



School of Environment and Natural Resources

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To: The Office of Academic Affairs

From: Ron Hendrick, Professor and Director

Date: June 30, 2011

Re: School of Environment and Natural Resources Semester Program Proposals

The faculty and staff of the School of Environment and Natural Resources (SENR) have completed a thorough review and revision of our undergraduate and graduate curricula in preparation for the conversion to semesters, and the SENR faculty has voted to recommend that the Office of Academic Affairs approve the attached semester curriculum proposals. In addition to the work of several curricular sub-committees within the School, the SENR Academic Affairs Committee reviewed and approved all semester conversion plans for undergraduate programs, and the SENR Graduate Studies Committee reviewed and approved plans for the MS, PhD, and MENR graduate programs. SENR faculty approved these semester plans by unanimous vote (25 in favor, 0 opposed, 0 abstentions) on April 16, 2010; subsequent minor revisions and updates to the plans have been approved by SENR curriculum committees as appropriate.

The following outline details the SENR programs proposed for semester: A) conversion, B) new approval, C) termination, and D) conversion with minimal changes but subsequent termination.

A. Existing SENR programs to be converted to semesters include:

(Note: Rural Sociology programs included below became part of SENR in 2010; program degree codes are in parentheses following program titles; specialization three-letter codes are in parentheses following specializations.)

Four Undergraduate Majors:

- 1) Environmental Science (ENVSCI-BS): *modified from four to five specializations representing existing focal areas in the major, including Ecosystem Restoration (ECR), Water Science (WTR), Environmental Molecular Science (EMS), Soil Resources and Environmental Sustainability (SOI), and Environmental Science Education (ESE).*
- 2) Forestry, Fisheries, and Wildlife (FFW-BS): *converted as semester equivalent, with appropriate revisions to maintain certification and double-certification options uniquely available (compared with other programs nationally) to students in this major, including Society of American Foresters (SAF) accreditation and The Wildlife Society (TWS) and American Fisheries Society (AFS) certifications. Three-letter specialization codes for FFW specializations (FAS, FOR, FWM, UFW, WFS, WPV, WLS) are detailed in the comment field of the FFW-BS program request.*
- 3) Environmental Policy and Decision Making (ENVPDM-BS): *modified in title (previously Environmental Policy and Management (EPM)) and designating three specializations based on existing focal areas in the major: Climate Change (CCP), International Issues (IIP), and Water Conservation (WCP).*
- 4) Natural Resource Management (NATRESM-BS): *modified in title (previously Parks, Recreation & Tourism (PRT)) and designating three specializations based on existing and emerging focal areas (made possible by the addition of Rural Sociology faculty to SENR in 2010) in the major: Parks and Recreation Management (PRM), Natural Resource Administration and Management (NRA), and Sustainable Agriculture (SAG), with additional focus-area options (non-transcript) aligned with employment opportunities and existing programs in the School: Forestry, Fisheries, Wildlife, Soil and Water, Visitor Services, and Zoo Science and Management.*

Two Undergraduate Minors:

- 1) Soil Resources (SOILSCI-MN): *converted as semester equivalent.*
- 2) Rural Sociology (RURLSOC-MN): *converted as semester equivalent.*

Two Graduate Degree Programs:

- 1) Master of Science (ENVNATR-MS): converted as **semester equivalent**
- 2) Doctor of Philosophy (ENVNATR-PH): converted as **semester equivalent**

The Environment and Natural Resources Graduate Program awards both MS and PhD degrees in seven areas of specialty (all converted as **semester equivalents**):

- Ecological Restoration (ERS)
- Ecosystem Science (ECS)
- Environmental Social Sciences (ESS)
- Rural Sociology (RS)
- Fisheries and Wildlife Science (FWS)
- Forest Science (FS)
- Soil Science (SSC)

Three Graduate Minors (all converted as **semester equivalents**):

- 1) Environment and Natural Resources (ENVNATR-GM)
- 2) Soil Science (SOILSCI-GM)
- 3) Rural Sociology (RURLSOC-GM)

One Professional Degree Program (converted as **semester equivalent**):

- 1) Master of Environment and Natural Resources (ENVNAT-MEN)

Three Combined Programs (all combined programs will be converted as **semester equivalents**, and impose no additional requirements or provisions beyond the requirements of the combined degrees. As such, and abiding all college and university rules of the degree-granting partners, forms for **these combined degrees are not included in these SENR semester electronic program proposals**):

- 1) Combined BS/MS
- 2) Combined BS/MENR
- 3) Dual Degree Program with the John Glenn School of Public Affairs: MS/ or MENR/MAPPM (Master of Arts in Public Policy and Management) or MS/ or MENR/MPA (Master of Public Administration)

B. New SENR semester programs proposed for approval by OAA:

Four undergraduate minors have been developed for semesters. Three minors correspond with existing majors in the School; three of these minors collectively replace the Natural Resources Management minor (listed as terminated, below). The fourth minor, Sustainable Agriculture, has been developed through the collaboration of Rural Sociology and Soils faculty, together with colleagues from across the College of Food, Agricultural and Environmental Sciences.

Undergraduate Minors:

- 1) Environmental Science (ENVSCI-MN)
- 2) Forestry, Fisheries & Wildlife (FFW-MN)
- 3) Society and Environmental Issues (SOCENV-MN)
- 4) Sustainable Agriculture (SUSTAGR-MN)

C. SENR programs to be terminated:

Each listed below is an old program name that has been replaced by current programs listed above, either through revised titles (1-3), being subsumed as a specialization into the ENR MS and PhD (4-7), or being replaced by more targeted options (8).

