

**Department of Fisheries and Wildlife  
2009-2010 Curriculum**

Advisor: \_\_\_\_\_

H.S. or Transfer C.C. \_\_\_\_\_

Name: \_\_\_\_\_

Minor or Dbl Degree \_\_\_\_\_

<b>BACCALAUREATE CORE (Exclusive of Fisheries and Wildlife Core)</b>		<b>CREDITS</b>				
		<b>24</b>				
_____ Social Processes & Inst.			_____ Diff, Pow & Discr			
_____ Literature & Arts			_____ Science, Tech, Society			
_____ Western Culture			_____ Contemp Global Issues			
_____ Cultural Diversity			_____ Fitness HHS 231 & 241			
			<b>Terms Offered</b>			
		<b>9</b>	<b>F</b>	<b>W</b>	<b>Sp</b>	<b>Su</b>
_____ WR 121 English Communication		3	X	X	X	X
_____ COMM 111 Public Speaking		3	X	X	X	X
<b>Select one:</b> _____ WR 222 English Composition -or-		3	X	X	X	X
_____ PHL 121 Reasoning and Writing		3	X, E	X, E	X, E	X, E
<b>FISHERIES AND WILDLIFE CORE</b>		<b>134-153</b>				
_____ BI 211 Principles of Biology I		4	X			X
_____ BI 212 Principles of Biology II		4		X		X
_____ BI 213 Principles of Biology III		4			X	X
_____ BI 370 Ecology (prerequisites: BI 211, 212, 213)		3	X, E	X, E	X, E	X
<b>Select one</b>	_____ CH 121 General Chemistry I	5	X, E	X, E	E	X, E
<b>Chemistry</b>	_____ CH 122 General Chemistry II	5		X, E	X, E	X, E
<b>series:</b>	_____ CH 123 General Chemistry III -or-	5			X, E	X, E
	_____ CH 221 General Chemistry I	5	X	X		X
	_____ CH 222 General Chemistry II	5		X	X	X
	_____ CH 223 General Chemistry III	5			X	X
<b>Select one:</b>	_____ MTH 241 Calculus for Management and Social Science -or-	4	X, E	X, E	X, E	E
	_____ MTH 251 Differential Calculus	4	X, E	X, E	X, E	E
<b>Select one</b>	_____ ST 351 Introduction to Statistical Methods I	4	X, E	X, E	E	X, E
<b>Statistics</b>	_____ ST 352 Introduction to Statistical Methods II -or-	4		X	X	X
<b>series:</b>	_____ ST 411 Methods of Data Analysis I	4	X	X		X
	_____ ST 412 Methods of Data Analysis II	4		X	X	
<b>Fisheries &amp; Wildlife Core</b>		<b>25-27</b>				
_____ FW 107 Orientation to Fisheries and Wildlife		1	X			
_____ FW 251 Principles of Fish and Wildlife Conservation		3	E	X, E	E	E
_____ FW 255 Field Sampling of Fish and Wildlife		3	X	X	X	
_____ FW 307 Specialization Development		1		X		
_____ FW 320 Population Dynamics (prereq: BI 370)		4		X	E	E
_____ FW 321 FW Resource Ecology (prereq: FW320)		3	E	E	X	
_____ FW 410 Internship experience (2 required)		4-6		all terms		
_____ FW 488 Problem Solving in Fisheries and Wildlife		3		X		
_____ FW 489 Effective Communications in Fisheries and Wildlife		3			X	
<b>Vertebrate Biology: choose one</b>		<b>7-8</b>				
_____ FW 311 Ornithology		3	E	E	X, E	E
_____ FW 315 Ichthyology		3	X	E	E	E
_____ FW 317 Mammalogy		3	E	X	E	E

X = offered main campus; E = offered thru E-campus; \* = Bacc Core; ^ = Writing Intensive Course, AE= Alt. even yrs, AO= Alt. odd yrs

Note: Classes are subject to change at any time. Double check course catalog online often for updates.

