Fisheries and Wildlife Sciences Curriculum 2014-2015 2/6/2015

For students who matriculated Summer 2014 or later.

Courses are subject to change, check online catalog for updated class schedule. FW Core Courses may double count with Bacc. Core.

BACCALAUREATE CORE

This section is only required for students earning their first degree with the exception of the speech and WIC requirement.

Writing I, Speech & Math 111 must be completed within the first 45 OSU credit hours & Writing II within the first 90 OSU credit hours. Transfer students must complete Writing II & Speech within first 45 OSU credit hours.

Literature & Arts (LA)	Social Processes & Institutions (SPI)	Contemporary Global Issues (CGI)
Western Culture (WC)	Difference, Power, & Discrimination (DPD)	Science, Technology, and Society (STS)
Cultural Diversity (CD)	Fitness HHS 231 & 241 -or- PAC	**Synthesis courses cannot be from the same Department (CGI & STS)**

No more than two courses from one Department can be taken to fulfill perspective courses (CD, LA, SPI & WC)

	CREDITS
WR I: WR 121 English Composition*	3
Speech: COMM 111 Public Speaking or Comm 114*	3
_____ Writing Intensive Course (can double count) ^	3

Select one WR II:	CREDITS
WR 222 English Composition* **-or-**	3
WR 327 Technical Writing* **-or-**	
WR 362 Science Writing* **-or-**	
PHL 121 Reasoning and Writing* **-or-**	
_____ HC 199 Honors Writing	
CREDITS	**24-25**

FISHERIES AND WILDLIFE SCIENCES CORE

Complete Series:	BI 211 Principles of Biology I*	4	*Select One:*	MTH 241 Calculus for Mgmt.* **-or-**	4
	BI 212 Principles of Biology II*	4		MTH 245 Math for Mgmt., Life & SS* **-or-**	4
	BI 213 Principles of Biology III*	4		MTH 251 Differential Calculus*	4
Complete Series:	CH 121 General Chemistry I*	5		BI 370 Ecology (prereqs: BI 211-213)	3
	CH 122 General Chemistry II*	5		ST 351 Intro to Statistical Methods I	4
	CH 123 General Chemistry III*	5		ST 352 Intro to Statistical Methods II	4
For on campus students CH 231-233 Corvallis campus labs 261-263 may be substituted for CH 121-123.				**CREDITS**	**42**

FISHERIES AND WILDLIFE SCIENCES SPECIFIC CORE

FW 107 Orientation to Fisheries and Wildlife	1	FW 321 App. Comm. & Ecosystem Eco. (Prereq: FW 320)	3
FW 209 Career Skills in Fisheries and Wildlife Sciences	1	FW 410 Internship: Exploratory	1
FW 251 Principles of F&W Conservation	3	FW 410 Internship : Intensive	3
FW 255 Field Sampling of Fish and Wildlife	3	FW 488 Problem Solving in F & W	3
FW 307 Specialization Development	1	FW 489 Effective Communications in F & W	3
FW 320 Population Dynamics (Prereq: BI 370)	4	**CREDITS**	**26 - 28**

VERTEBRATE BIOLOGY CORE (choose one)		SYSTEMATICS CORE (choose one)	
FW 311 Ornithology	3	FW 312 Systematics of Birds	2
FW 315 Ichthyology	3	FW 316 Systematics of Fish	3
FW 317 Mammalogy	3	FW 318 Systematics of Mammals	2
BI/FW 302 Bio. & Conservation of Marine Mammals	4	Z 474 Systematic Herpetology	2
Z 473 Herpetology	3		
_____ Select one additional course from vertebrate or Systematics column (2 or 3 or 4 credits)		**CREDITS**	**7 - 10**

ADVANCED FISHERIES AND WILDLIFE SCIENCES CORE - Choose one course from each category, plus one additional.