- 1) Fisheries and Wildlife Management (FWMGT-BS): no students remain under this old title
- 2) Forestry and Urban Forestry (FORUF-BS): no students remain under this old title
- 3) Human Dimensions in Natural Resources (HDNR-BS): no students remain under this old title
- 4) Natural Resources (NATRES-PH): no students remain under this old title
- 5) Natural Resources (NATRES-MS): no students remain under this old title
- 6) Soil Science (SOILSCI-PH): all students remaining under this old title will graduate by 2012
- 7) Soil Science (SOILSCI-MS): all students remaining under this old title will graduate by 2012

8) Natural Resources Management Minor (NATRESM-MN): this minor is being terminated because of its broad scope and is being replaced by the more specific new minors listed above that correspond to existing majors; no new students will be admitted after Spring 2012, and this minor should be terminated upon moving current students to appropriate (more targeted) new minors, which should be completed by Summer 2012.

D. SENR programs to be converted with minimal changes, but to be terminated thereafter:

No new students will be admitted to these programs effective immediately; the programs should be terminated upon the completion of the last student in the program, which should be no later than Spring 2015.

- 1) Rural Sociology (RURLSOC-MS)
- 2) Rural Sociology (RURLSOC-PH)

SENR faculty and staff have worked tirelessly to develop these plans, engaging in a thorough and collegial process. Two faculty retreats devoted significant time to semester conversion plans, and all faculty meetings beginning in the fall of 2009 included updates and discussion about semester conversion planning. Dr. Greg Hitzhusen was appointed by the School as a point person to facilitate Q2S planning, participated in regular UCAT Q2S workshops with colleagues from across the university, and established a Carmen site to share and organize Q2S working documents and resources. In addition to the committees mentioned above, several new committees led the curriculum development process, including four faculty working groups formed within each of the majors, and a core curriculum committee of a dozen faculty representing all of the specializations across the four undergraduate majors and including myself and the chairs of the Grad Studies Committee and Academic Affairs Committee. These groups reviewed all recent SENR curriculum revisions, researched semester programs of peer institutions, and generated creative proposals of how to improve and better integrate our multi-disciplinary curriculum. Curriculum mapping revealed gaps and overlap in our curriculum; to match our semester courses to our learning goals, at least nine new courses have been proposed, several others have been merged, and at least 75 courses will be discontinued. As a previous director of a Natural Resources program that underwent semester conversion at the University of Georgia, I provided guidance to revise SENR's curricular offerings around our core strengths, guided by learning outcome goals and encouraging options beyond existing structures and traditions. Several SENR faculty and staff participated in the College of Food, Agricultural, and Environmental Sciences bi-weekly Q2S Implementation Committee meetings starting in November 2009, sharing planning ideas with Q2S point people from across the College.

We also based our semester curriculum development on several faculty-led research efforts. Our social science faculty created a survey of environmental curriculum interests and career goals for CFAES, SENR and OSU undergraduate student samples, and results from over 1300 respondents (published results now *in press*) informed our vision of student interests, needs, and knowledge about the environmental topics addressed in SENR programs. We also completed phone interviews with SENR alumni and stakeholders to examine curricular elements most valuable to graduates and employers. And I conducted exit interviews of SENR students to better understand their experience in SENR programs. These measures and the efforts mentioned above collectively led the faculty to propose an expanded core of courses to help SENR students better integrate natural and social science elements of the curriculum, and to modify the majors as described above. The core curriculum committee will remain intact to monitor the quality and success of the semester curriculum, and make revisions as appropriate into the future.

This proposed curriculum represents welcome changes that increase the efficiency and complementarity of SENR programs, maximizing the expertise of our faculty and improving opportunities for SENR students to prepare for graduate education and succeed in their professional careers. I have also attached a commentary detailing SENR's preliminary assessment plans for semester programs. These program proposals reflect the outstanding collaborative efforts of SENR faculty to prepare for the semester transition. I heartily recommend approval of these plans, and appreciate OAA's ongoing efforts to strengthen our curriculum in OSU's transition to semesters.



Ronald L. Hendrick, Ph.D.
Director, SENR

Status: PENDING

PROGRAM REQUEST
Forestry, Fisheries and Wildlife

Last Updated: Pfister, Jill Ann
01/14/2011

Fiscal Unit/Academic Org	Sch of Enviro&Natural Res - D1173
Administering College/Academic Group	Food, Agric & Environ Science
Co-administering College/Academic Group	
Semester Conversion Designation	Converted with minimal changes to program goals and/or curricular requirements (e.g., sub-plan/specialization name changes, changes in electives and/or prerequisites, minimal changes in overall structure of program, minimal or no changes in program goals or content)
Current Program/Plan Name	Forestry, Fisheries, and Wildlife
Proposed Program/Plan Name	Forestry, Fisheries and Wildlife
Program/Plan Code Abbreviation	FFW-BS
Current Degree Title	Bachelor of Science Environment&Natural Resources

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program		181	120.7	121	0.3
Required credit hours offered by the unit	Minimum	54	36.0	42	6.0
	Maximum	127	84.7	75	9.7
Required credit hours offered outside of the unit	Minimum	54	36.0	46	10.0
	Maximum	127	84.7	79	5.7
Required prerequisite credit hours not included above	Minimum				
	Maximum	0	0.0	0	0.0

Explain any change in credit hours if the difference is more than 4 semester credit hours between the values listed in columns B and C for any row in the above table

On balance, FFW majors will probably be taking a few more classes outside SENR than before. All of the changes to the FFW curriculum, which was very tightly planned under quarters to allow for various certification options, have been made with the goal of continuing to meet educational requirements for professional certification with anticipated faculty teaching resources under the constraints of conversion to a semester calendar. OSU is the only place where FFW students can gain dual certifications, and we have maintained those unique offerings under semesters - on the whole we just have to rely a bit more on offerings outside SENR.

Regarding the specific changes in credit hours:

The minimum required credit hours offered by SENR is slightly more under semesters (6.0 credit hours difference) because the SENR core curriculum has been expanded.

The maximum required credit hours offered by SENR is less under semesters (9.7 credit hours difference) because we have dropped a crosslist (AED 531) and a previously required course (ENR 567/3rd writing), and added additional courses from outside SENR as specialization options.

