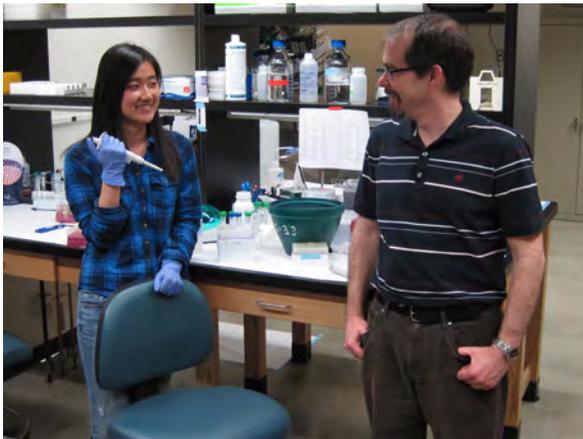




DEPARTMENT OF ZOOLOGY AND PHYSIOLOGY
University of Wyoming



Student Advising Booklet - Fall 2015

Website: <http://www.uwyo.edu/zoology>

FaceBook: <https://www.facebook.com/UWyoZoology>

DEPARTMENT OF ZOOLOGY AND PHYSIOLOGY OVERVIEW

The Department of Zoology & Physiology provides a supportive environment for study in diverse fields ranging from cell biology to ecosystem function. Whether your interests are in human health care, animal biology, or wildlife management, we have a major tailored to meet your needs. At any one time, our 450 undergraduates and 70 graduates are studying aspects of genetics, cell function, animal physiology, neuroscience, organismal biology (mammals, birds, amphibians, reptiles, fish, invertebrates), toxicology, terrestrial and aquatic ecology, wildlife and fisheries management and pre-professional human health care (dentistry, optometry, medicine). The degrees we offer allow the curious to explore numerous career options, while providing a strong basic science background for those wishing to pursue further education in graduate or professional schools.

We strongly advise students to take rigorous and challenging high school courses in chemistry, mathematics, biology and physics to make sure that they are best prepared to “hit the ground running”. The first year of all degrees is similar, providing a grounding in the basic sciences.

Freshman Fall Semester			Hrs
LIFE	1010	General Biology	4
MATH	1400	Algebra	4
CHEM	1020	General Chemistry I	4
		First Year Seminar or COM1	3
Credit hours subtotal:			<u>15</u>

Freshman Spring Semester			Hrs
LIFE	2022	Animal Biology (<i>or Microbiol if Physiology</i>)	4
MATH	1405	Trigonometry	4
CHEM	1030	General Chemistry II	4
		COM1 or First Year Seminar	3
Credit hours subtotal:			<u>15</u>

DEPARTMENT CONTACT INFORMATION

Address: The Head, Department of Zoology & Physiology, 1000 E. University Ave., Dept. 3166, Laramie, WY 82071.

E-mail: zprequest@uwyo.edu

Department website: <http://www.uwyo.edu/zoology>

FaceBook: <https://www.facebook.com/UWyoZoology>

Department Phone Number: 307-766-4207

CAREER OPPORTUNITIES IN THE BIOLOGICAL SCIENCES

Career opportunities in the biological sciences are varied, rewarding and exciting. A number of these careers require post graduate coursework, training or degrees. A major in Zoology, Physiology, or Wildlife & Fisheries Biology & Management provides a strong foundation for success in these and many other careers.

Allergist	Developmental Biologist	Medical Entomologist	Plant Biochemist
Analytical Technician	Ecologist	Medical Illustrator	Plant Pest Control Inspector
Anatomist	Electron Microscopist	Medical Librarian	Plant Quarantine Inspector
Animal Behaviorist	Embryologist	Medical Practitioner	Policy Advisor
Animal Breeder	Emergency Medical Technician	Medical Technologist	Population Geneticist
Apiarist	Endocrinologist	Medical Writer	Protozoologist
Aqua culturist	Entomologist	Microbiologist	Radiobiologist
Aquarium Director	Environ. Impact Analyst	Microscopist	Radiologic Technologist
Aquatic Biologist	Environ. Physiologist	Morphologist	Range Manager
Aquatic Ecologist	Environ. Toxicologist	Museum Educator	Research and Development
Aquatic Toxicologist	Environmentalist	Museum Technician	Research Associate
Assurance Mgr.	Ethologist	Natural Resources Manager	Research Librarian
Bacteriologist	Field Biologist	Nat. Sciences Research	Research Technician
Biochemist	Fish Culturist	Naturalist	Resource Policy Analyst
Biological Consultant	Fish Physiologist	Nature Center Director	Science Editor
Biological Engineer	Fisheries Biologist	Nematologist	Science Librarian
Biological Illustrator	Food and Drug Inspector	Nuclear Medicine	Science Writer
Biological Quality	Forensic Pathologist	Nursery Owner	Sewage Plant Operator
Biologist	Forester	Nursing	Sociobiologist
Biomedical Engineer	Game Manager	Occupational Therapist	Soil Scientist
Biometrician	Genetic Counselor	Oceanographer	Taxidermist
Biophysicist	Genetic Engineer	Optometrist	Taxonomist
Biostatistician	Geneticist	Ornithologist	Teacher
Biotechnologist	Herpetologist	Paleoecologist	Technologist
Cell Biologist	Histologist	Parasitologist	Toxicologist
Cell Physiologist	Ichthyologist	Park Naturalist	Veterinarian
Chemical Technician	Immunologist	Park Ranger	Veterinary Hospital Assistant
Chemotaxonomist	Industry Quarantine	Park Technician	Virologist
Confocal Microscopist	Industry Toxicologist	Part Superintendent	Water Quality Controller
Conserv. Warden/Ranger	Inspector	Pathologist	Watershed Manager
Consultant	Lab Immunologist	Pathophysiologist	Wildlife Conservation & Management Specialist
Crime Lab Technician	Laboratory Manager	Pest Control Specialist	Wildlife Photographer
Curator	Limnologist	Pharmacist	Zoo Assistant
Cytogeneticist	Mammalogist	Photographer	Zoo Director
Cytopathologist	Marine Biologist	Physical Therapist	Zoologist
Cytotechnologist	Medical Assistant	Physician's Assistant	
Dentist		Physiologist	

Additional Careers Information from the American Institute of Biological Sciences: <http://www.aibs.org/careers>

UNDERGRADUATE DEGREES

Majors:

Bachelor of Science in Physiology

Bachelor of Science in Wildlife and Fisheries Biology & Management (WFBM)

Bachelor of Science in Zoology

Minors:

Neuroscience

Physiology

Wildlife and Fisheries Biology & Management (WFBM)

Zoology

LEARNING OUTCOMES FOR UNDERGRADUATE STUDENTS

The learning outcomes that we expect our graduates to have acquired are:

1. Competence in basic math and sciences (physics, chemistry, calculus, statistics).
2. Competence in the specific skills, knowledge and abilities within coursework defined by each major.
3. Qualitative and Quantitative analysis and interpretation of biological data.
4. Synthesis of information from the biological literature, as by effective written and oral communication of it.

Graduate Degrees

Master of Science in Zoology and Physiology

Doctorate in Zoology and Physiology

Doctorate in Ecology (In collaboration with the Program in Ecology)

Doctorate in Neuroscience (In collaboration with the Neuroscience Program)

LEARNING OUTCOMES FOR GRADUATE STUDENTS

For the MS degree in Zoology and Physiology:

1. Comprehend and synthesize advanced knowledge in a specific area of biology.
2. Collect and analyze data to address a research question.
3. Summarize research findings and communicate them effectively in writing and orally.

