

ZOOLOGY UNDERGRADUATE MAJOR (BS, HBS)

Also available via Ecampus.

Administered by the Department of Integrative Biology under the School of Life Sciences.

The Zoology major offers scientific training in the diversity, organismal biology, ecology, and evolution of animals. The major core provides a solid foundation in the biological sciences while electives allow students to cater course work to meet specific interests in animal biology. Undergraduate research, internship, teaching and study abroad experience are strongly recommended, and credits can be integrated with major requirements.

Zoology majors enter such varied fields as animal care and husbandry, curatorial and museum management, laboratory animal research, field biology and conservation, and environmental management and policy. The Zoology major is not suitable for pre-veterinary medicine students as it does not include the required prerequisite course work (see the option in Pre-Veterinary Medicine in the Biology major).

Major Code: 620

- Explain and apply the fundamental concepts of the zoological sciences including these four disciplinary areas: Animal diversity; Ecology and Evolution; Organismal Biology; and, Cell Biology and Genetics.
- Explain and apply the fundamental concepts of animal diversity.
- Explain and apply the fundamental concepts of ecology and evolution.
- Explain and apply the fundamental concepts of organismal biology
- Explain and apply the fundamental concepts of cell biology and genetics.
- Apply the process of science.
- Apply the process of science through accessing primary literature, identifying relevant works for a particular topic, and evaluating the scientific content of these works.
- Apply the process of science through formulating testable hypotheses based on observation, gathering data to address these hypotheses and analyzing those data to assess the degree to which their hypothesis is supported. Employing fundamental quantitative and statistical principles to present and critique scientific findings.
- Communicate scientific information through effective formal and informal writing and speaking in a format used by practicing scientists.
- Integrate and analyze information across levels of organization ranging from cells to ecosystems within the zoological sciences to formulate arguments and critically evaluate scientific claims.
- Conduct background research and apply fundamental zoological science principles to make informed decisions on socio-scientific issues.

Students in the Biology major must complete BI 221 or BI 221H, BI 222 or BI 222H, and BI 223 or BI 223H with a C– or better to continue on to upper-division Biology (BI) and Zoology (Z) coursework. Students must also complete their General Chemistry series and CH 331 with a C– in each term to move on to other Chemistry (CH) coursework.

Students majoring in Biology, BioHealth Sciences, Fisheries and Wildlife Sciences, or Zoology cannot seek a dual or double major in any combination of these four majors. Zoology majors cannot seek the Biology minor.

For further information, see MyDegrees or the Integrative Biology (<http://ib.oregonstate.edu>) website.

Code	Title	Credits
Zoology Core Courses		
BI 198	PROFESSIONAL DEVELOPMENT I: BIOLOGY AND ZOOLOGY	1
BI 298	PROFESSIONAL DEVELOPMENT FOR BIOLOGISTS II	1
<i>Baccalaureate Core Communications Course</i>		
COMM 111	*PUBLIC SPEAKING	3
<i>Baccalaureate Core Writing II Course</i>		
WR 327	*TECHNICAL WRITING	3
or WR 362	*SCIENCE WRITING	
<i>Quantitative and Physical Sciences Core</i>		
Select one of the following MTH series:		8
MTH 251 & MTH 252	*DIFFERENTIAL CALCULUS and INTEGRAL CALCULUS	
MTH 227 & MTH 228	*CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I and CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES II	
Select one of the following CH series:		15
Series 1		
CH 231 & CH 261	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 231	
CH 232 & CH 262	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 232	
CH 233 & CH 263	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 233	
Series 2		
CH 121 & CH 122 & CH 123	GENERAL CHEMISTRY and *GENERAL CHEMISTRY and *GENERAL CHEMISTRY	
CH 331 & CH 332	ORGANIC CHEMISTRY and ORGANIC CHEMISTRY	8
CH 337 or CH 390	ORGANIC CHEMISTRY LABORATORY ENVIRONMENTAL CHEMISTRY	3-4
ST 351 & ST 352	INTRODUCTION TO STATISTICAL METHODS and INTRODUCTION TO STATISTICAL METHODS	8
<i>Biological Sciences Core</i>		
Select one of the following series:		12
Series 1 (Corvallis students)		
BI 221 & BI 222 & BI 223	*PRINCIPLES OF BIOLOGY: CELLS and *PRINCIPLES OF BIOLOGY: ORGANISMS and *PRINCIPLES OF BIOLOGY: POPULATIONS	
Series 2 (Ecampus students)		
BI 204 & BI 205 & BI 206	*INTRODUCTORY BIOLOGY I and *INTRODUCTORY BIOLOGY II and *INTRODUCTORY BIOLOGY III	
BI 370	ECOLOGY	3
BI 311	GENETICS	4
BB 314	CELL AND MOLECULAR BIOLOGY	4
Z 361 & Z 362 or Z 364 or Z 461 or BI 450	INVERTEBRATE BIOLOGY and INVERTEBRATE BIOLOGY LABORATORY ⁺ DIVERSITY OF LIFE: INVERTEBRATES MARINE AND ESTUARINE INVERTEBRATE ZOOLOGY *MARINE BIOLOGY AND ECOLOGY	4-15
Z 371 & Z 372 or Z 374	VERTEBRATE BIOLOGY and VERTEBRATE BIOLOGY LABORATORY DIVERSITY OF LIFE: VERTEBRATES	5
Z 423	ENVIRONMENTAL PHYSIOLOGY	3