The minimum required credit hours offered outside SENR has increased under semesters (10 credit hour difference) for the same reasons that the maximum hours offered by SENR has decreased, as noted above (a crosslist and a course have been eliminated, and additional courses from outside SENR have been incorporated into the course list). The maximum required credit hours offered outside the unit has decreased (5.7 credit hour difference) for the same reason that the minimum hours offered by SENR has increased (SENR core expansion).

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

- a. Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- b. Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- c. Knowledge and comprehension of the utilization and demand upon ecosystems.
- d. Knowledge and comprehension of ecosystems within the human/social contexts.
- e. Knowledge and use of identification skills.
- f. Knowledge and understanding of natural history.
- g. Knowledge of, skills and application of sampling principles, methodology, and tools.
- h. Ability to communication effectively.
- i. Ability to find appropriate sources of information.
- j. Ability to quantify and interpret information and data.
- k. Knowledge and application of spatial information systems (GPS, GIS).
- l. Ability and skills necessary for problem solving.
- m. Ability to apply theory and perform appropriate testing.
- n. Ability to perform critical analysis of information and forms of communication. .
- o. Ability and skills to work collaboratively.
- p. Has global awareness of the profession or discipline
- q. Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
- r. Knowledge and comprehension of scientific and professional ethics and ability to embody these into their profession.

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No

DIRECT MEASURES (means of assessment that measure performance directly, are authentic and minimize mitigating or intervening factors)

Standardized tests

- Certification or licensure examinations

Classroom assignments

- Other classroom assessment methods (e.g., writing assignments, oral presentations, oral exams)

Evaluation of a body of work produced by the student

- Capstone course reports, papers, or presentations

INDIRECT MEASURES (means of assessment that are related to direct measures but are steps removed from those measures)

Surveys and Interviews

- Student survey
- Alumni survey
- Student evaluation of instruction

Status: PENDING

PROGRAM REQUEST
Forestry, Fisheries and Wildlife

Last Updated: Pfister, Jill Ann
01/14/2011

- Student interviews or focus groups

USE OF DATA (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)

- Meet with students directly to discuss their performance
- Analyze and discuss trends with the unit's faculty
- Analyze and report to college/school
- Make improvements in curricular requirements (e.g., add, subtract courses)
- Make improvements in course content
- Periodically confirm that current curriculum and courses are facilitating student attainment of program goals

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Program Specialization/Sub-Plan Name	Wildlife Science (Existing)
Program Specialization/Sub-Plan Goals	• see attachment
Program Specialization/Sub-Plan Name	Urban Forestry & Wildlife Mgmt (Existing)
Program Specialization/Sub-Plan Goals	• see attachment
Program Specialization/Sub-Plan Name	Forestry and Wildlife Mgmt (Existing)
Program Specialization/Sub-Plan Goals	• see attachment
Program Specialization/Sub-Plan Name	Forest Ecosystem Science&Mgmt (Existing)
Program Specialization/Sub-Plan Goals	• see attachment
Program Specialization/Sub-Plan Name	Wildlife & Fisheries Science (Existing)
Program Specialization/Sub-Plan Goals	• see attachment
Program Specialization/Sub-Plan Name	Fisheries and Aquatic Sciences (Existing)
Program Specialization/Sub-Plan Goals	• see attachment
Program Specialization/Sub-Plan Name	Wildlife&Pre-Vet Sciences (Existing)
Program Specialization/Sub-Plan Goals	• see attachment

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- FFWcmaps.xls: Forestry, Fisheries & Wildlife Curriculum Maps
(Curricular Map(s). Owner: Hitzhusen, Gregory Ernest)
- FFWrationale.doc: FFW Program Rationale
(Program Rationale Statement. Owner: Hitzhusen, Gregory Ernest)
- FFWqtrAdvSheets.pdf: FFW quarter advising sheets
(Quarter Advising Sheet(s). Owner: Hitzhusen, Gregory Ernest)
- SENR_FFW_Specialization_Goals.docx: FFW specialization goals
(Other Supporting Documentation. Owner: Hitzhusen, Gregory Ernest)
- SENR_Assessment.doc: SENR prelim. assessment plans
(Other Supporting Documentation. Owner: Hitzhusen, Gregory Ernest)
- SENR_Q2S_Transition_Plans.pdf: SENR transition plan
(Transition Policy. Owner: Hitzhusen, Gregory Ernest)
- SENRcourseNumbers11-25.xls: SENR full semester course list
(List of Semester Courses. Owner: Hitzhusen, Gregory Ernest)
- SENRcoverLetterFinal.pdf: SENR cover letter
(Letter from Program-offering Unit. Owner: Hitzhusen, Gregory Ernest)
- FFW_Sem_AdvFinal.xlsx: FFW semester advising sheets
(Semester Advising Sheet(s). Owner: Hitzhusen, Gregory Ernest)

Comments

- Note that semester advising overview template is duplicated in FFW semester advising sheets document, but the overview is created in a format more like what will be made available to students.
Course list specific to the major is included in the Advising Sheets; a full course list of SENR courses is attached in the course list spreadsheet.