_____ Choose one additional course from the following Advanced Fisheries and Wildlife Sciences Core sections

Genetics and Evolution	Species Conservation Management	Botany
ANS 378 Animal Genetics (4)	FW 419 The Natural Hist. of Whales & Whaling (3)	BOT 313 Plant Structure (4)
BI 311 Genetics (4)	FW/BI 421 Aquatic Biological Invasions (4)	BOT 321 Plant Systematics (4)
CSS/HORT/PBG 430 Plant Genetics (3)	FW 427 Principles of Wildlife Diseases (4)	BOT 323 Flowering Plants of the World^ (3)
FW 370 Conservation Genetics (4)	FW 451 Avian Conservation & Management (3)	BOT 331 Plant Physiology (4)
BI 345 Introduction to Evolution* (STS) (3)	FW 454 Fishery Biology^ (4)	BOT 341 Plant Ecology (4)
Z 422 Comparative Anatomy (5)	FW 458 Mammal Conservation & Management (4)	BOT 416 Aquatic Botany (4)
	FW/Z 464 Marine Conservation Biology (3)	BOT 440 Field Methods in Plant Ecology (4)
Credit hours per course are listed after course names in parentheses	FW 473 Fish Ecology (4)	BOT 442 Plant Population Ecology (3)
	FW 481 Wildlife Ecology (4)	BOT 488 Environmental Physiology of Plants (3)
		RNG 353 Wildland Plant Identification (4)
CREDITS 3 - 5	**CREDITS 3 - 4**	**CREDITS 3 - 4**

CGI=Contemporary Global Issues STS=Science, Technology and Society DPD=Difference, Power, Discrimination *=Bacc Core

^Writing Intensive Course: approved list of WIC courses on curricula webpage

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ADVANCED FISHERIES AND WILDLIFE SCIENCES CORE (cont..)

Habitats and Ecosystems	Behavior and Physiology
FES 341 Forest Ecology (3)	ANS 311 Principles of Animal Nutrition (3)
FES 342 Forest Types of the Northwest (3)	ANS 314 Animal Physiology (4)
FW 426 Coastal Ecology and Resource Mgmt. (5)	ANS 413 Comp. Nutrition of Domestic & Wild Animals (3)
FW 435 Wildlife in Agricultural Ecosystems^ (3)	BI 350 Animal Behavior (3)
FW/FES 445 Ecological Restoration (4)	FW 471 Environmental Physiology of Fishes (4)
FW/FOR/RNG 446 Wildland Fire Ecology (3)	FW 474 Early Life History of Fishes (4)
FW/FES 452 Biodiversity Conservation of Managed Forests (3)	FW 475 Wildlife Behavior (4)
FW 456 Limnology (5)	FW 476 Fish Physiology (4)
FW 462 Ecosystem Services (3)	Z 423 Environmental Physiology (3)
FW 467 Antarctic Science and Conservation (4)	Z 431 Vertebrate Physiology (4)
FW 479 Wetlands & Riparian Ecology (prereq: BI 370) (3)	Z 432 Vertebrate Physiology (4)
RNG 341 Rangeland Ecology and Management (3)	Credit hours per course are listed after course names in parentheses
Z 351 Marine Ecology (3)	
CREDITS 3 - 5	CREDITS 3 - 4

PHYSICS and EARTH SCIENCES Choose 3 courses from the lists below, NO MORE than 2 courses from a category