<b>choose one</b>			<b>F</b>	<b>W</b>	<b>Sp</b>	<b>Su</b>
FW 312	Systematics of Birds	2	X, E		E	E
FW 316	Systematics of Fish	2	X			
FW 318	Systematics of Mammals	2		X		
<b>select one additional from either</b>		2 or 3				
<b>Habitats &amp; Ecosystems: choose one</b>		<b>3-5</b>				
FOR 341	Forest Ecology	3			X, E	
FW 426	Coastal Ecology and Resource Management	5	HMSC			
FW 435	Wildlife in Agricultural Ecosystems*^	3	E	X, E		E
FW 446	Wildland Fire Ecology	3		X		
FW 453	Forest Management and Wildlife Conservation	3			X	
FW 456	Limnology	5			X	
FW 479	Wetlands and Riparian Ecology	3	E	E	X-AE	E
Z 351	Marine Ecology	3			X	
<b>Species Conservation &amp; Management: choose two</b>		<b>6-8</b>				
FW 451	Avian Conservation and Management	3	X-AO			
FW 458	Mammal Conservation and Management	4	X			
FW 454	Fishery Biology*^	4	HMSC			
FW 473	Fish Ecology	4			X	
FW 481	Wildlife Ecology	4	X		X, E	E
FW 464	Marine Conservation Biology - fall 2010	3	X-AE			
FW 499	ST/Whales and Whaling	3	X			
<b>Behavior &amp; Physiology: choose two</b>		<b>6-8</b>				
ANS 314	Animal Physiology	4		X		E
BOT 313	Plant Structure	4		X		
BOT 331	Plant Physiology	4		X		
FW 471	Environmental Physiology of Fishes	4		X		
Z 350	Animal Behavior	3		X		X
Z 423	Environmental Physiology	4	X			
Z 431	Vertebrate Physiology	4		X		
Z 437	Vertebrate Endocrinology	4			X	
<b>Genetics &amp; Evolution: choose one</b>		<b>3-4</b>				
ANS 378	Animal Genetics	4	X			
BI 311	Genetics	4	X, E	X, E	X, E	
BI 445	Evolution	3	X	X	X	
CSS 430	Plant Genetics	3		X		
GEN 430	Introduction to Population Genetics	3		Check course listing		
Z 422	Comparative Anatomy	5		Check course listing		
Z 345	Introduction to Evolution (STS)	3		Check course listing		

## PHYSICS, CHEMISTRY, EARTH SCIENCE

**Requirement:** Choose three courses from the list below in physics, chemistry, and earth sciences. **No more than two courses can be selected from any single category.**

**Goal:** To provide students with a background in the basic physical sciences that are important to fish and wildlife science, conservation, and management, to allow students to explore topics of potential interest, and to provide a solid base on which to build a specialization program to match their career goals.

		CREDITS
<b>PHYSICS AND MATH</b>		<b>9-15</b>
PH 201	General Physics I	5
PH 202	General Physics II	5
PH 203	General Physics III	5
PH 205	Solar System Astronomy	4
PH 206	Stars and Stellar Evolution	4
PH 207	Galaxies, Quasars, and Cosmology	4
PH 211	General Physics with Calculus I	4
PH 212	General Physics with Calculus II	4
PH 213	General Physics with Calculus III	4
PH 331	Sound, Hearing, and Music* (STS)	3
PH 332	Light, Vision, and Color* (STS)	3
MTH 252	Integral Calculus	4
FW/MTH 268	Mathematical Ideas in Biology	4
<b>CHEMISTRY</b>		
CH 130	General Chemistry of Living Systems	4
CH 324	Quantitative Analysis	4
CH 331	Organic Chemistry**	4
CH 332	Organic Chemistry**	4
CH 334	Organic Chemistry	4
CH 335	Organic Chemistry	4
CH 336	Organic Chemistry	4
CH 390	Environmental Chemistry	3
BB 350	Elemental Biochemistry**	4
TOX 360	The World of Poisons* (STS)	3
<b>EARTH SCIENCES</b>		
ATS 210	Introduction to the Atmospheric Sciences	3
GEO 201	Physical Geology	4
GEO 202	Earth System Science	4
GEO 203	Evolution of Planet Earth	4
GEO 221	Environmental Geology**	3
GEO 305	Living with Active Cascade Volcanoes* (STS)**	3
GEO 306	Minerals, Energy, Water, and the Environment* (STS)	3
GEO 307	National Park Geology and Preservation* (STS)**	3
GEO 308	Global Change and Earth Sciences* (CGI)**	3
GEO 322	Surface Processes	4
GEO 323	Climatology*^	4
OC 331	Introduction to Oceanography	3
OC 332	Coastal Oceanography	3
CSS 305	Principles of Soil Science	4

Most 400 geology courses would be appropriate, but they have 200 and 300 level prerequisites.