Three-letter specialization codes:

FAS=fisheries and aquatic sci

FOR=forest ecosys sci&mgmt

FWM=forestry&wildlife mgmt

UFW=urban forestry&wildlife mgmt

WFS=wildlife&fisheries sci

WPV=wildlife&pre-vet sci

WLS=wildlife sci *(by Hitzhusen, Gregory Ernest on 12/08/2010 10:33 AM)*

Status: PENDING

PROGRAM REQUEST
Forestry, Fisheries and Wildlife

Last Updated: Pfister, Jill Ann
01/14/2011

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Hitzhusen, Gregory Ernest	11/26/2010 11:53 PM	Submitted for Approval
Revision Requested	Hitzhusen, Gregory Ernest	12/08/2010 10:29 AM	Unit Approval
Submitted	Hitzhusen, Gregory Ernest	12/12/2010 03:12 PM	Submitted for Approval
Approved	Hitzhusen, Gregory Ernest	12/12/2010 03:12 PM	Unit Approval
Revision Requested	Pfister, Jill Ann	01/13/2011 12:03 PM	SubCollege Approval
Submitted	Hitzhusen, Gregory Ernest	01/13/2011 02:02 PM	Submitted for Approval
Approved	Hitzhusen, Gregory Ernest	01/13/2011 02:02 PM	Unit Approval
Approved	Pfister, Jill Ann	01/14/2011 05:17 PM	SubCollege Approval
Approved	Pfister, Jill Ann	01/14/2011 05:18 PM	College Approval
Pending Approval	Soave, Melissa A	01/14/2011 05:18 PM	CAA Approval

FFW Program Rationale:

Students currently following the FFW major in the School of Environment and Natural Resources (SENR) choose from among seven specializations, all of which lead to a Bachelor of Science. The seven specializations are 1) Wildlife Science, 2) Wildlife and Pre-Veterinary Science, 3) Fisheries Science, 4) Wildlife and Fisheries Science, 5) Forest Ecosystem Science and Management, 6) Forestry and Wildlife Science, and 7) Urban Forestry and Wildlife. All seven specializations listed above were designed to meet educational requirements for professional certification and/or accreditation by The Wildlife Society (TWS), American Fisheries Society (AFS), and/or the Society of American Foresters (SAF). Students may complete educational requirements for dual certification by TWS/AFS, or TWS/SAF with major specializations 4 and 6. The FFW curriculum was created in 2003 and will continue with no structural changes when the conversion is made to semesters.

This revised curriculum is based on internal review by the teaching faculty and comments received from faculty, students, and stakeholders. Such findings can be summarized as follows:

- a. Forestry, Fisheries, and Wildlife has a relatively long history and tradition of serving the needs of state, federal, and private NGO agencies/organizations. There exists a readily identifiable job market for FFW graduates in both the public and private sectors.
- b. Forestry, Fisheries, and Wildlife is an interdisciplinary field that requires depth in natural sciences and mathematics, and breadth of education and training that spans the natural and social sciences. The broad but rigorous SENR core proposed after the semester conversion lays a solid foundation for FFW students to specialize in the FFW major specialization of their choice.
- c. Cross-training of students in the often academically separate disciplines of Forestry Science and Management, Wildlife Ecology and Management, and Fisheries Science and Management is highly desired by employers because many resource agencies expect their employees to manage resources of a wide variety of terrestrial and aquatic environments, including forests, lakes and wetlands, flowing water, openland/agricultural, and urban environment ecosystems. The interdisciplinary nature of SENR allows us to offer a diverse curriculum that maintains disciplinary focus and rigor while developing the broad background and diverse perspectives in the social, biological, and physical sciences needed to solve natural resource management problems.
- d. The FFW curriculum draws on the strengths and specialized expertise of a number of new FFW faculty that SENR has hired over the past decade. In particular, we are now better positioned than ever to address emerging issues that include among others, human-wildlife conflicts, the interactions of terrestrial and aquatic environments (with focus on wetlands and riparian systems), managing and enhancing the built environment, and providing food, fiber, and recreation in a sustainable and socially/environmentally responsible manner.

- e. FFW students have a variety of career paths open to them. We encourage students to pursue graduate programs in FFW or related fields and set our standards accordingly. We also recognize that many of our graduates will begin their professional lives without post-baccalaureate education. Others may choose career paths outside of FFW or Natural Resources Management and we expect that such students will be prepared to apply what they learn as citizens and careers professionals. The FFW curriculum offers an appropriate mix of applied and basic science to prepare all three types of students.

In summary, the revised major is proposed to (1) enhance disciplinary depth and multidisciplinary breadth while serving the needs of stakeholders at state, regional and national levels; (2) better prepare students for careers in the FFW and natural resources management disciplines; (3) better serve students who wish to be informed citizens on natural resource and environmental issues; and (4) increase accessibility of the major to a broader array of students.

Explanation of the SENR Forestry, Fisheries, and Wildlife Major

The Forestry Fisheries and Wildlife (FFW) Major builds quantitative and communications skills and core competencies in the physical, biological, and social sciences that prepare students for careers in forestry, fisheries, or wildlife science and management, restoration ecology, environmental management, conservation of natural resources, or related fields. Students are introduced to the natural and social sciences and principles of Forestry, Fisheries, and Wildlife within the SENR core. By completing 1 of 7 major specializations, students develop specialized education and training in 1-2 areas of Forestry, Fisheries, and Wildlife. Students then apply their specializations to practical problems and field experiences in a FFW capstone course required of all FFW majors in the SENR core.

Seven professional-oriented degree specializations are available. Six of seven major specializations allow students to fulfill education requirements for professional certification with the Society or American Foresters (SAF), American Fisheries Society (AFS), or The Wildlife Society (TWS). With one additional communications course not counted in degree requirements, students may fulfill education requirements for dual certification by TWS and either SAF or AFS. Two other specializations provide students with at least core competency in Wildlife while preparing for Veterinary School or an Urban Forestry career.

Wildlife Science: Students who complete this specialization within the FFW major will meet education requirements for professional certification by The Wildlife Society (TWS). The Wildlife Science specialization emphasizes the natural science foundation of wildlife ecology and management with focus on terrestrial organisms, populations, and communities. This specialization is designed to prepare students for careers in terrestrial ecology, wildlife science, environmental management, conservation of natural resources, or related fields that typically require continued studies at the graduate level. Additional physical science coursework (not required for TWS certification or counted in the degree total) is recommended to prepare students to enter some graduate programs that have strong science requirements.

Wildlife and Pre-Veterinary Sciences: Students who complete this specialization within the FFW major will have met nearly all of the education requirements for professional certification (associate level) by The Wildlife Society (TWS). Additional coursework (not counted in the degree total) is recommended to fully meet TWS certification requirements. This specialization is designed for students who are interested in a Veterinary career and includes all courses recommended by the Pre-Veterinary program to apply to Veterinary Schools. The Wildlife and Pre-Veterinary Science specialization is also well-suited for students interested in a career in pursuing graduate studies with a career focus on health and diseases of captive and free-ranging wildlife populations or endangered species management.