PHYSICS & MATH	EARTH SCIENCES	CHEMISTRY
PH 201 General Physics I* (5)	**ATS 210** Introduction to the Atmospheric Sciences (3)	**BB 350** Elementary Biochemistry (4)
PH 202 General Physics II* (5)	**ATS 320** The Changing Climate* (STS) (3)	**CH 130** Gen. Chem. Of Living Systems (4)
PH 203 General Physics III* (5)	**GEO 201** Physical Geology* (4)	**CH 324** Quantitative Analysis (4)
PH 211 General Physics with Calculus I* (4)	**GEO 202** Earth System Science* (4)	**CH 331** Organic Chemistry (4)
PH 212 General Physics with Calculus II* (4)	**GEO 203** Evolution of Planet Earth* (4)	**CH 332** Organic Chemistry (4)
PH 213 General Physics with Calculus III* (4)	**GEO 221** Environmental Geology* (4)	**CH 334** Organic Chemistry (4)
PH 331 Sound, Hearing, and Music* (STS) (3)	**GEO 305** Living with Active Cascade Volcanoes* (STS) (3)	**CH 335** Organic Chemistry (4)
PH 332 Light, Vision, and Color* (STS) (3)	**GEO 306** Minerals, Energy, Water, and Envrmt.* (STS) (3)	**CH 336** Organic Chemistry (4)
MTH 241 Calculus for Mgmt. & Soc. Sci.* (4)	**GEO 307** Nat'l Park Geo. And Preservation* (STS) (3)	**CH 390** Environmental Chemistry (3)
MTH 251 Differential Calculus* (4)	**GEO 308** Global Change and Earth Sciences* (CGI) (3)	**TOX 360** The World of Poisons* (STS) (3)
MTH 252 Integral Calculus (4)	**GEO 322** Surface Processes (4)	1.)_____ 2.)_____ 3.)_____
MTH 268 Mathematical Ideas in Biology (4)	**GEO 323** Climatology^ (4)	Credit hours per course are listed after course names in parentheses
	OC 201 Oceanography* (4)	
MTH 241 & 251 cannot double count with FW Core	**OC 332** Coastal Oceanography (3)	
	SOIL 205 Soil Science* (4) or **CSS 205** Soil Science* (4)	CREDITS 9 - 14

HUMAN DIMENSIONS Choose 3 courses from the list of Human Dimensions courses (credit hours listed after course name)

AG 301 Ecosystem Science of Pac. NW Indians* (DPD) (3)	**FW 350** Endangered Species/Society/Sustainability* (STS) (3)
ANTH 481 Natural Resources & Community Values* (STS) (3)	**FW 360** Origins of F & W Management- Evolution, Genetics & Ecology* (STS) (3)
AEC/AREC 351 Natural Resource Economics & Policy* (CGI) (3)	**FW 415** Fisheries and Wildlife Law and Policy (3)
AEC/AREC/ECON 352 Environmental Economics & Policy (CGI) (3)	**FW/FES 439** Human Dimensions of Fisheries and Wildlife Management^ (3)
AEC/AREC 432 Environmental Law (4)	**FW/HSTS 470** Ecology and History: Landscapes of the Columbia Basin* (STS) (3)
BI 301 Human Impacts on Ecosystems* (CGI) (3)	**FW/ANS/FES/SOC 485** Consensus and Natural Resources* (STS) (3)
BI 349 Biodiversity: Causes, Consequences and Conservation* (CGI) (3)	**GEO 300** Sustainability for the Common Good* (CGI) (STS) (3)
FE/FOR 456 International Forestry* (CGI) (3)	**HST 481** Environmental History of the U.S.* (STS) (3)
FES 351 Recreation Behavior and Management (4)	**HSTS 415** Theory of Evolution and Foundation of Modern Biology*^(STS) (4)
FES 355 Management for Multiple Resource Values (3)	**OC 333** Oceans, Coasts and People (3)
FES 360 Collaboration and Conflict Management (3)	**PHL 440** Environmental Ethics (3)
FES 365 Issues in Natural Resources Conservation* (3) (CGI)	**PHL 443** World Views and Environmental Values* (CGI) (3)
FES 432 Economics of Recreation Resources (4)	**PS 475** Environmental Politics and Policy (4)
FOR 330 Forest Resource Economics I (4)	**PS 476** Science and Politics* (STS) (4)
FOR 462 Natural Resource Policy and Law (3)	**SOC 480** Environmental Sociology* (CGI) (4)
FW 325 Global Crises in Resource Ecology* (CGI) (3)	**SOC 481** Society and Natural Resources* (STS) (4)
FW 340 Multicultural Perspectives in Natural Resources* (DPD) (3)	**SOIL/GEO 335** Introduction to Water Science and Policy* (STS) (3)
1.)_____ **2.)**_____	**3.)**_____ CREDITS 9 - 12

Electives	CREDITS	0 - 22
Specialization (see text for details)	CREDITS	24

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AREA OF SPECIALIZATION (24 credit minimum)

To supplement the Advanced Fisheries and Wildlife Core, students develop an additional set of classes, called the "Specialization," that are focused on the student's career interests. The Specialization selection process, along with career development activities, is part of FW 307: Specialization Development. Students generally take this course their junior year after consultation with their advisor. Students work with the course instructor and their advisor to finalize the courses within their Specialization.