For PhD Students:

1. Comprehend and synthesize advanced knowledge in a specific area of biology.
2. Develop a research project that constitutes a substantial and original contribution to the field of study.
3. Summarize research findings and communicate them effectively in writing and orally.



MAJORS



Studying Physiology at UW

Physiology is the study of how animals work: how they breathe, feed, and interact with their environment. Apart from the intrinsic value of this knowledge, it is also knowledge upon which the health care professions are built. Physiology is of interest to nearly everyone; it is especially important for students who may be thinking of becoming medical practitioners, veterinarians, or other health care professionals.

Students who are interested in learning about this fascinating subject can do so by taking a range of courses offered by the Department of Zoology and Physiology. Additionally, as for all degree programs, students must meet University and College of Arts and Sciences requirements by choosing from a range of specified courses outside the department.

The department's degree program in Physiology typically involves the following:

Freshman Year: In this year, students take introductory courses such as Biology, Chemistry, Physics, and Mathematics, as these are essential for understanding physiological processes.

Sophomore Year: In this year, students finish any introductory courses they have not yet completed and also take basic courses in human systems physiology. Human systems physiology is concerned with the function of the major organ systems of the body such as the cardiovascular, renal and respiratory systems.

Junior and Senior Years: Having completed these basic and introductory courses, students continue with the study of Integrative Physiology. This course emphasizes the regulation of the basic body systems by the central nervous and endocrine systems. Students will also begin to specialize in an area of physiology that they find particularly interesting. The department has several such areas, which include cell biology, endocrinology, neuroscience and comparative physiology. Over their junior and senior years, students can expand their interests by taking courses such as Animal Behavior, Neurophysiology, Neural Mechanisms of Behavior, Comparative Environmental Physiology, Introduction to Neuroscience, Structure and Function of the Nervous System, Cell Physiology, and Pathophysiology. There is also the opportunity to take courses in other departments with expertise in subjects such as reproductive physiology, immunology or medical anthropology.

At the end of this program students will have a thorough knowledge of the principles underlying physiological processes and will have developed analytical and problem solving skills that are valued by employers. Students will be well-prepared for graduate studies or professional careers especially in the health care professions.

Pre-Professional Health Care Studies at UW

Pre-professional Advising Office, Health Sciences Building

<http://www.uwyo.edu/preprof/>

Students at UW benefit from the expertise of advisors in the Pre-professional Health Advising Center within the College of Health Sciences. The Pre-Professional health advisors provide advising in addition to a student's academic advisor in the major- providing invaluable assistance in navigating the requirements for prerequisite coursework and admissions as well as helping students learn more about the health care professions.

Admission to medical, veterinary or other health professions is highly competitive and success depends on a number of criteria generally including: the score on a rigorous admissions exam, the student's college GPA, interviews by medical school admissions committees, and evidence of internships or volunteer work in pertinent health care areas. Specific requirements vary by school and professional degree sought.

Pre-professional health students must become knowledgeable and proficient in the basic sciences upon which the health care professions are built. A BS degree in Physiology will meet this goal- by providing a stimulating, interesting and relevant degree for any student considering a career in the health professions. Completion of the Physiology degree is a strong predictor of good admissions exam scores and is excellent preparation for further successful study in the health professions. In addition to meeting the expectations and requirements of veterinary, optometry, pharmacy and allied health profession schools, the varied experiences and coursework in the Physiology degree will help to validate a student's professional career choice.

University of Wyoming, College of Arts & Sciences Requirements Checklist – Physiology – August 2015

Student: _____ Advisor: _____ Initial Date of Program: _____

**A University of Wyoming degree requires a minimum of 120 hours
At least 42h must be at the Upper Division Level**

University Studies Program: (30 Credit Hours)

(FYS) First Year Seminar (C or better)	1 course, 3 credits	_____
(V) U.S. & Wyoming Constitutions	1 course, 3 credits	_____
(C1) Communication 1 (C or better)	1 course, 3 credits	_____
(C2) Communication 2 (C or better)	1 course, 3 credits	_____
(C3) Communication 3 (C or better) (<i>in major</i>)	1 course, 3 credits	LIFE 4100 _____
(Q) Quantitative Reasoning (<i>in major</i>)	1 course, 3 credits	MATH 1400/1450 _____
(PN) Physical and Natural World (<i>in major</i>)	1 course, 3 credits	CHEM 1020 _____
(PN) Physical and Natural World (<i>in major</i>)	1 course, 3 credits	CHEM 1030 _____
(H) Human Culture (suggest <i>Intro to Psychology</i>)	1 course, 3 credits	_____
(H) Human Culture (suggest <i>Intro to Sociology</i>)	1 course, 3 credits	_____

A&S Core: (6 Credit Hours)

ASD: US Diversity	1 course, 3 credits	_____
ASG: Global Awareness	1 course, 3 credits	_____

University Upper Division Requirement: (42 Credit Hours)

3XXX-level or above: 30 of which must be earned from the University of Wyoming.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Required Courses: (60-61 Credit Hours)

The following courses are for the major requirements and are offered in no particular order. A “roadmap” of how to complete the degree in 4 years is provided, but **please** consult with your advisor for scheduling sequence.

COURSE	USP	CREDITS	PREREQUISITES
A. MATHEMATICS			
<input type="checkbox"/> MATH 1450 Algebra and Trigonometry		5	C in MATH 0925 OR Level 3 Math Placement OR Math ACT 23, SAT 600
OR	Q		
<input type="checkbox"/> MATH 1400 Algebra		3	C in MATH 0925 OR Level 3 Math Placement OR Math ACT 23, SAT 600
AND			
<input type="checkbox"/> MATH 1405 Trigonometry		3	C in MATH 1400
<input type="checkbox"/> MATH 2200 Calculus I		4	C in MATH 1405 or 1450 OR level 5 on Math Placement or Math ACT 27, SAT 600
<input type="checkbox"/> MATH 2205 Calculus II			C in MATH 2200 OR Adv Placement MATH 2200
OR			
<input type="checkbox"/> STAT 2050 Fundamentals of Statistics		4	C in MATH 1000, 1400 or equiv
OR			
<input type="checkbox"/> STAT 2070 Intro Statistics for the Social Sciences			C in MATH 1000, 1400 or equiv

B. CHEMISTRY

<input type="checkbox"/> CHEM 1020 General Chemistry I	PN	4	Math ACT 23 OR concurrent MATH 1400, OR 1405 OR 1450
<input type="checkbox"/> CHEM 1030 General Chemistry II	PN	4	CHEM 1020
Two additional CHEM courses (not CHEM 1000):			
<input type="checkbox"/> Course: _____		4	Usually this is CHEM2420 Organic Chemistry I
<input type="checkbox"/> Course: _____		4	Most frequently CHEM2440 Organic Chemistry II
<i>If a student is planning on medical, dental, optometry, or PA schools, they usually need 2 semesters of organic chemistry (CHEM 2420 + CHEM 2440). In addition, some programs have additional requirements (e.g., biochemistry, cell biology, microbiology).</i>			

C. PHYSICS

<input type="checkbox"/> PHYS 1110 General Physics I		4	MATH 1405, 1450
<input type="checkbox"/> PHYS 1120 General Physics II		4	PHYS 1110
<i>Students can take PHYS1310 College Physics I and PHYS1320 College Physics II (require Calculus) but not common</i>			