\*\* = Course also offered through E-campus

\*= Bacc Core; **STS**= Science, Technology, & Society; **CGI**= Contemporary Global Issues; **^**= Writing Intensive Course

## HUMAN DIMENSIONS COURSES

**Requirement:** Three courses from the following list of Human Dimensions courses.

**Goal:** To provide students a broad perspective at an advanced level of the interface between humans and the natural resources upon which we depend. This experience is intended to build upon and complement the Baccalaureate Core Perspectives requirement.

HUMAN DIMENSIONS COURSES		Credits
		9-12
AG 301	Ecosystem Science of Pacific NW Indians* (DPD)**	3
ANTH 481	Natural Resources and Community Values* (STS)**	3
AREC 351	Natural Resource Economics and Policy* (CGI)**	3
AREC 352	Environmental Economics and Policy* (STS)**	3
AREC 432	Environmental Law**	4
BI 301	Human Impacts on Ecosystems* (CGI)	3
BOT 322	Economic and Ethnobotany: Role of plants in human culture	3
FOR 330	Forest Resource Economics I	4
FOR 351	Recreation Behavior and Management	4
FOR 355	Management for Multiple Resource Values	4
FOR 365	Issues in Natural Resource Conservation* (CGI)**	3
FOR 432	Economics of Recreation Resources	4
FOR 451	Historical Cultural Aspects of Recreation	4
FOR/FE 456	International Forestry* (CGI)	3
FOR 460	Forest Policy^	4
FOR 462	Natural Resource Policy and Law	3
FOR 463	Environmental Policy and Law Interactions	3
FW 340	Multicultural Perspectives in Natural Resources* (DPD)**	3
FW 350	Endangered Species/Society/Sustainability* (STS)**	3
FW 360	Origins of Fish & Wildlife Management-Evolution, Genetics & Ecology	3
FW 415	Fisheries and Wildlife Law and Policy	3
FW 470	Ecology and History: Landscapes of the Columbia Basin* (STS)**	3
FW 485	Consensus and Natural Resources* (STS)**	3
GEO 311	20TH Century U.S. Environmental Policy* (CGI)	3
HST 481	Environmental History of the U.S.* (STS)**	4
HSTS 415	Theory of Evolution and Foundation of Modern Biology*^ (STS)	4
PHL 440	Environmental Ethics	3
PHL 443	World Views and Environmental Values* (CGI)**	3
PS 474	Bureaucratic Politics	4
PS 475	Environmental Politics and Policy**	4
PS 476	Science and Politics* (STS)	4
SOC 480	Environmental Sociology* (CGI)**	3
SOC 481	Society and Natural Resources**	4
WS 470	Women: Creating Multicultural Alliances	3

\*\* = Course also offered through E-campus

\*= Bacc Core; **STS**= Science, Technology, & Society; **DPD**= Difference, Power, and Discrimination;

**CGI**= Contemporary Global Issues; ^ = Writing Intensive Course

## **SPECIALIZATION      24 credits**

Students, in consultation with faculty, refine their career and life goals and develop a plan of study to help them achieve those goals. Specializations should be developed their junior year and will be presented to their advisor for review and comment. A one credit, P/N graded course (FW 307) is offered winter term to help students define their professional goals and develop an appropriate academic plan. After review by a student's advisor, specializations are reviewed by the Departmental Resident Instruction Committee. The focus of the review will be on delineation of the goals and how the proposed academic program will help the student achieve those goals. Individual specializations and titles are subject to approval by the Department Head. The following guidelines are provided to assist students in preparing a Specialization.

Specializations must contain a minimum of 24 credits. Courses are required to be upper division (300 and 400 level) with one lower division course allowed. Two courses completed prior to submission of your specialization are allowed. All courses in the Specialization are in addition to the courses in the Fisheries and Wildlife Core. Specializations may be given titles to reflect their content and can be general or specific.

Specializations that include "Fish", "Fishery" or "Fisheries" in the title should contain at least 12 credits of "aquatic sciences". Ones that include "Wildlife" in the title should have at least 12 credits of "terrestrial sciences". Ones that include "Marine" in the title should include a term of full-time enrollment (at least 12 credits) at a marine field station.

A binder with examples of specializations is available in the departmental advising office Nash 104E. These examples are intended as guidelines for students to give them suggestions for courses they may want to include in their specialization.