Fisheries and Aquatic Sciences: Students who complete this specialization within the FFW major will meet education requirements for professional certification by The American Fisheries Society (AFS). The Fisheries Science specialization emphasizes the natural science foundation of fisheries ecology and management with focus on aquatic organisms, populations, and communities. This specialization is designed to prepare students for careers in aquatic ecology, fisheries science, environmental management, conservation of natural resources, or related fields that typically require continued studies at the graduate level. Additional physical science coursework (not required for AFS Certification

and not counted in the degree total) is recommended to prepare students to enter some graduate programs that have strong science requirements.

Wildlife and Fisheries Sciences: Students who complete this specialization within the FFW major will meet education requirements for professional certification by The American Fisheries Society (AFS) and nearly all of the Associate level education requirements for professional certification by The Wildlife Society (TWS). One additional communications course is recommended (not counted in the degree total) for TWS certification. The Wildlife and Fisheries Sciences specialization emphasizes the natural science foundation of wildlife and fisheries ecology and management with focus on terrestrial and aquatic organisms, populations, and communities. This specialization is designed to prepare students for careers in terrestrial or aquatic ecology, wildlife or fisheries science, environmental management, conservation of natural resources, or related fields that typically require continued studies at the graduate level. Additional physical science coursework (not required for TWS or AFS Certification and not counted in the degree total) is recommended to prepare students to enter some graduate programs that have strong science requirements.

Forest Ecosystem Science and Management: Students who complete this specialization within the FFW major will meet education requirements for professional certification by The Society of American Foresters (SAF). The Forest Ecosystem Science and Management specialization emphasizes forest ecology and management with focus on forest plant species, populations, and communities. This specialization is designed to prepare students for careers in forest ecology and management, restoration ecology, environmental management, conservation of natural resources, and related fields that may require continued studies at the graduate level.

Forestry and Wildlife Management: Students who complete this specialization within the FFW major will meet education requirements for professional certification by The Society of American Foresters (SAF) and nearly all of the Associate level education requirements for professional certification by The Wildlife Society (TWS). One additional communications course is recommended (not counted in the degree total) for TWS certification. The Forestry and Wildlife Management specialization emphasizes forest and wildlife ecology and management with focus on forest organisms, populations, and communities. This specialization is designed to prepare students for careers in forestry or wildlife management, restoration ecology, environmental management, conservation of natural resources, and related fields that may require continued studies at the graduate level. Additional physical science coursework (not required for SAF OR TWS Certification and not counted in the degree total) is recommended to prepare students to enter some graduate programs that have strong science requirements.

Urban Forestry and Wildlife Management: Students who complete this specialization within the FFW major will not meet education requirements for professional certification by The Society of American Foresters (SAF) or The Wildlife Society (TWS). Combining courses in forestry/urban forestry and landscape design with courses in business and marketing, the Urban Forestry and Wildlife specialization is designed to meet industry standards to prepare students for careers in the field of urban forestry. Core courses in wildlife ecology, biology, and management introduce competencies that can be applied to managing urban parkland, residential, and rural interface habitats for wildlife.

SENR Forestry, Fisheries & Wildlife

121 Hours - Q2S Curriculum Draft 2.5 – Summer Semester 2012

13 of 65
Semester Advising
Sheets p1

COURSE & NUMBER	HRS		COURSE & NUMBER	HRS	
UNIVERSITY REQUIREMENTS (GE)			SENR REQUIREMENTS		
Writing Skills	6 Hours		SENR CORE REQUIREMENTS	21 Hours	
English X110 (GE Course 1: Writing Level 1)	3		ENR 1000 (FAES Survey combined with ENR 119)	1	
ENR 2367 (GE Course 2: Writing Level 2)	3		ENR 2100 (Intro to Environmental Science) (GE Open Option 1)	3	
Arts & Humanities	12 Hours		ENR 2300 (Society and Natural Resources) (GE Open Option 2)	3	
GE Literature Course (GE Course 3: Literature) ●★◆	3				
GE Arts Course (GE Course 4: Arts) ●★◆	3				
GE History Course (GE Course 9: Historical Study) ●★◆	3		ENR 3300 (Intro to Forestry, Fisheries & Wildlife)	3	
GE Culture & Ideas or Historical Study (GE Course 12) ●★◆ [Recommended: ENR 347/3470 (Religion & Environmental Values in America)]	3		ENR 3400 (Psychology of Environmental Problems) or ENR 3500 (Community, Environment & Development)	3	
Social Sciences	6 Hours		ENR 4000 (Natural Resources Policy)	3	
Rural Sociology 105/1500 (Recommended) or GE Social Science (GE Course 10: Social Science 1) ●★◆	3		ENR 3700 (Intro to Spatial Info for Natural Resources)	2	
AED Econ 2001 or Economics X200 (Microeconomics) (GE Course 11: Social Science 2)	3		ENR 4900.02 (Natural Resources Mgt)	3	
Diversity Courses	overlapping		FFW MAJOR SPECIALIZATIONS:		
Social Diversity in US ●	----		Fisheries & Aquatic Science	51	
Global Studies Course 1 ★◆	----		Forestry Ecosystem Science & Management	51	
Global Studies Course 2 ★◆	----		Forestry & Wildlife (dual specialization)	52	
Data Analysis, Quantitative & Logical Skills	8 Hours		Urban Forestry & Wildlife Management (dual specialization)	51	
ENR 2000 (Recommended) or GE Equivalent Statistics course (GE Course 6: Data Analysis)	3		Wildlife & Fisheries Science (dual specialization)	51	
Math 1156 (Calculus for the Biological Sciences) (GE Course 5: Math & Logical Skills)	5		Wildlife & Pre-Veterinary Science (pre-professional)	53	
			Wildlife Science	53	
Natural Sciences	17 Hours				
Chemistry 1210 (Intro Chem I)	5				
Biology 1113 (Intro Biology I)	4				
Biology 1114 (Intro Biology II) or an additional Biological Science or Physical Science Course	4				
ENR 3000 (Intro to Soil Science)	3				
ENR 3001 (Soil Science Laboratory)	1				
Free Electives	0 Hours		MINIMUM HRS FOR GRADUATION (varies per specialization)	121 Hours	