D. BIOLOGY and ZOOLOGY

<input type="checkbox"/> LIFE 1010 General Biology		4	C in MATH 0921 OR Level 2 on Math Placement OR Math ACT 21, SAT 600
<input type="checkbox"/> MOLB 2021 Microbiology		4	C in LIFE 1010
OR			
<input type="checkbox"/> LIFE 2022 Animal Biology			
<input type="checkbox"/> LIFE 3050 Genetics		4	C in LIFE/BIOL 1010; C in LIFE 2022 OR LIFE 2023 OR MICR/MOLB 2021
<input type="checkbox"/> ZOO 3115 Human Systems Physiology		4	C in LIFE/BIOL 1010; C in CHEM 1020 (preferred) OR B in CHEM 1000; sophomore standing
<input type="checkbox"/> ZOO 4125 Integrative Physiology		4	C in ZOO 3115 &/or Pharmacy 1 standing

E. WRITING IN BIOLOGY

<input type="checkbox"/> ZOO 4100 Biological Communication	C3	3	C in C1 AND C2
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Elective Courses: (18 Credit Hours)

Students must select *at least 18 credit hours* from courses listed below. This list is not exhaustive but students must discuss inclusion of a course not listed as an elective with their advisor BEFORE signing up for it. These courses may also be listed in 'Credits in the Major' and as Upper Division (3000- and 4000-level) courses. If a student elects a minor or concentration (see section that follows), then **all** of those courses may be used to meet this requirement. **Students may not use electives used in one minor for a different minor.**

- Course: _____

Elective Courses needed for major in Physiology (minimum of 18h required)

Course	Course Title	Credits
ZOO 3010	Vertebrate Anatomy, Embryology & Histology	4
ZOO 3600	Principles of Animal Behavior	3
ZOO 4110	HIV/AIDS: The Disease and the Dilemma	3
ZOO 4280	Introduction to Neuroscience	3
ZOO 4340	Developmental Biology & Embryology	4
ZOO 4670	Cell Physiology	4
ZOO 4735	Advanced Topics in Physiology	2+
NEUR 5100	Structure & Function of the Nervous System	4
NEUR 5685	Neurophysiology	3
NEUR 5887	Molecular Neuropharmacology	3
LIFE 3600	Cell Biology	4
KIN 3021	Physiology of Exercise (<i>Needs KIN2040/41 Human Anatomy as a prerequisite</i>)	3
KIN 3038	Exercise Psychology (will need permission of instructor)	3
KIN 3042	Biomechanics of Human Movement	3
KIN 4042	Applied Biomechanics (prereq KIN 3042)	3
MOLB 3000	Introduction to Molecular Biology	3
MOLB 3610	Principles of Biochemistry	4
MOLB 4100	Clinical Biochemistry	3
MOLB 4400	Immunology	4
PSYC 4080	Physiological Psychology	4
PHCY 4450	Pathophysiology	4
ANSC 4120	Principles of Mammal Reproduction	3
SOC 3550	Medical Sociology	3
ANTH 4210	Human Osteology	3
ANTH 4230	Forensic Anthropology	3
PATB 4130	Mammalian Pathobiology	3
PATB 4140	Principles of Toxicology	3
PATB 4710	Medical Virology	3
CHEM 3550	Physical Chemistry for the Life Sciences	3
<i>Several of the courses listed above have prerequisites. For 5000-level courses permission of the instructor is required</i>		

PHYSIOLOGY MAJORS MAY ALSO CHOOSE A MINOR OR A CONCENTRATION

Concentration electives may be substituted for electives in "F" above.

If a concentration is chosen, it will appear on the transcript but not on the diploma.

Appropriate ZOO4735 Advanced Topics in Physiology classes may be used here also

Concentration in ECOPHYSIOLOGY

Select at least 3 courses

- LIFE 3400 General Ecology (3)
- ZOO 3600 Principles of Animal Behavior (3)
- ZOO 3010 Vertebrate Anatomy Embryology & Histology (4)
- ZOO 4190 Comparative Environmental Physiology (4)

Minor in NEUROSCIENCE

In addition to Introduction to Neuroscience (3), 12h from

- ZOO 3010 Vertebrate Anatomy Embryology & Histology (4)
- ZOO 4340 Developmental Biology and Embryology (4)
- NEUR 5100 Structure Function of the Nervous System (4)
- PSYC 4080 Physiological Psychology (4)
- NEUR 5685 Neurophysiology (3)
- NEUR 5887 Molecular Neuropharmacology (3)

Concentration in CELL PHYSIOLOGY

Select at least 3 courses

- ZOO 3010 Vertebrate Anatomy Embryology & Histology (4)
- ZOO 4340 Developmental Biology and Embryology (4)
- LIFE 3600 Cell Biology (3)
- ZOO 4670 Cell Physiology (4)

Minor in CHEMISTRY

ALL of the following

- Both Organic Chemistry I&II (CHEM2420/2440) (8)
- CHEM 2230 Quantitative Analysis (4)
- MOLB 3610 Principles of Biochemistry (4)

Credits in the Major

Students must complete at least 30 credit hours with grades of C or better in all courses used to meet this requirement. Courses listed in "F" should be listed here. All courses selected for an optional minor/concentration should also be listed here. ZOO 4900, ZOO 4971, and ZOO 4975 cannot be included here, but are permitted to count in the 42-credit hour upper division category.

COURSE

- MOLB 2021 or LIFE 2022 (see above)*
- LIFE 3050 (see above) *
- ZOO 3115 (see above) *
- ZOO 4125 (see above) *
- MATH 2200 (see above)

CREDITS PREREQUISITES

- 4 LIFE1010
- 4 LIFE2022/MOLB2021
- 4 LIFE1010; CHEM1020
- 4 ZOO3115
- 4 MATH1400+1405/1450

Electives (18h)

- Course: _____

- _____
- _____
- _____
- _____
- _____
- _____

* C required

BS in Physiology



University of Wyoming

Freshman Fall Semester		Hrs	Min Grade	Notes
LIFE	1010 General Biology	4	C	PN. C required for ZOO3115 and MOLB2021/LIFE2022
MATH	1400 Algebra	4	C	Q. C required for MATH1405. Students can take MATH1450 instead of 1400&J405
CHEM	1020 General Chemistry I	4	C	PN. C required for ZOO3115
	First Year Seminar or COM1	3	C	FYS or COM1
Credit hours subtotal:		15		

Freshman Spring Semester		Hrs	Min Grade	Notes
MOLB	2021 General Microbiology (recommended) OR	4	C	C in either required for Genetics
LIFE	2022 Animal Biology			
MATH	1405 Trigonometry	4	C	C required for MATH2200
CHEM	1030 General Chemistry II	4		
	COM1 or First Year Seminar	3	C	COM1 or FYS
Credit hours subtotal:		15		

Sophomore Fall Semester		Hrs	Min Grade	Notes
MATH	2200 Calculus I	4	*	Section aimed at Biologists is recommended
PHYS	1110 General Physics I	4		Alternative: PHYS1310 Gen Physics I Calculus based
CHEM	2420 Organic Chemistry I	4	*	Recommended 3rd required Chemistry course
	COM2	3	C	COM2
Credit hours subtotal:		15		

Sophomore Spring Semester		Hrs	Min Grade	Notes
STAT	2050 Fundamentals of Statistics	4		or Calculus II or Statistics 2070
PHYS	1120 General Physics II	4		Alternative: PHYS1320 Gen Physics II Calculus based
	4th Chemistry course	4	*	Usually Organic Chemistry II
ZOO	3115 Human Systems Physiology	4	C	C required for ZOO4125
Credit hours subtotal:		16		

Notes:

Students must have a minimum cumulative GPA of 2.0 to graduate. Students must complete 42 hours of upper division coursework, 30 of which must be from the University of Wyoming. No more than 60 hours in the major subject may be used toward the 120 credits required. **A minimum of 30h** in courses noted by a * must be completed with a C grade or higher. Courses for the major and the A&S Core must be taken for a letter grade unless offered for S/U only. H and PN courses must be taken outside the major subject, but can be cross-listed with the major.