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BI 445	EVOLUTION	3
BI 483	POPULATION BIOLOGY	3
<i>Writing Intensive Course (WIC)</i>		
Select one course from the following:		3-15
BI 319	*THEORY, PRACTICE AND DISCOURSE IN THE LIFE SCIENCES	
BI 371	*ECOLOGICAL METHODS	
BI 373	*FIELD METHODS IN MARINE ECOLOGY	
BI 450	*MARINE BIOLOGY AND ECOLOGY (by application only - Hatfield Marine Science Center)	
<i>Senior Biology Field Test</i>		
BI 498	SENIOR BIOLOGY FIELD TEST **	0
Zoology Elective Courses		
<i>Organismal, Physiology and Systematics Electives</i>		
Select two 3+ credit courses from the following:		6-8
BI 358	SYMBIOSES AND THE ENVIRONMENT	
BI 485	MONSTER BIOLOGY	
BOT 321	PLANT SYSTEMATICS	
FW 302	BIOLOGY AND CONSERVATION OF MARINE MAMMALS ¹	
or FW 311	ORNITHOLOGY	
or FW 315	ICHTHYOLOGY	
or FW 317	MAMMALOLOGY	
or FW 331	ECOLOGY OF MARINE AND ESTUARINE BIRDS	
MB 480	GENERAL PARASITOLOGY	
Z 350	ANIMAL BEHAVIOR	
Z 365	BIOLOGY OF INSECTS	
Z 422	COMPARATIVE/FUNCTIONAL VERTEBRATE ANATOMY	
Z 431	VERTEBRATE PHYSIOLOGY I	
Z 438	BEHAVIORAL NEUROBIOLOGY	
Z 473	HERPETOLOGY	
Z 477	AQUATIC ENTOMOLOGY	
<i>Ecology, Evolution and Conservation Electives</i>		
Select two 3+ credit courses from the following:		6-8
BI 301	*HUMAN IMPACTS ON ECOSYSTEMS	
or BI 348	*HUMAN ECOLOGY	
BI 351	MARINE ECOLOGY ⁺	
or BI 450	*MARINE BIOLOGY AND ECOLOGY	
BI 353	PACIFIC NORTHWEST COASTAL ECOSYSTEMS (taught at Hatfield Marine Science Center)	
BI 375	FIELD METHODS IN ECOLOGICAL RESTORATION (taught at OSU-Cascades)	
BI 427	PALEOBIOLOGY	
BI 481	BIOGEOGRAPHY	
BI 495	DISEASE ECOLOGY	
BOT 341	PLANT ECOLOGY	
FES 440	WILDLAND FIRE ECOLOGY	
or FES 445	ECOLOGICAL RESTORATION	
or FW 445	ECOLOGICAL RESTORATION	
FW 320	INTRODUCTORY POPULATION DYNAMICS ⁺	
or FW 421	AQUATIC BIOLOGICAL INVASIONS	
or FW 427	PRINCIPLES OF WILDLIFE DISEASES	
or FW 479	WETLANDS AND RIPARIAN ECOLOGY	
Z 349	*BIODIVERSITY: CAUSES, CONSEQUENCES, AND CONSERVATION	
<i>Natural Resource, Management and Policy Electives</i>		
Select two 3+ credit courses from the following:		6
AEC 250	*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY	
or AEC 253	*ENVIRONMENTAL LAW, POLICY, AND ECONOMICS	
AEC 432	ENVIRONMENTAL LAW	
ANS 280	COMPANION ANIMAL MANAGEMENT	
BI 347	*OCEANS IN PERIL	
BI 348	*HUMAN ECOLOGY	