Fisheries and Aquatic Sciences Specialization	Units
Fisheries and Aquatic Sciences	20
ENR 5342 (Principles of Fisheries Ecology & Management)	3
EEOB 655 (Limnology) OR EEOB 652 (Limnology at Stone Lab) OR ENR 5250.01 (Wetland Ecology & Restoration)	3
ENR 5280 (Stream Ecology)	4
ENR 5345 (Methods in Aquatic Ecology)	4
ENR 5350.01 (Taxonomy and Behavior of Aquatic Invertebrates)	3
ENR 5350.02 (Taxonomy and Behavior of Fishes) OR EEOB 621 (Ichthyology at Stone Lab)	3
Other Biological Sciences	10
EEOB 400 (Evolution)	3
EEOB 405.1 (Systematics & Diversity of Organisms Lecture)	3
EEOB 503.01 (Introduction to Ecology Lecture)	3
EEOB 503.02 (Introduction to Ecology Laboratory)	1
Physical Sciences	7
AGSYSMGT 370 (Principles of Hydrology)	3
CHEM 2310 (Organic Chemistry) or BIOCHEM 511 (Intro to Biochemistry)	4
Mathematics and Statistics	0
No additional requirements beyond GE and/or SENR core.	0
Communications	0
No additional requirements beyond GE and/or SENR core.	0
Human Dimensions	0
No additional requirements beyond GE and/or SENR core.	0
Specialization Electives: Potential Options (14 units min.)	14
EEOB 440 (Introduction to Ethology)	3
EEOB 405.2 (Animal Diversity & Systematics Laboratory)	1
EEOB 611 (Aquatic and Wetland Plants)	3
EEOB 626 (Biology of Fishes) OR EEOB 653 (Fish Ecology at Stone Lab)	3
EEOB 654 (Ecological Physiology)	3
ENR 3280 (Water Quality Management)	3
ENR 5355 (Aquaculture)	3
GEOG 420/3900 (Global Climate Change: Causes & Consequences)	3
GEOG 607/5220 (Fundamentals of GIS)	3
PHYSICS 111/1200 (General Physics; Mechanics, Kinematics, Fluids, Waves)	5
Note: American Fisheries Society requirements met by University GE and/or SENR core not included.	
University GE Total/SENR Core Total	70
Fisheries and Aquatic Science Major Option Total	51
Degree Total	121

Forest Ecosystem Science and Management Specialization	Units
Courses required for Certification by SAF	37
AGSYSMGT 370 (Principles of Hydrology)	2
ENR 3321 (Biology and Identification of Woody Forest Plants)	3
ENR 3322 (Forest Ecosystems)	3
ENR 3323 (Forest Biometrics)	3
ENR 3333 (Silviculture)	3
ENR 3600 (Management of Public Lands)	2
ENR 3335.01 (Intro to Wildland Fire Management)	3
ENR 4320 (Sustainable Forest Products)	3
ENR/AED Econ 531 (Environmental & Nat. Res. Economics)	3
ENR 5642 (Natural Resources Admin.)	3
ENR 5320 (Forest Management)	3
ENR 5340 (Forest Ecosystem Management)	3
ENTOM/PLNT PATH xxx (new course)	3
Specialization Electives	14
Elective Courses 2000 and above that support major with advisor consent (soils, recreation, wildlife, geo-spatial analysis, etc.)	14
University GE Total/SENR Core Total	70
Forest Ecosystem Science and Management Major Option Total	51
Degree Total	121

Forestry and Wildlife Specialization	Units
Wildlife Management (6 units)	6
ENR 5360 (Principles of Wildlife Ecology & Management)	3
ENR 5562 (Wildlife Ecology Methods)	3
Wildlife Biology (6 units)	6
ENR 5364.01 (Mammalian Wildlife Biology and Management)	3
ENR 5364.02 (Avian Wildlife Biology and Management)	3
Ecology (3 units)	0
Met with ENR 2100 in SENR Core	0
Zoology (9 units)	6
Met with one-half of Biology 1113/1114 units (4)	0
EEOB 400 (Evolution)	3
ENR 5350.01 (Taxon and Beh of Aquatic Inverts) or ENR 5350.02 (Taxon and Beh of Fishes) or EEOB 405.1 (Systematics & Diversity of Organisms Lecture)	3
Botany (9 units)	3
Met with one-half of Biology 113/114 units (4)	0
EEOB 210 (Local Flora)	3
Met with ENR 3321 (Biology & Identification of Woody Forest Plants)	0
Physical Sciences (13 units)	5
Met with Chem 1210, and ENR 3000/3001 in University GE and SENR Core (9)	0
PHYSICS 1200 (General Physics: Mechanics, Kinematics, Fluids, Waves)	5
Quantitative Sciences (9 units)	0
Met with MATH151/1151.01, and ENR 2000 or Stat 145 in University GE (9)	0
Humanities and Social Sciences (9 units)	0
Met with University GE (9)	0
Communications (9 units)	3
Met with ENGL 100 or 110 and ENR 2367/GE equiv in University GE and SENR Core (6)	0
ENR 4611 (Interp & Visitor Services) or ENR 7400 (Commun Env Risk)	3
Policy Administration and Law (5 units)	2
Met with ENR 4000 in SENR Core (3)	0
ENR 5649 (Wildlife Conservation Policy) or ENR 3600 (Management of Public Lands)	2
SAF Certification Category/Subcategory	21
ENR3321 (Biology and Identification of Woody Forest Plants)	3
ENR 3322 (Forest Ecosystems)	3
ENR 3323 (Forest Biometry)	3
ENR 3333 (Silviculture)	3
ENR/AED Econ 531 (Environmental & Nat. Res. Economics)	3
ENR 5320 (Forest Management)	3
ENTOM/PLNT PATH xxx (new course)	3
Recommended Additional Courses (for TWS certification, not counted in degree total)	3
COMM 320 (Interprs & Org Comm) or COMM 321 (Pub Spk)	3
Recommended Electives (for grad school, not counted in degree total)	9
Chem 1220 (General Chemistry II)	5
CHEM 2310 (Intro Org Chem) or BioCHEM 511 (Intro to Biochemistry)	4
University GE Total/SENR Core Total	70
Wildlife-Forestry Major Option Total	52
Degree Total	122