BS in Physiology



University of Wyoming

Junior Fall Semester		Hrs	Min Grade	Notes
LIFE	3050 Genetics	4	*	
LIFE	4125 Integrative Physiology	4	*	
	US & Wyoming Constitutions	3	V	
PSYC	1000 Introduction to Psychology	3		H. <i>This is only recommended</i>
Credit hours subtotal:		<u>14</u>		

Junior Spring Semester		Hrs	Min Grade	Notes
	Upper Division Physiology Elective	3	*	
	Upper Division Physiology Elective	3	*	
	Upper or Lower Division Elective	3		
	Human Culture	3	H	
	US Diversity or Global Awareness	3		A&S Core (ASD)/A&S Core (ASG)
Credit hours subtotal:		<u>15</u>		

Senior Fall Semester		Hrs	Min Grade	Notes
	Upper Division Physiology Elective	3	*	
	Upper Division Physiology Elective	3	*	
	Upper Division Elective	3		
	Upper or Lower Division Elective	3		
	US Diversity or Global Awareness	3		ASG/ASD
Credit hours subtotal:		<u>15</u>		

Senior Spring Semester		Hrs	Min Grade	Notes
ZOO	4100 Communication in Biological Sciences	3	C	COM3
	Upper Division Physiology Elective	3	*	
	Upper Division Physiology Elective	3	*	
	Upper Division Elective	3		
	Upper Division Elective	3		
Credit hours subtotal:		<u>15</u>		

TOTAL CREDIT HOURS: 120

Notes:

Students are encouraged to enroll in Human Culture requirement courses that correspond to the College of Arts & Sciences Core required US Diversity (ASD) and Global Awareness (ASG) electives or else they will have to take separate ASD and ASG courses. A list of ASD & ASG courses that transfer is available.

Studying Wildlife and Fisheries Biology & Management at UW

Wildlife and Fisheries Biology & Management (WFBM) is a professional degree designed to prepare students for state, federal and other positions in resource management and conservation biology. The degree provides students with an understanding of the processes governing dynamics of wildlife and fish populations, as well as an appreciation of human-mediated effects on these resources. Students graduating with this degree will be familiar with the theory of resource management as well as with methods used to determine population status, habitat quality, and conservation actions. In Wyoming specifically, the abundance of wild animals provides a unique natural laboratory for studying the responses of wildlife and fish populations to changing environments and habitats.

As for all degree programs, students also have to meet University and College of Arts and Sciences requirements. The department's program in Wildlife and Fisheries Biology & Management typically would involve the following:

Freshman Year: Students take introductory courses in subjects such as biology, chemistry, physics, and mathematics as these provide essential tools for understanding ideas and processes in Wildlife and Fisheries Biology and Management.

Sophomore Year: Students finish any introductory courses they have not yet completed and take courses in resource management, physiology, genetics, and evolution, as these subjects provide the underlying principles of population dynamics, and the mechanisms of evolution.

Junior and Senior Years: In these years students select a **Terrestrial** or an **Aquatic** option, taking relevant courses such as Animal Behavior, Wildlife Ecology and Management, Fisheries Management, Limnology, Fish Culture and Nutrition, Comparative Environmental Physiology, Evolutionary Biology, Invertebrate Biology, Ornithology, Ichthyology, Mammalogy, Vegetation Ecology and several courses in Range Management and Botany.

At the end of their program and in close consultation with their academic advisor, students will have been able to earn a degree that is compatible with the requirements for professional certification by the *American Fisheries Society* and the *Wildlife Society*.

University of Wyoming, College of Arts & Sciences Requirements Checklist – WFBM – August 2015

Student: _____ Advisor: _____ Initial Date of Program: _____

**A University of Wyoming degree requires a minimum of 120 hours
At least 42h must be at the Upper Division Level**

University Studies Program: (30 Credit Hours)

(FYS) First Year Seminar (C or better)	1 course, 3 credits	_____
(V) U.S. & Wyoming Constitutions	1 course, 3 credits	_____
(C1) Communication 1 (C or better)	1 course, 3 credits	_____
(C2) Communication 2 (C or better)	1 course, 3 credits	_____
(C3) Communication 3 (C or better) (<i>in major</i>)	1 course, 3 credits	ZOO 4100 _____
(Q) Quantitative Reasoning (<i>in major</i>)	1 course, 3 credits	MATH 1400/1450 _____
(PN) Physical and Natural World (<i>in major</i>)	1 course, 3 credits	CHEM 1020 _____
(PN) Physical and Natural World (<i>in major</i>)	1 course, 3 credits	CHEM 1030 _____
(H) Human Culture	1 course, 3 credits	_____
(H) Human Culture	1 course, 3 credits	_____

A&S Core: (6 Credit Hours)

ASD: US Diversity	1 course, 3 credits	_____
ASG: Global Awareness	1 course, 3 credits	_____

University Upper Division Requirement: (42 Credit Hours)

3XXX-level or above: 30 of which must be earned from the University of Wyoming.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Required Courses: (54-55 Credit Hours)

The following courses are for the major requirements and are offered in no particular order. A “roadmap” of how to complete the degree in 4 years is provided, but **please** consult with your advisor for scheduling the sequence.

COURSE	USP	CREDITS	PREREQUISITES
A. MATHEMATICS, STATS & COMP SCI			
<input type="checkbox"/> MATH 1450 Algebra and Trigonometry		5	C in MATH 0925 OR Level 3 Math Placement OR Math ACT 23, SAT 600
OR	Q		
<input type="checkbox"/> MATH 1400 Algebra		3	C in MATH 0925 OR Level 3 Math Placement OR Math ACT 23, SAT 600
AND			
<input type="checkbox"/> MATH 1405 Trigonometry		3	C in MATH 1400
<input type="checkbox"/> MATH 2200 Calculus I		4	C in MATH 1405 or 1450 OR level 5 on Math Placement or Math ACT 27, SAT 600
OR			
<input type="checkbox"/> MATH 2350 Business Calculus		4	C in MATH 1405 or 1450 OR level 5 on Math Placement or Math ACT 27, SAT 600
<input type="checkbox"/> COSC 1200 Computer Info Systems		3	
<input type="checkbox"/> STAT 2050 Fundamentals of Statistics		4	C in MATH 1000, 1400 or equiv. STAT2070 can substitute

B. CHEMISTRY			
<input type="checkbox"/> CHEM 1020 General Chemistry I	PN	4	Math ACT 23 OR concurrent MATH 1400, OR 1405 OR 1450
<input type="checkbox"/> CHEM 1030 General Chemistry II	PN	4	CHEM 1020

C. PHYSICS			
<input type="checkbox"/> PHYS 1110 General Physics I			MATH 1405, 1450
OR			
<input type="checkbox"/> GEOL 1100 Physical Geology		4	
OR			
<input type="checkbox"/> SOIL 2010 Introduction to Soil Science			CHEM1020
<i>Students can take PHYS1310 College Physics I (requires Calculus) but not common</i>			

D. BIOLOGY and ZOOLOGY			
<input type="checkbox"/> LIFE 1010 General Biology		4	C in MATH 0921 OR Level 2 on Math Placement OR Math ACT 21, SAT 600
<input type="checkbox"/> LIFE 2022 Animal Biology		4	LIFE1010
<input type="checkbox"/> LIFE 2023 Biology of Plants & Fungi		(4)	LIFE1010. <i>For Terrestrial option only</i>
<input type="checkbox"/> LIFE 2450 Principles of Fish & Wildlife Management		3	LIFE1010. LIFE2022
<input type="checkbox"/> LIFE 3050 Genetics		4	C in LIFE 1010; C in LIFE 2022
<input type="checkbox"/> LIFE 3400 General Ecology		3	C in LIFE 2022
<input type="checkbox"/> LIFE 3410 Field Ecology		2	LIFE3400 concurrently or Consent
<input type="checkbox"/> ZOO 4190 Comparative Environmental Physiology		4	LIFE2022, CHEM1020, CHEM1030
<input type="checkbox"/> ZOO 4440 Population Ecology		3	LIFE1010, LIFE3400, STAT2050 or Consent
<input type="checkbox"/> ZOO 4970 Fish & Wildlife Internship		1	Consent required