or BI 301	*HUMAN IMPACTS ON ECOSYSTEMS	
FES 355	MANAGEMENT FOR MULTIPLE RESOURCE VALUES	
FES 412	FOREST ENTOMOLOGY	
FES 452/FW 452	BIODIVERSITY CONSERVATION IN MANAGED FORESTS	
FES 485	*CONSENSUS AND NATURAL RESOURCES	
FOR 436	WILDLAND FIRE SCIENCE AND MANAGEMENT	
FOR 462	NATURAL RESOURCE POLICY AND LAW	
FW 350	*ENDANGERED SPECIES, SOCIETY AND SUSTAINABILITY	
FW 451	AVIAN CONSERVATION AND MANAGEMENT	
FW 458	MAMMAL CONSERVATION AND MANAGEMENT	
FW 462	ECOSYSTEM SERVICES	
GEOG 450	LAND USE IN THE AMERICAN WEST	
PS 475	ENVIRONMENTAL POLITICS AND POLICY	
PS 477	INTERNATIONAL ENVIRONMENTAL POLITICS AND POLICY	
SOC 481	*SOCIETY AND NATURAL RESOURCES	
TRAL 352	WILDERNESS MANAGEMENT	
or TRAL 357	*PARKS AND PROTECTED AREAS MANAGEMENT	
Experiential Learning or Skills Elective		
Select one of the following two tracks:		3
<i>Track I Experiential Learning Credits</i>		
Select any combination of three credits from the following:		
BI 309	TEACHING PRACTICUM (by approval)	
BI 401	RESEARCH AND SCHOLARSHIP (by approval)	
BI 406	PROJECTS: CURATORIAL ASSISTANT (by approval)	
BI 409	ADVANCED TEACHING PRACTICUM (by approval)	
BI 410	INTERNSHIP (by approval)	
OSU international internships (INTL credits) by approval		
<i>Track II Skills Course</i>		
Select one course from the following:		3-4
ANS 435	APPLIED ANIMAL BEHAVIOR	
BI 375	FIELD METHODS IN ECOLOGICAL RESTORATION (taught at OSU-Cascades)	
BI 450	*MARINE BIOLOGY AND ECOLOGY (by application only - taught at Hatfield Marine Science Center)	
BOT 425	FLORA OF THE PACIFIC NORTHWEST	
BOT 440	FIELD METHODS IN PLANT ECOLOGY	
CS 201	COMPUTER PROGRAMMING FOR NON-CS MAJORS	
or CS 161	INTRODUCTION TO COMPUTER SCIENCE I	
FES 430	FOREST AS CLASSROOM	
FW 255	FIELD SAMPLING OF FISH AND WILDLIFE	
FW 493	FIELD METHODS FOR MARINE RESEARCH (taught at Hatfield Marine Science Center)	
FW 498	AQUACULTURE LABORATORY	
GEOG 360	GISCIENCE I: GEOGRAPHIC INFORMATION SYSTEMS AND THEORY	
GRAD 430	INTRODUCTION TO SCIENTIFIC DIVING	
KIN 232	BACKCOUNTRY LEADERSHIP	
NR 325	SCIENTIFIC METHODS FOR ANALYZING NATURAL RESOURCE PROBLEMS	
RNG 353	WILDLAND PLANT IDENTIFICATION	
RNG 441	RANGELAND ANALYSIS	
SED 435	COMMUNICATING OCEAN SCIENCES TO INFORMAL AUDIENCES	
TRAL 493	ENVIRONMENTAL INTERPRETATION	
Total credits required for graduation		180

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

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- If FW 302 is selected, FW 301 is optional but recommended - FW 311 is taught at Hatfield Marine Science Center
- If FW 311 is selected, FW 312 is optional but recommended
- If FW 317 is selected, FW 316 is optional but recommended
- FW 331 is taught at Hatfield Marine Science Center

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BI 450 (by application only), Z 461 and FW 421 are taught at Hatfield Marine Science Center. Z 364 and Z 374 are taught via Ecampus only