Urban Forestry and Wildlife Management Specialization	Units
Wildlife Management 12 units)	12
ENR 5360 (Principles of Wildlife Ecology & Management)	3
ENR 5364.01 (Mammalian Wildlife Biology and Management)	3
ENR 5364.02 (Avian Wildlife Biology and Management)	3
ENR 5649 (Wildlife Conservation Policy)	3
Urban Forestry Courses (32 units)	32
C&R PLAN 310 (Intro to City & Reg Planning)	3
NR 3321 (Biol and Ident Woody Plants) or H&CS 234 (Landscape Plants)	3
ENR 3322 (Forest Ecosystems)	3
ENR 3323 (Forest Biometry)	3
ENR 3333 (Silviculture)	3
ENR 3600 (Management of Public Lands)	2
ENR 5322 (Arboriculture)	3
ENTOM/PLNT PATH xxx (new course)	3
Ag Econ 401 (Principles of Agribusiness Management)	3
Ag Econ 402 (Principles of Agribusiness Marketing)	3
Bus Adm 510 (Legal Environment of Business)	3
Specialization Electives	7
Elective Courses 2000 and above that support major with advisor consent (soils, recreation, wildlife, geo-spatial analysis, etc.)	7
University GE Total/SENR Core Total	70
Urban Forestry and Wildlife Major Option Total	51
Degree Total	121

Wildlife and Fisheries Sciences Specialization		Units
Wildlife Management (6 units)		6
ENR 5360 (Principles of Wildlife Ecology & Management)		3
ENR 5562 (Wildlife Ecology Methods)		3
Wildlife Biology (6 units)		6
ENR 5364.01 (Mammalian Wildlife Biology and Management)		3
ENR 5364.02 (Avian Wildlife Biology and Management)		3
Ecology (3 units)		0
Met with ENR 2100 in SENR Core (3)		0
Zoology (9 units)		3
Met with one-half of Biology 1113/1114 units (4)		0
EEOB 400 (Evolution)		3
Met with ENR 5350.01 (Taxon and Beh of Aquatic Inverts) or ENR 5350.02 (Taxon and Beh of Fishes) or EEOB 405.01 (Systematics & Diversity of Organisms Lecture) (3)		0
Botany (9 units)		6
Met with one-half of Biology 1113/1114 units (4)		0
EEOB 210 (Local Flora)		3
ENR 3321 (Biology & Identification of Woody Forest Plants)		3
Physical Sciences (9 units)		0
Met with Chem 1210, and ENR 3000/3001 in University GE and SENR Core (9)		0
Quantitative Sciences (9 units)		0
Met with Math151/1151.01, and ENR 2000 or Stat 145 in University GE		0
Humanities and Social Sciences (9 units)		0
Met with University GE		0
Communications (12 units)		6
Met with ENGL 100 or 110 and ENR 2367 in University GE and SENR Core (6)		0
ENR 4611 (Interp & Visitor Services) or ENR 7400 (Commun Env Risk)		3
COMM 320 (Interpersonal & Org Communications) or COMM 321 (Public Speaking)		3
Policy Administration and Law (6 units)		3
Met with ENR 4000 in SENR Core (3)		0
ENR 5649 (Wildlife Conservation Policy)		3
Fisheries and Aquatic Science (14 units)		14
ENR 5342 (Principles of Fisheries Ecology & Management)		3
ENR 5345 (Methods in Aquatic Ecology)		4
ENR 5280 (Stream Ecology)		4
<i>One of the following two classes:</i>		
ENR 5350.02 (Taxonomy and Behavior of Fishes) OR EEOB 621 (Ichthyology at Stone Lab)		3
ENR 5350.01 (Taxonomy and Behavior of Aquatic Invertebrates)		3
Other Biological Sciences (16 units minimum)		0
Met with SENR Core and TWS Certification Requirements		0
Physical Science (16-17 units)		7
Met with Chemistry 1210, and ENR 3000/3001 in University GE and SENR Core (9)		0
AGSYSMGT 370 (Principles of Hydrology)		3
<i>One of the following two classes:</i> CHEM 2310 (Organic Chem) or BIOCHEM 511 (Intro Biochemistry)		4-5
Mathematics and Statistics (6 units)		0
Met with MATH 151/1151.01, and ENR 2000 or Stat 145 in University GE in SENR Core		0
Communications (9 units)		0
SAF requirements met with GE, SENR Core, and TWS Certification Requirements		0
Human Dimensions (6 units)		0
Met with ENR 2300 and ENR 4000 in SENR Core (6)		0
University GE Total/SENR Core Total		70
Wildlife and Fisheries Science Major Option Total		51
Degree Total		121