E. COMMUNICATING IN BIOLOGY			
<input type="checkbox"/> ZOO 4100 Biological Communication	C3	3	C in C1 AND C2

Specialty Elective Courses: (*minimum 23 Credit Hours required*)

Required for Terrestrial option:

BOT 4700 Vegetation Ecology (4)
ZOO 4300 Wildlife Ecology and Management (5)

Required for Aquatic option:

ZOO 4330 Ichthyology (3)
ZOO 4440 Limnology (3) AND
ZOO 4430 Limnology Laboratory (2)

Recommended for Terrestrial option:

ZOO 4350 Ornithology (3) Required for certification
ZOO 4370 Mammalogy (3) Required for certification
ZOO 4420 Conservation Biology (3)
2 courses in BOT and/or REWM (5-6) Required for certification
Course in Aquatic Biology (see options <i>right</i>)

Recommended for Aquatic option:

ZOO 4310 Fisheries Management (3)
ZOO 4540 Invertebrate Zoology (4)
CHEM 2230 Quantitative Analysis (4)
Course in Terrestrial Biology (see options <i>left</i>)

For certification in either the Terrestrial or Aquatic Options, students must take 6 hours in courses that consider 'Human Dimensions'.

ENR 2000 Environment & Society (3)	ENR/POLS 4051 Environmental Politics (3)
ENR 3000 Approaches to ENR Problem Solving (3)	ENR 4550 Negotiation Analysis (3)
ENR/AGEC 3750 Natural Resource Econ (3)	ENR 4750 Environmental Law & Policy (3)
ENR 4040 Conservation of Natural Resources (3)	ENR 4900 Environment & Natural Resource Policy Practice (3)
ENR 3900 Seminar Environment & Natural Resources (3)	POLS 4052 Federal Land Policy (3)

WFBM Specialty Areas - alternatives for remaining credits

ZOOLOGY

- ZOO 3010 Vertebrate Anatomy, Embryology & Histology (4)
- ZOO 3600 Principles of Animal Behavior (3)
- ZOO 3500 Evolutionary Biology (3)
- ZOO 4380 Herpetology (3)
- ZOO 4390 Ecotoxicology (3)
- ZOO 4425 Genetic Markers (3)
- ZOO 4415 Behavioral Ecology (3)
- ZOO 4740 Fish Culture and Nutrition (3)
- ANSC 3100 Principles of Animal Nutrition (3)
- PATB 4170 Diseases of Wildlife (3)
- PATB 4310 Introduction to Veterinary Parasitology (3)

GEOGRAPHY

- GEOG 3150 Survey of Remote Sensing Applications (3)
- GEOG 3480 Environmental Change (3)
- GEOG 4200 Intro to GIS (3)
- GEOG 4210 Advanced GIS (3)
- GEOG 4450 Fluvial Geomorphology (3)

BOTANY

For certification in the Terrestrial Option, students must take 9 credit hours of 'plant courses'. So in addition to LIFE 2023 and BOT 4700, students need to select one additional course that meets this requirement.

- BOT 3100 Plants & Civilization (3)
- BOT 3200 Plant Anatomy (3)
- BOT 4111 Remote Sensing of the Environment (3)
- BOT 4400 Plant Physiology (4)/CHEM 2300 is a prerequisite
- BOT 4550 Computational Biology (4)
- BOT 4664 Special Topics in Evolution (1+)
- BOT 4790 Special Topics in Ecology (1+)
- BOT 4640 Flora of the Rocky Mountains (summer course)
- BOT 4680 Taxonomy of Vascular Plants (4)

ENTOMOLOGY & RENEWABLE RESOURCES

- ENTO 4300 Applied Insect Ecology (3)
- ENTO 4678 Aquatic Entomology (3)
- ENTO 4684 Classification of Insects (4)
- REWM 2500 Rangeland Plant Identification (2)
- REWM 3100 Principles of Wildland Water Quality (3)
- REWM 3500 Rangeland Plant Ecophysiology (3)
- REWM 4000 Poisonous Plants & Plant Toxins (3)
- REWM 4285 Wildland Watershed Management (3)
- REWM 4650 Wildlife Habitat Evaluation Techniques (3)/Highly recommended
- REWM 4700 Wildland Watershed Management (3)

CREDITS IN THE MAJOR

Students must complete at least 30 credit hours with grades of C or better in courses used to meet this requirement.

COURSE

- LIFE 2022 (see above)*
- LIFE 3050 (see above) *
- LIFE 3400 (see above) *
- MATH 2200 (see above)

CREDITS PREREQUISITES

- | | | |
|---|--|--------------------|
| 4 | | LIFE1010 |
| 4 | | LIFE2022 |
| 4 | | LIFE2022 |
| 4 | | MATH1400+1405/1450 |

Specialty Elective Courses (23h+)

- Course: _____

- | | | |
|--|--|-------|
| | | _____ |
| | | _____ |
| | | _____ |
| | | _____ |
| | | _____ |
| | | _____ |
| | | _____ |

* C required

BS in WFBM



University of Wyoming

Freshman Fall Semester		Hrs	Min Grade	Notes
LIFE	1010 General Biology	4	C	PN. C required for LIFE2022
MATH	1400 Algebra	4	C	Q. C required for MATH1405. Students can take MATH1450 instead of 1400+1405
CHEM	1020 General Chemistry I	4		PN
	First Year Seminar or COM1	3	C	FYS or COM1
Credit hours subtotal:		15		

Freshman Spring Semester		Hrs	Min Grade	Notes
LIFE	2022 Animal Biology	4	C	C required for Genetics
MATH	1405 Trigonometry	4	C	C required for MATH2200
CHEM	1030 General Chemistry II	4		
	COM1 or First Year Seminar	3	C	COM1 or FYS
Credit hours subtotal:		15		

Sophomore Fall Semester		Hrs	Min Grade	Notes
LIFE	2023 Plants & Fungi	4	C	Required for Terrestrial option only
MATH	2200 Calculus I (recommended) OR	4		Section aimed at Biologists is recommended in MATH2200
MATH	2350 Business Calculus I			
LIFE	3400 General Ecology	3	*	
LIFE	3410 Field Ecology	2	*	
	US & Wyoming Constitutions	3		V
Credit hours subtotal:		16		

Sophomore Spring Semester		Hrs	Min Grade	Notes
ZOO	2450 Principles of Fish & Wildlife Mngmnt	3	*	
COSC	1200 Computer Information Systems	3		
STAT	2050 Fundamentals of Statistics	4		
	Human Culture	3		H
	COM 2	3	C	COM2
Credit hours subtotal:		16		

Notes:

1. Students must have a minimum cumulative GPA of 2.0 to graduate.
2. Students must complete 42 hours of upper division coursework, 30 of which must be from the University of Wyoming.
3. No more than 60 hours in the major subject may be used toward the 120 credits. Courses for the major and the A&S Core must be taken for a letter grade unless offered for S/U only. H and PN courses must be taken outside the major subject, but can be cross-listed with the major.