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Zoology majors are required to take a comprehensive, two-hour Biology Major Field Test their final OSU term (or spring term if they will graduate in summer) in order to graduate: BI 498. For further information, visit the Integrative Biology (<http://ib.oregonstate.edu/advising/MFT-info/>) website

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Track I

First Year		Credits
Fall		
BI 198	PROFESSIONAL DEVELOPMENT I: BIOLOGY AND ZOOLOGY	1
CH 121 or CH 231 <i>and</i> CH 261	GENERAL CHEMISTRY or GENERAL CHEMISTRY <i>and</i> *LABORATORY FOR CHEMISTRY 231	5
MTH 111 or MTH 112	*COLLEGE ALGEBRA or *ELEMENTARY FUNCTIONS	4
Bacc Core		3
HHS 231	*LIFETIME FITNESS FOR HEALTH (or PAC Course)	1-2
Credits		14-15
Winter		
CH 122 or CH 232 <i>and</i> CH 262	*GENERAL CHEMISTRY or GENERAL CHEMISTRY <i>and</i> *LABORATORY FOR CHEMISTRY 232	5
MTH 112 or MTH 251	*ELEMENTARY FUNCTIONS or *DIFFERENTIAL CALCULUS	4
Two Bacc Core courses		6-8
Credits		17
Spring		
BI 298	PROFESSIONAL DEVELOPMENT FOR BIOLOGISTS II	1
CH 123 or CH 233 <i>and</i> CH 263	*GENERAL CHEMISTRY or GENERAL CHEMISTRY <i>and</i> *LABORATORY FOR CHEMISTRY 233	5
MTH 251 or MTH 227	*DIFFERENTIAL CALCULUS or *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I	4
Two Bacc Core courses		6-8
Credits		18
Second Year		
Fall		
BI 221	*PRINCIPLES OF BIOLOGY: CELLS	4
CH 331	ORGANIC CHEMISTRY	4
MTH 252 or MTH 228	INTEGRAL CALCULUS or CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES II	4
Bacc Core		3-4
Credits		16
Winter		
BI 222	*PRINCIPLES OF BIOLOGY: ORGANISMS	4
CH 332	ORGANIC CHEMISTRY	4

Two Bacc Core courses		6-8
Credits		16
Spring		
BI 223	*PRINCIPLES OF BIOLOGY: POPULATIONS	4
CH 337 or CH 390	ORGANIC CHEMISTRY LABORATORY or ENVIRONMENTAL CHEMISTRY	3-4
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
Bacc Core course		3-4
Credits		15-16
Third Year		
Fall		
BI 311 or BB 314 or BI 370	GENETICS or CELL AND MOLECULAR BIOLOGY or ECOLOGY	3-4
ST 352	INTRODUCTION TO STATISTICAL METHODS	4
Z 423	ENVIRONMENTAL PHYSIOLOGY	3
Bacc Core		3-4
Credits		14-15
Winter		
BI 311 or BB 314 or BI 370	GENETICS or CELL AND MOLECULAR BIOLOGY or ECOLOGY	3-4
Writing Intensive Course or Organismal, Physiology and Systematics Elective		3
Ecology, Evolution and Conservation Elective or Natural Resource, Management and Policy Elective		3
Bacc Core		3-4
Credits		13-14
Spring		
BI 311 or BB 314 or BI 370	GENETICS or CELL AND MOLECULAR BIOLOGY or ECOLOGY	3-4
Z 361	INVERTEBRATE BIOLOGY	3
Z 362	INVERTEBRATE BIOLOGY LABORATORY	2
Writing Intensive Course or Organismal, Physiology and Systematics Elective		3-5
Ecology, Evolution and Conservation Elective or Natural Resource, Management and Policy Elective		3-4
Credits		17-18
Fourth Year		
Fall		
BI 445	EVOLUTION	3
Z 371	VERTEBRATE BIOLOGY	3
Z 372	VERTEBRATE BIOLOGY LABORATORY	2
Ecology, Evolution and Conservation Elective or Natural Resource, Management and Policy Elective		3-4
Credits		12
Winter		
BI 483	POPULATION BIOLOGY	3
Ecology, Evolution and Conservation Elective or Natural Resource, Management and Policy Elective		3-4
Writing Intensive Course or Organismal, Physiology and Systematics Elective		3-5
Experiential Learning or Skills Elective		3-4
Credits		16
Spring		
BI 498	SENIOR BIOLOGY FIELD TEST	0
Experiential Learning or Skills Elective		3-4
Electives		8
Credits		12
Total Credits		180-185