## **INTERNSHIP/EXPERIENCE REQUIREMENT      4-6 credits**

**REQUIREMENT:** Two experience activities are required for graduation. These will be taken as FW 410, Internship, for 1-3 credits each for a total of 4-6 credits. The student should sign up for the appropriate number of credits the term they plan to complete their internship requirements. All internships must be completed at least two terms before graduation. At least one of the experiences must be "substantial" and valued at 3 credits. The coordinator will determine the credits for each experience based on the activities involved and in consultation with the student and the experience mentor. Internship is a graded class.

**GOAL:** The goal of this requirement is for students to apply the concepts, principles and skills acquired in the classroom to a professional, "real-world" context. Additionally students will gain an understanding of the structure and function of natural resource organizations. This experience will allow students to recognize their personal strengths and refine their professional goals.

**EXPLANATION:** We define an experience as an active learning activity that applies classroom knowledge in a "real-world" setting, and involves students with natural resource professionals in management, research, policy making, and education positions. The experience must occur during a student's tenure at OSU, must not be a part of other credit courses, and must receive prior approval from the faculty coordinator. Experiences will be formalized with a letter of understanding between the student, the department and the mentor overseeing the experience. At the conclusion of the experience the student will complete the course by meeting the class syllabus requirements, including submission of a resume and a brief report describing the activities and what was learned; mentors may provide a brief evaluation of the student's performance. Credit value will be based upon the contribution of the experience to the student's education. Generally, major experience will consist of continuing involvement over several months, while minor experiences will be of shorter duration (days). Examples of experiences would include full or part-time employee/volunteer during the summer or academic year in a natural resource related area, participation in professional meetings, and teaching natural resource subjects in school or community forums.

This requirement will be administered by a faculty coordinator who will be responsible for planning, general oversight and final evaluation of the experience requirement. The coordinator will serve as liaison between students and agencies/groups/individuals providing experience activities, and will actively seek out experience opportunities. The coordinator will provide guidance to students to maximize the educational value of the experiences.

Internship Coordinator: Rebecca Goggans, [Rebecca.goggans@oregonstate.edu](mailto:Rebecca.goggans@oregonstate.edu), Nash 104A

### **Capstone Courses     6 credits**

**FW 488. Problem Solving in Fisheries and Wildlife Science** (3 credits, Winter term)

**Enforced Pre-requisites: FW 320, 321**

**Recommended pre-requisites:** One or more 400-level FW courses, such as FW 481 Wildlife Ecology, FW 454 Fishery Biology, or FW 426 Coastal Ecology and Resource Management

**Description:** This is the first of a two-course capstone sequence designed to introduce students to the synthesis of scientific information on species, habitats and ecosystems and the use of such data in shaping fisheries and wildlife conservation, management and policy. The course will center on three activities: 1) a review of three or four case histories on current, “real world” conservation and management problems presented by faculty or agency biologists who have worked on each problem; 2) discussion about the process used to logically address complex problems in fish and wildlife conservation, leading to development of 3) independent work by students in small groups on a select topic of their choice. The intent of the case history studies is to provide an in-depth treatment of a “real life” complex issue in natural resource management. Each case study will be presented using a common framework that will provide students with a logical process for addressing complex problems in general, and their group problem specifically. The group project provides an opportunity for students to apply what they have learned in this and previous courses to address a conservation or management issue of interest. Each student group will work on a project that includes data analysis and/or synthesis, literature review, and evaluation of the social and economic systems that are involved in the controversy or management problem. Project write-up and presentation will be completed in the subsequent companion course, FW 489 Effective Communications in Fisheries and Wildlife Science, offered in Spring term. Students are required to take the two courses sequentially.

This will be a required course in the FW curriculum, offered each Winter term as part of a 2 course sequence that must be taken together (FW 488 (Winter) and FW 489 (Spring)). The course sequence will be restricted to majors with senior status. A distance version of the course will be developed in 2009.

**FW 489: Effective Communications in Fisheries and Wildlife Science** (3 credits, Spring term)

**Enforced Prerequisites:** FW488

**Description:** This continues the 2 course capstone sequence for FW majors emphasizing the analysis, synthesis and interpretation of information and written and oral communication of management, education or policy statements. The course will be taught spring term every year and in sequence with FW488 that will be taught during winter. We will meet twice per week (80 minutes each session) with a lecture and discussion on the first day each week and Group Project work on the second day to assure designated time for Group Project activities.

In this course, groups will work on a variety of methods for presenting their projects to different audiences. In addition to lectures on how to communicate effectively, we will discuss science and advocacy, the role of science in policy-making, conflict resolution skills for communicating with diverse audiences, and working with the media.