BS in WFBM - Terrestrial



University of Wyoming

Junior Fall Semester		Hrs	Min Grade	Notes
LIFE	3050 Genetics	4	*	
ZOO	4420 Conservation Biology	3	*	
ENR/POLS	<i>Human Dimensions course</i>	3		<i>Only required for certification</i>
ZOO	4970 Internship	1		
	Physics, Geology or Soils	4		
Credit hours subtotal:		<u>15</u>		

Junior Spring Semester		Hrs	Min Grade	Notes
ZOO	4350 Ornithology	3	*	Possible substitutions, consult your advisor
	Aquatic Biology Elective	3	*	
BOT/REWM	Any course	3	*	
	US Diversity or Global Awareness	3		A&S Core (ASD)/A&S Core (ASG)
	Human Culture	3	H	
Credit hours subtotal:		<u>15</u>		

Senior Fall Semester		Hrs	Min Grade	Notes
ZOO	4300 Wildlife Ecology and Management	5	*	
ZOO	4370 Mammalogy	3	*	Possible substitutions, consult your advisor
BOT	4700 Vegetation Ecology	4	*	
	US Diversity or Global Awareness	3		A&S Core (ASD)/A&S Core (ASG)
Credit hours subtotal:		<u>15</u>		

Senior Spring Semester		Hrs	Min Grade	Notes
ZOO	4100 Communication in Biological Sciences	3	C	COM3
ZOO	4400 Population Ecology	3	*	
ZOO	4190 Comparative Physiology	4	*	
ENR/POLS	<i>Human Dimensions course</i>	3		<i>Only required for certification</i>
BOT/REWM	Any course	3	*	
Credit hours subtotal:		<u>16</u>		

TOTAL CREDIT HOURS: 123

Notes:

1. Students interested in being certified by The Wildlife Society **MUST** consult their advisor for more information. Additional courses may be required.
2. Students are strongly encouraged to enroll in *Human Culture* requirement courses that correspond to the College of Arts & Sciences Core required US Diversity (ASD) and Global Awareness (G) electives or else they will have to take separate ASD and ASG courses. A list of ASD & ASG courses that transfer is available.
3. A minimum of 30h in courses noted by a * must be completed with a C grade or higher.
4. For certification, students must take 6h in courses that consider *Human Dimensions*. *Not required specifically for the WFBM major*

BS in WFBM - Aquatic



University of Wyoming

Junior Fall Semester		Hrs	Min Grade	Notes
LIFE	3050 Genetics	4	*	
ZOO	4440 Limnology	3	*	
ZOO	4430 Limnology Lab	2	*	
ZOO	4970 Internship	1		
	Physics, Geology or Soils	4		
Credit hours subtotal:		14		

Junior Spring Semester		Hrs	Min Grade	Notes
ZOO	4330 Ichthyology	3	*	
	Aquatic Upper Division specialty course ¹	3	*	
	Terrestrial option specialty course ¹	3	*	
ENR/POLS	Human Dimensions course	3		Only required for certification
	US Diversity or Global Awareness	3		A&S Core (ASD)/A&S Core (ASG)
Credit hours subtotal:		15		

Senior Fall Semester		Hrs	Min Grade	Notes
ZOO	4310 Fisheries Management	3	*	
	Aquatic Upper Division specialty course ¹	3	*	
	Aquatic option specialty course ¹	4	*	Suggested Invertebrate Zoology
	Aquatic option specialty course ¹	3	*	
	US Diversity or Global Awareness	3		A&S Core (ASD)/A&S Core (ASG)
	Human Culture	3	H	
Credit hours subtotal:		16		

Senior Spring Semester		Hrs	Min Grade	Notes
ZOO	4100 Communication in Biological Sciences	3	C	COM3
ZOO	4400 Population Ecology	3	*	
ZOO	4190 Comparative Physiology	4	*	
ENR/POLS	Human Dimensions course	3		Only required for certification
Credit hours subtotal:		13		

TOTAL CREDIT HOURS: 120

Notes:

1. Students interested in being certified by The American Fisheries Society MUST consult their advisor for more information. Additional courses may be required.
2. Students are strongly encouraged to enroll in Human Culture requirement courses that correspond to the College of Arts & Sciences Core required US Diversity (ASD) and Global Awareness (G) electives or else they will have to take separate ASD and ASG courses. A list of ASD & ASG courses that transfer is available.
3. A minimum of 30h in courses noted by a * must be completed with a C grade or higher.
4. For certification, students must take 6h in courses that consider Human Dimensions. Not required specifically for the WFBM major

Studying Zoology at UW

Zoology is the study of animals: their structure, physiology, development and evolution, and adaptations to their environment. We are animals, and we are surrounded by them. One of the enduring fascinations of Zoology as a subject is that we can learn so much about ourselves and our environment by studying what our fellow creatures do. In Wyoming specifically, there is an abundance of wild animals and much has to be learned about them and how they react to changing climates and habitats.

Students who are interested in studying Zoology can do so by taking a range of courses that the Department of Zoology and Physiology offers. The department is lucky to have many expert zoologists on its staff, and it can offer courses that cover all aspects of Zoology. As for all degree programs, students also have to meet University and College of Arts and Sciences requirements.

The department's program in zoology typically would involve the following:

Freshman Year: In this year, students take introductory courses in subjects such as biology, chemistry, physics, and mathematics as these provide fundamental knowledge and skills for understanding zoological ideas and processes.

Sophomore Year: In this year, students finish any introductory courses they have not yet completed and begin the study of zoology by taking courses in genetics, ecology and evolution, and these subjects provide the great underlying principles of animal structure and function, and the mechanisms of evolution.

Junior and Senior Years: In these years, students can elect to concentrate in those areas of zoology that they find most interesting. The department has strengths in four areas: cell and developmental biology, physiology, organismal biology, and ecology.

Over their junior and senior years, students can take courses such as Cell Biology, Histology, Developmental Biology, Animal Behavior, Invertebrate Zoology, Herpetology, Ornithology, Ichthyology, Mammalogy, and several different courses in Physiology (see Studying Physiology at the University of Wyoming).

At the end of this program, students will have a comprehensive knowledge of zoology, be will prepared for graduate study, and be prepared for the career opportunities listed.

University of Wyoming, College of Arts & Sciences Requirements Checklist – Zoology – August 2015

Student: _____ Advisor: _____ Initial Date of Program: _____

***A University of Wyoming degree requires a minimum of 120 hours
At least 42h must be at the Upper Division Level***

University Studies Program: (30 Credit Hours)

(FYS) First Year Seminar (C or better)	1 course, 3 credits	_____
(V) U.S. & Wyoming Constitutions	1 course, 3 credits	_____
(C1) Communication 1 (C or better)	1 course, 3 credits	_____
(C2) Communication 2 (C or better)	1 course, 3 credits	_____
(C3) Communication 3 (C or better)	1 course, 3 credits	_____ ZOO 4100 _____
(Q) Quantitative Reasoning	1 course, 3 credits	_____ MATH 1400/1450 _____
(PN) Physical and Natural World	1 course, 3 credits	_____ CHEM 1020 _____
(PN) Physical and Natural World	1 course, 3 credits	_____ CHEM 1030 _____
(H) Human Culture	1 course, 3 credits	_____
(H) Human Culture	1 course, 3 credits	_____

A&S Core: (6 Credit Hours)

ASD: US Diversity	1 course, 3 credits	_____
ASG: Global Awareness	1 course, 3 credits	_____

University Upper Division Requirement: (42 Credit Hours)

3XXX-level or above: 30h of which must be earned from the University of Wyoming.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Required Courses: (54-55 Credit Hours)

The following courses are for the major requirements and are offered in no particular order. A “roadmap” of how to complete the degree in 4 years is provided, but **please** consult with your advisor for scheduling the sequence.