Track II**First Year**

Fall		Credits
BI 198	PROFESSIONAL DEVELOPMENT I: BIOLOGY AND ZOOLOGY	1
BI 221	*PRINCIPLES OF BIOLOGY: CELLS	4
CH 121	GENERAL CHEMISTRY	5
or CH 231 <i>and</i> CH 261	or GENERAL CHEMISTRY <i>and</i> *LABORATORY FOR CHEMISTRY 231	
Bacc Core		3
HHS 231	*LIFETIME FITNESS FOR HEALTH (or PAC Course)	1-2
Credits		14-15

Winter		
BI 222	*PRINCIPLES OF BIOLOGY: ORGANISMS	4
CH 122	*GENERAL CHEMISTRY	5
or CH 232 <i>and</i> CH 262	or GENERAL CHEMISTRY <i>and</i> *LABORATORY FOR CHEMISTRY 232	
Two Bacc Core courses		6-8
Credits		17

Spring		
BI 223	*PRINCIPLES OF BIOLOGY: POPULATIONS	4
BI 298	PROFESSIONAL DEVELOPMENT FOR BIOLOGISTS II	1
CH 123	*GENERAL CHEMISTRY	5
or CH 233 <i>and</i> CH 263	or GENERAL CHEMISTRY <i>and</i> *LABORATORY FOR CHEMISTRY 233	
MTH 251	*DIFFERENTIAL CALCULUS	4
or MTH 227	or *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I	
Bacc Core		3-4
Credits		18

Second Year

Fall		
BI 311	GENETICS	3-4
or BB 314 or BI 370	or CELL AND MOLECULAR BIOLOGY or ECOLOGY	
CH 331	ORGANIC CHEMISTRY	4
MTH 252	INTEGRAL CALCULUS	4
or MTH 228	or CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES II	
Bacc Core		3-4
Credits		15-16

Winter		
BI 311	GENETICS	3-4
or BB 314 or BI 370	or CELL AND MOLECULAR BIOLOGY or ECOLOGY	
CH 332	ORGANIC CHEMISTRY	4
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
Bacc Core		3-4
Credits		15-16

Spring		
CH 337	ORGANIC CHEMISTRY LABORATORY	4
or CH 390	or ENVIRONMENTAL CHEMISTRY	
ST 352	INTRODUCTION TO STATISTICAL METHODS	4
Z 361	INVERTEBRATE BIOLOGY	3
Z 362	INVERTEBRATE BIOLOGY LABORATORY	2
Bacc Core		3-4
Credits		17

Third Year

Fall		
BI 311	GENETICS	3-4
or BB 314 or BI 370	or CELL AND MOLECULAR BIOLOGY or ECOLOGY	
Z 371	VERTEBRATE BIOLOGY	3
Z 372	VERTEBRATE BIOLOGY LABORATORY	2

Z 423	ENVIRONMENTAL PHYSIOLOGY	3
Bacc Core		3-4
Credits		15-16

Winter		
BI 445	EVOLUTION	3
BI 483	POPULATION BIOLOGY	3
Writing Intensive Course or Organismal, Physiology and Systematics Elective		3-5
Bacc Core		3-4
Credits		15

Spring		
Ecology, Evolution and Conservation Electives or Natural Resource, Management and Policy Elective		3-4
Writing Intensive Course or Organismal, Physiology and Systematics Elective		3-5
Credits		9

Fourth Year

Fall		
Ecology, Evolution and Conservation Electives or Natural Resource, Management and Policy Elective		3-6
Electives		10
Credits		16

Winter		
Ecology, Evolution and Conservation Electives or Natural Resource, Management and Policy Elective		3
Writing Intensive Course or Organismal, Physiology and Systematics Elective		3
Experiential Learning or Skills Elective		3
Electives		6
Credits		15

Spring		
BI 498	SENIOR BIOLOGY FIELD TEST	0
Experiential Learning or Skills Elective		3
Electives		11
Credits		14
Total Credits		180-184

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Baccalaureate Core Course (BCC)

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Writing Intensive Course (WIC)