ZOLOGY 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.

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

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<td>or Z 423</td>
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**Zoology Undergraduate Major (BS, HBS)**

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<td>BI 483</td>
<td>POPULATION BIOLOGY</td>
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**Writing Intensive Course (WIC)**

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)

**Senior Biology Field Test**

- BI 498  SENIOR BIOLOGY FIELD TEST **
  
0

**Zoology Elective Courses**

Organism, Physiology and Systematics Electives

Select two 3+ credit courses from the following: 6-8

- BI 358  SYMBIOTES 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  MAMMALOGY
  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

Ecology, Evolution and Conservation Electives

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

Natural Resource, Management and Policy Electives 6-8

Select two 3+ credit courses from the following: 6

- AEC 260  *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  *CONSSENSUS 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
GEOD 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

- Track I Experiential Learning Credits
  - 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

- Track II Skills Course
  - 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
    - GEOD 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)
1. If FW 302 is selected, FW 301 is optional but recommended. If FW 311 is taught at Hatfield Marine Science Center.
2. If FW 311 is selected, FW 312 is optional but recommended.
3. If FW 317 is selected, FW 316 is optional but recommended.
4. FW 311 is taught at Hatfield Marine Science Center.

++ 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.

**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.

**Major Code: 620**

**Track I**

**First Year**

**Fall**

BI 198 PROFESSIONAL DEVELOPMENT I: BIOLOGY AND ZOOLOGY 1

CH 121 or CH 231 and CH 261 GENERAL CHEMISTRY or GENERAL CHEMISTRY and *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 and CH 262 *GENERAL CHEMISTRY or GENERAL CHEMISTRY and *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 and CH 263 *GENERAL CHEMISTRY or GENERAL CHEMISTRY and *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

BI 337 ORGANIC CHEMISTRY LABORATORY or CH 390 or ENVIRONMENTAL CHEMISTRY 3-4

ST 351 INTRODUCTION TO STATISTICAL METHODS 4

Bacc Core course Credits 15-16

**Third Year**

**Fall**

BI 311 GENETICS or BB 314 or BI 370 3-4

or CELLS and MOLECULAR BIOLOGY or ECOLOGY

ST 352 INTRODUCTION TO STATISTICAL METHODS 4

Z 423 ENVIRONMENTAL PHYSIOLOGY 3

Bacc Core 3-4

Credits 14-15

**Winter**

BI 311 GENETICS or BB 314 or BI 370 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 GENETICS or BB 314 or BI 370 or ECOLOGY 3-4

or CELLS and MOLECULAR BIOLOGY

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**

BI 198 PROFESSIONAL DEVELOPMENT I: BIOLOGY AND ZOOLOGY 1

BI 221 *PRINCIPLES OF BIOLOGY CELLS 4

or CH 231 and CH 261 GENERAL CHEMISTRY 5

or GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 231

Credits 18

**Winter**

BI 222 *PRINCIPLES OF BIOLOGY ORGANISMS 4

CH 123 or CH 233 and CH 263 GENERAL CHEMISTRY 4

or GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 233

Credits 8

**Spring**

BI 223 *PRINCIPLES OF BIOLOGY POPULATIONS 4
### Zoology Undergraduate Major (BS, HBS)

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<td></td>
<td>Writing Intensive Course or Organismal, Physiology and Systematics Elective</td>
<td></td>
<td>3-5</td>
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<td>Bacc Core</td>
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<td>3-4</td>
</tr>
</tbody>
</table>

**Total Credits** 180-184

* Baccalaureate Core Course (BCC)
^ Writing Intensive Course (WIC)

**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 |

**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 |

**Total Credits** 180-184