<u>COURSE</u>	<u>USP</u>	<u>CREDITS</u>	<u>PREREQUISITES</u>
A. MATHEMATICS			
<input type="checkbox"/> MATH 1450 Algebra and Trigonometry		5	C in MATH 0925 OR Level 3 Math Placement OR Math ACT 23, SAT 600
OR	Q		
<input type="checkbox"/> MATH 1400 Algebra		3	C in MATH 0925 OR Level 3 Math Placement OR Math ACT 23, SAT 600
AND			
<input type="checkbox"/> MATH 1405 Trigonometry		3	C in MATH 1400
<input type="checkbox"/> MATH 2200 Calculus I		4	C in MATH 1405 or 1450 OR level 5 on Math Placement or Math ACT 27, SAT 600
<input type="checkbox"/> STAT 2050 Fundamentals of Statistics		4	C in MATH 1000, 1400 or equiv. STAT2070 can substitute

Recommended Electives:

<i>Normally offered in the Spring semester</i>	<i>Normally offered in the Fall semester</i>
ZOO 3115 Human Systems Physiology (4)	ZOO 4300 Principles of Wildlife Ecol & Mgmt (5)
ZOO 3600 Animal Behavior (3)	ZOO 4310 Fisheries Management (3)
ZOO 4190 Comparative Environmental Physiology (4)	ZOO 4415 Behavioral Ecology (3)
ZOO 4340 Developmental Biology & Embryology (4)	ZOO 4420 Conservation Biology (3)
ZOO 4400 Population Ecology (3)	ZOO 4430 Limnology Lab (2), must be taken w/ ZOO 4440 ZOO 4440 Limnology (3), may be taken without ZOO 4430
ZOO 4735 Advanced Topics in Physiology (2+) (also Fall)	A&S 4900 Special Topics in_____ (1+) (Study abroad courses, e.g. Darwin and the Galapagos)
<i>ZOO 4380 Herpetology (3)</i>	<i>ZOO 4540 Invertebrate Zoology (4)</i>
<i>ZOO 4350 Ornithology (3)</i>	<i>ZOO 4370 Mammalogy (3)</i>
<i>ZOO 4330 Ichthyology (3)</i>	

***Can count as an elective if not already taken as F. ADVANCED ZOOLOGY COURSE**

Other Electives:

More possibilities across campus (this list is not exhaustive, check departmental websites for scheduling)	
MOLB 3000 Introduction to Molecular Biology (3)	ANSC 3010 Comp Anat and Phys of Domestic Animals (4)
BOT 4550 Computational Biology (4)	ANSC 3100 Principles of Animal Nutrition (3)
BOT 4664 Special Topics in Evolution (1+)	ANSC 3150 Equine Nutrition and Physiology (3)
BOT 4790 Special Topics in Ecology (1+)	PATB 4170 Diseases of Wildlife (3)
GEOG 3150 Survey of Remote Sensing Applications (3)	PATB 4310 Introduction to Veterinary Parasitology (3)
GEOG 3480 Environmental Change (3)	PATB 4360 Medical Entomology & Parasitology (4)
ENTO 4300 Applied Insect Ecology (3)	PATB 4710 Medical Virology (3)
ENTO 4682 Insect Anat. & Physiology (5)	ENTO 4678 Aquatic Entomology (3)
	ENTO 4684 Classification of Insects (4)

CREDITS IN THE MAJOR

Students must complete at least 30 credit hours with grades of C or better in courses used to meet this requirement. All courses selected for an optional minor/concentration can also be listed here. ZOO 4900, ZOO 4971, and ZOO 4975 **cannot** be included here, but are permitted to count in the 42-credit hour upper division category.

COURSE

- LIFE 2022 (see above)*
- LIFE 3050 (see above) *
- LIFE 3400 (see above) *
- LIFE 3500 (see above)
- MATH 2200 (see above)

CREDITS PREREQUISITES

- 4 LIFE1010
- 4 LIFE2022
- 4 LIFE2022
- 4 LIFE2022; LIFE3050
- 4 MATH1400+1405/1450

Electives (21+ Credit Hours)

- Course: _____

* C required

BS in Zoology



University of Wyoming

Freshman Fall Semester		Hrs	Min Grade	Notes
LIFE	1010 General Biology	4	C	PN. C required for LIFE2022
MATH	1400 Algebra	4	C	Q. C required for MATH1405. Students can take MATH1450 instead of 1400&J1405
CHEM	1020 General Chemistry I	4		PN.
	First Year Seminar or COM1	3	C	FYS or COM1
Credit hours subtotal:		15		

Freshman Spring Semester		Hrs	Min Grade	Notes
LIFE	2022 Animal Biology	4	C	C required for Genetics
MATH	1405 Trigonometry	4	C	C required for MATH2200
CHEM	1030 General Chemistry II	4		
	COM1 or First Year Seminar	3	C	COM1 or FYS
Credit hours subtotal:		15		

Sophomore Fall Semester		Hrs	Min Grade	Notes
MATH	2200 Calculus I	4	*	Section aimed at Biologists is recommended
PHYS	1110 General Physics I	4		Alternative: PHYS1310 Gen Physics I Calculus based
LIFE	3400 General Ecology	3	*	
	US & Wyoming Constitutions	3		V
	Human Culture	3		H
Credit hours subtotal:		17		

Sophomore Spring Semester		Hrs	Min Grade	Notes
STAT	2050 Fundamentals of Statistics	4		or Statistics 2070
PHYS	1120 General Physics II	4		Alternative: PHYS1320 Gen Physics II Calculus based
	Human Culture	3		H
	COM 2	3	C	COM2
Credit hours subtotal:		14		

Notes:

Students must have a minimum cumulative GPA of 2.0 to graduate. Students must complete 42 hours of upper division coursework, 30 of which must be from the University of Wyoming. No more than 60 hours in the major subject may be used toward the 120 credits required. A minimum of 30h in courses noted by a *

* must be completed with a C grade or higher. Courses for the major and the A&S Core must be taken for a letter grade unless offered for S/U only. H and PN courses must be taken outside the major subject, but can be cross-listed with the major.

BS in Zoology



University of Wyoming

Junior Fall Semester		Hrs	Min Grade	Notes
LIFE	3050 Genetics	4	C	<i>C required for LIFE3050 Genetics</i>
	UD Required Zoology Elective ¹	3	*	
	Upper or Lower Division Elective ³	3		
	3rd Chemistry course (not 1000)	4		
Credit hours subtotal:		14		

Junior Spring Semester		Hrs	Min Grade	Notes
	Upper Division Zoology Elective	3	*	
	Upper Division Zoology Elective	3	*	
	Upper Division Elective	3		
	Upper Division Elective	3		
	US Diversity or Global Awareness ²	3		A&S Core (ASD)/A&S Core (ASG)
Credit hours subtotal:		15		

Senior Fall Semester		Hrs	Min Grade	Notes
LIFE	3500 Evolutionary Biology	4	*	
	Upper Division Zoology Elective	3	*	
	Upper Division Zoology Elective	3	*	
	Upper Division Elective	3		
	US Diversity or Global Awareness ²	3		A&S Core (ASD)/A&S Core (ASG)
Credit hours subtotal:		16		

Senior Spring Semester		Hrs	Min Grade	Notes
ZOO	4100 Communication in Biological Sciences	3	C	COM3
	Upper Division Zoology Elective	3	*	
	Upper Division Zoology Elective	3	*	
	Upper or Lower Division Elective ³	3		
	Upper or Lower Division Elective ³	3		
Credit hours subtotal:		15		

TOTAL CREDIT HOURS: 121

Notes:

1. REQUIRED ELECTIVE COURSE. Students must select a course from the following list: ZOO 4330 Ichthyology (3); ZOO 4350 Ornithology (3); ZOO 4370 Mammalogy (3); ZOO 4380 Herpetology (3); ZOO 4540 Invertebrate Zoology (4)
2. Students are strongly encouraged to enroll in Human Culture requirement courses that correspond to the College of Arts & Sciences Core required US Diversity (ASD) and Global Awareness (ASG) electives or else they will have to take separate ASD and ASG courses. A list of ASD & ASG courses that transfer is available.