Specializations are in addition to Fisheries and Wildlife Core/Advanced Core courses and must contain a minimum of 24 credits. At least 20 credits within a Specialization will be from upper division (300 and 400 level) courses; no more than four lower division credits are allowed. A maximum of two courses may be completed prior to approval of the Specialization, additional upper division credits may be allowed through petition to advisor. With the exception of Writing Intensive Courses (WIC), double counting (when credit is given twice for a course), is not permitted between the Specialization and other University or Departmental course work. For students completing their first BS degree, 12 credit hours applied towards their minor may also be applied towards the specialization (requires approval by Advisor in Minor Department and FW Advisor). A maximum of 12 credit hours, in any combination, of FW 401 Research and FW 410 International Internship can be used towards the specialization. Post Baccalaureate students who are completing their second degree may use a maximum of 12 credits from their first degree towards their specialization (approved by FW Advisor). No courses included may be taken for a Satisfactory/Unsatisfactory (S/U) grade.

FW 410 INTERNSHIPS (4 credits minimum)

There are two types of internships: Exploratory (1-2 credits) and Intensive (3-6) credits. Students are required to complete a minimum of two internships or other approved alternative experiences (one of each type) for their degree. Students are encouraged to start gaining professional experience by volunteering or interning with a natural resource agency as early as possible and no later than their junior year. Both internships should be completed at least two terms prior to graduation and need not be sequential.

The **Exploratory Internship** helps students explore career directions. It involves a professional experience with at least 40 hours of learning time off campus in a natural resource setting. Most students attend a professional conference, such as the Annual Conference of The Wildlife Society or American Fisheries Society, or assist a professional biologist with field work.

The **Intensive Internship** helps students experience work as a professional and gain technical skills that complement the academic/conceptual knowledge learned in classes. It involves a professional experience in an off-campus natural resource organization for a long enough time period and with enough depth and breadth to gain competence in one or more facets of a position or organization. This experience often leads to the student performing professional duties independent of supervision.

Students need to register for the FW 410 internship class for the term in which their internship occurs (even if it is summer term). Before registering, students must have their internship approved by the FW Internship Coordinator. The Internship Coordinator is responsible for guiding students, providing general oversight, and final evaluation of the internship/experience requirement. Before beginning the internship, a formal letter of understanding between the student, department, and mentor in the natural resource profession must be submitted by the student.

At the conclusion of the experience the student will complete the course by meeting the requirements listed on the FW 410 class syllabus, including submission of a resume and brief report describing the activities and what was learned. Mentors may provide a brief evaluation of the student's education.

For more information, contact the Internship Coordinator.
Corvallis Campus students: Danielle Jarkowsky, Danielle.Jarkowsky@oregonstate.edu, Nash 104E.
Ecampus students: Rebecca Goggans, Rebecca.Goggans@oregonstate.edu.

FW 488/489 CAPSTONE COURSES 6 credits

Students participate in a capstone experience through courses FW 488 & FW 489. These two courses are taken in sequential terms after a student has reached at least senior standing and is as close to the end of their degree requirements as possible. Both courses must be taken on the same campus (either through Ecampus or Corvallis Campus but not a combination of the two). Students are required to complete FW 320 & FW 321 and are recommended to have taken one or more 400 level FW classes before they begin the capstone sequence. The two capstone courses are 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. It includes a group problem solving project and case studies.

FW 488 Problem Solving in Fisheries & Wildlife Science (3 credits)

This course focuses on three activities: 1) a review of several 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, and; 3) independent work by students in small groups on a selected topic of their choice. 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. Projects include data analysis and/or synthesis, literature review, and/or evaluation of the social and economic systems involved in the controversy or management problem

FW 489 Effective Communications in Fisheries & Wildlife Science (3 credits)

This course is a continuation of projects started in FW 488. It centers on analysis, synthesis, and interpretation of data and written and oral communication of management, education or policy statements. Discussions include science and advocacy, the role of science in policy-making, conflict resolution skills for communicating with diverse audiences, and working with the media. Groups work on a variety of methods for presenting their projects to different audiences.