the end of Semester 6.		X

Total Credits					12-15
Semester 7		Critical	Recommended	AUCC	Credits
FW 300 (Spring only)	Biology and Diversity of Fishes	X			2
FW 301	Ichthyology Laboratory	X			1
FW 370	Design of Fish and Wildlife Projects	X		4A,4B	3
Select one course from the following:		X			3-4
BZ 214	Animal Biology-Vertebrates				
BZ 329	Herpetology				
BZ 330	Mammalogy				
BZ 335	Ornithology				
Select one Plant Biology course from the following:		X			3-4
BZ 223	Plant Identification				
BZ 325	Plant Systematics				
BZ 450	Plant Ecology				
F 311	Forest Ecology				
RS 300	Rangeland Conservation and Stewardship				
RS 313/F 313	Dendrology and Herbaceous Plant ID				
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)			X	3D	3

Total Credits					15-17
Senior					
Semester 8		Critical	Recommended	AUCC	Credits
FW 401 (Fall only)	Fishery Science	X		4C	3
Select one group from the following:		X			3-4
Group A:					
BZ 471	Stream Biology and Ecology				
BZ 472	Stream Biology and Ecology Laboratory				
Group B:					
ESS 474	Limnology				
Group C:					
FW 430	Waterfowl Ecology and Management				
Group D:					
FW 568/ BZ 568	Sustaining River Ecosystems in Changing World				
Group E:					
NR 370	Coastal Environmental Ecology				
Select one course from the following:		X			3-4
FW 400	Conservation of Fish in Aquatic Ecosystems				
FW 402	Fish Culture				
(Spring only)					
FW 405	Fish Physiology				
(Spring of odd years only)					

Human Dimensions Elective (See Department List on Concentration Requirements tab)	X			3
BSPM 302 /BSPM 303A, or BZ 212 / NR 312 must be completed by the end of Semester 8.	X			

Total Credits				12-14
Semester 9	Critical	Recommended	AUCC	Credits
Select one course from the following:	X			3-4
FW 400 (Fall only) Conservation of Fish in Aquatic Ecosystems				
FW 402 Fish Culture				
FW 405 (Odd years only) Fish Physiology				
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		X	3B	6
Guided Elective (See Department List on Concentration Requirements tab.)	X			3
Electives		X		0-3
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.	X			
Total Credits				12-16
Program Total Credits:				120