MINORS



REQUIREMENTS FOR THE MINOR IN NEUROSCIENCE

Total credit hours: 17-19

- Courses counted towards one minor may NOT be used to count towards a different minor.
- A grade of “C” or better is required in all courses.

REQUIRED COURSES (7 credit hours)

ZOO 3115	Human Systems Physiology	4
ZOO 4280	Introduction to Neuroscience	3

ELECTIVE COURSES (12+ credits)

A minimum of 12 credit hours in the following courses.

ZOO 4125	Integrative Physiology	4
ZOO 4340	Developmental Biology & Embryology	4
ZOO 4290	Neural Mechanisms of Behavior	3
ZOO 4670	Cell Physiology	4
ZOO 4730	Advanced Topics in Physiology-Neuroscience related ones (e.g. Pain, Neurodevelopment)	4
ZOO 5100	Structure and Function of the Nervous System	4
ZOO 5715	Neuroscience Seminar	2
NEUR 5685	Neurophysiology	3
NEUR 5887	Molecular Neuropharmacology	3
PSYC 4080	Physiological Psychology	4

REQUIREMENTS FOR THE MINOR IN HUMAN & ANIMAL PHYSIOLOGY

Total credit hours: 17-20

- Courses counted towards one minor may NOT be counted towards another.
- A grade of "C" or better is required in all courses.

REQUIRED COURSES (8 credit hours)

ZOO 3115	Human Systems Physiology	4
LIFE 3050	Genetics	4

ELECTIVE COURSES (10-12 credits)

Select **THREE (3)** of the following courses, one of which must have a laboratory component.

Course	Course Title	Credits
ZOO 3010	Vertebrate Anatomy, Embryology & Histology	4
ZOO 3600	Principles of Animal Behavior	3
ZOO 4110	HIV/AIDS: The Disease and the Dilemma	3
ZOO 4125	Integrative Physiology	4
ZOO 4190	Comparative Environmental Physiology	4
ZOO 4280	Introduction to Neuroscience	3
ZOO 4340	Developmental Biology & Embryology	4
ZOO 4670	Cell Physiology	4
ZOO 4735	Advanced Topics in Physiology	2+
NEUR 5100	Structure & Function of the Nervous System	4
NEUR 5685	Neurophysiology	3
NEUR 5887	Molecular Neuropharmacology	3
LIFE 3600	Cell Biology	4
KIN 3021	Physiology of Exercise (<i>Needs KIN2040/41 Human Anatomy as a prerequisite</i>)	3
KIN 3038	Exercise Psychology (will need permission of instructor)	3
KIN 3042	Biomechanics of Human Movement	3
KIN 4042	Applied Biomechanics (prereq KIN 3042)	3
MOLB 3000	Introduction to Molecular Biology	3
MOLB 3610	Principles of Biochemistry	4
MOLB 4100	Clinical Biochemistry	3
MOLB 4400	Immunology	4
PSYC 4080	Physiological Psychology	4
PHCY 4450	Pathophysiology	4
ANSC 4120	Principles of Mammal Reproduction	3
SOC 3550	Medical Sociology	3
ANTH 4210	Human Osteology	3
ANTH 4230	Forensic Anthropology	3
PATB 4130	Mammalian Pathobiology	3
PATB 4140	Principles of Toxicology	3
PATB 4710	Medical Virology	3
CHEM 3550	Physical Chemistry for the Life Sciences	3

Several of the courses listed above have prerequisites. For 5000-level courses permission of the instructor is required

REQUIREMENTS FOR THE MINOR IN FISHERIES AND WILDLIFE BIOLOGY

Total credit hours: 18-22

- Courses counted towards one minor may NOT be counted towards another.
- A grade of "C" or better is required in all courses.

REQUIRED COURSES (9 or 11 credit hours)

LIFE 3400	General Ecology	3
ZOO 2450	Principles of Fish and Wildlife Management	3

And ONE (1) course from

ZOO 4300	Wildlife Ecology and Management	5
ZOO 4310	Fisheries Management	3

ELECTIVE COURSES (9-11 credits).

Select THREE (3) of the following courses, one of which must have a laboratory component

BIOL 3050	Genetics	3
ZOO 3600	Animal Behavior	3
ZOO 4190	Comparative Environmental Physiology	4
ZOO 4330	Ichthyology	3
ZOO 4350	Ornithology	3
ZOO 4370	Mammalogy	3
ZOO 4380	Herpetology	3
ZOO 4400	Population Ecology	3
ZOO 4415	Behavioral Ecology	3
ZOO 4440	Limnology	3
ZOO 4540	Invertebrate Zoology	4

REQUIREMENTS FOR THE MINOR IN ZOOLOGY

Total credit hours: 17-20

- Courses counted towards one minor may NOT be counted towards another.
- A grade of "C" or better is required in all courses.

REQUIRED COURSES (4 credit hours)

BIOL 3050	Genetics	4
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ELECTIVE COURSES (13-16 credits).

Select **FOUR (4)** of the following courses, one of which must have a laboratory component

ZOO 3010	Vertebrate Anatomy, Embryology, and Histology	4
LIFE 3400	General Ecology	3
ZOO 3600	Animal Behavior	3
ZOO 3115	Human Systems Physiology	4
ZOO 4190	Comparative Environmental Physiology	4
ZOO 4330	Ichthyology	3
ZOO 4340	Developmental Biology and Embryology	4
ZOO 4350	Ornithology	3
ZOO 4370	Mammalogy	3
ZOO 4540	Invertebrate Zoology	4
ZOO 4380	Herpetology	3

DEPARTMENTAL CLUBS AND CONTACT INFORMATION

Wyoming Student Subunit of the American Fisheries Society

To provide information and activities for students interested in fisheries management and the conservation of aquatic environments.

Advisors: Annika Walters 766-5473 awalter8@uwyo.edu;
Frank Rahel 766-4212 frahel@uwyo.edu

Website: <http://www.uwyo.edu/wyfisheriessociety/>

UW Environment & Natural Resources (ENR) Club

Open to all students, the Environment & Natural Resources (ENR) student club explores environmental issues, challenges, and ideas. Supported by the Haub School of ENR, this group coordinates events like the annual UW Wilderness Festival, UW Earth Day events, film screenings, speaker series, career brown bag lunches, and more. We also participate as a group in local service projects, hiking and camping trips, and social events.

Meeting Location/Time: Bi-weekly meetings, exact dates TBA

Advisor: Maggie Bourque, maggie@uwyo.edu

Website: <https://uwyo.collegiatelink.net/organization/enrstudentclub>

FaceBook: <https://www.facebook.com/UwyoENR>

University of Wyoming Student Chapter of the Wildlife Society

A student organization dedicated to the development and promotion of sound stewardship of wildlife resources and the environments upon which wildlife and humans depend.

Meeting Location/Time: Bi-monthly, Thursday 6pm, Biological science Room 311

Advisor: Merav Ben-David, 307-214-0510, bendavid@uwyo.edu

Website: <https://uwyo.collegiatelink.net/organization/uw-tws>

FaceBook: <https://www.facebook.com/WyomingTWS>