Wildlife and Pre-Veterinary Science Specialization	Units
Wildlife Management (6 units)	6
ENR 5360 (Principles of Wildlife Ecology & Management)	3
ENR 5562 (Wildlife Ecology Methods)	3
Wildlife Biology (6 units)	6
ENR 5364.01 (Mammalian Wildlife Biology and Management)	3
ENR 5364.02 (Avian Wildlife Biology and Management)	3
Ecology (3 units)	0
Met with ENR 2100 in SENR Core (3)	0
Zoology (9 units)	0
Met with one-half of Biology 1113/1114 units (4)	0
met with MICRBIOL 509 or MICRBIOL 520/521 (Microbiology) in Pre-Vet. Category (3)	0
Met with Mol Gen 500 in Pre-Vet. Category (3)	0
Botany (6 units)	3
Met with one-half of Biology 1113/1114 units (4)	0
ENR 3321 (Biology & Identification of Woody Forest Plants)	3
Physical Sciences (9 units)	0
Met with Chem 1210, and ENR 3000 in University GE and SENR Core (9)	0
Quantitative Sciences (9 units)	0
Met with Math151/1151.01, and ENR 2000 or Stat 145 in University GE and SENR Core (9)	0
Humanities and Social Sciences (9 units)	0
Met with University GE	0
Communications (9 units)	3
Met with ENGL 100 or 110 and ENR 2367 in University GE and SENR Core (6)	0
ENR 4611 (Interp & Visitor Services) or ENR 7400 (Commun Env Risk)	3
Policy Administration and Law (6 units)	3
Met with ENR 4000 in SENR Core (4)	0
ENR 5649 (Wildlife Conservation Policy)	3
Pre-Veterinary Courses (30 units)	32
PHYSICS 1200 (General Physics; Mechanics & Heat)	5
PHYSICS 1201 (General Physics: Electricity, Magnetism & Light)	5
Chem 1220 (General Chemistry II)	5
CHEM 2510 (Organic Chemistry I)	4
CHEM 2520 (Organic Chemistry II)	4
BIOCHEM 511 (Intro. Biological Chemistry)	3
MICRBIOL 509 or MICRBIOL 520/521 (Microbiology)	3
MOL GEN 500 (General Genetics)	3
Recommended Additional Courses (for TWS certification, not counted in degree total)	6
COMM 320 (Interprs & Org Comm) or COMM 321 (Pub Spk)	3
ENR 3321 (Biology & Identification of Woody Forest Plants) or EEOB 210 (Local Flora)	3
University GE Total/SENR Core Total	70
Wildlife and Pre-Veterinary Science Major Option Total	53
Degree Total	123

Wildlife Science Specialization	Units
Wildlife Management (9 units)	9
ENR 5360 (Principles of Wildlife Ecology & Management)	3
ENR 5562 (Wildlife Ecology Methods)	3
ENR 5370 (Wildlife Habitat Management)	3
Wildlife Biology (6 units)	6
ENR 5364.01 (Mammalian Wildlife Biology and Management)	3
ENR 5364.02 (Avian Wildlife Biology and Management)	3
Ecology (3 units)	0
Met with ENR 2100 in SENR Core (3)	0
Zoology (9 units)	6
Met with one-half of Biology 1113/1114 units (4)	0
EEOB 400 (Evolution)	3
ENR 5350.01 (Taxon and Beh of Aquatic Inverts) or ENR 5350.02 (Taxon and Beh of Fishes) or EEOB 405.1 (Systematics & Diversity of Organisms Lecture)	3
Botany (9 units)	6
Met with one-half of Biology 1113/1114 units (4)	0
EEOB 210 (Local Flora)	3
ENR 3321 (Biology & Identification of Woody Forest Plants)	3
Physical Sciences (15 units)	17
Met with Chem 1210, and ENR 3000/3001 in University GE and SENR Core (9)	0
Chem 1220 (General Chemistry II, 3 of 5 units met with Open Option GE)	2
PHYSICS 1200 (General Physics; Mechanics & Heat)	5
PHYSICS 1201 (General Physics: Electricity, Magnetism & Light)	5
CHEM 2310 (Intro Org Chem) or BIOCHEM 511 (Intro Biochem)	5
Quantitative Sciences (9 units)	0
Met with Math151/1151.01, and ENR 2000 or Stat 145 in University GE and SENR Core (9)	0
Humanities and Social Sciences (9 units)	0
Met with University GE (9)	0
Communications (12 units)	6
Met with ENGL 100 or 110 and ENR 2367/GE equiv in University GE and SENR Core (6)	0
COMM 320 (Interprs & Org Comm) or COMM 321 (Pub Spk)	3
ENR 4611 (Interp & Visitor Services) or ENR 7400 (Commun Env Risk)	3
Policy Administration and Law (6 units)	3
Met with ENR 4000 in SENR Core (3)	0
ENR 5649 (Wildlife Conservation Policy)	3
University GE Total/SENR Core Total	70
Wildlife Science Major Option Total	53
Degree Total	123

Forestry, Fisheries and Wildlife

COURSE & NUMBER	HRS	✓	COURSE & NUMBER	HRS	✓
UNIVERSITY REQUIREMENTS (GEC)			UNIVERSITY REQUIREMENTS (GEC)		
FAES 100 (University Survey)	1		Arts and Humanities	20 Hours	
Writing Skills	15 Hours		GEC History Course ¹ ★◆	5	
English 110.01 or 110.02 (Composition)	5				
ENR 367 ³ † or LARCH 367 ³ † (2nd Writing Course)	5*		ENR 367 ³ † or LARCH 367 ³ † or other GEC Humanities	5*	
ENR 567 (3rd Writing Course)	5		GEC Literature Course ¹ ★◆●	5	
Data Analysis, Quantitative & Logical Skills	15-16 Hours		GEC Visual/Performing Arts Course ¹ ★◆●	5	
Math 150 (Trig & Elementary Functions)	5		Social Sciences	15 Hours	
Math 151 (Calculus I)	5		AED Econ 200 or Economics 200 (Microeconomics)	5	
ENR 222 or Stat 145 or H&CS 260 or Stat 528 (Data Analysis I) and Stat 529 (Data Analysis II)	5 - 6		ENR 400 (Natural Resources Policy)	5	
Natural Sciences	20 Hours		Third GEC Social Science ¹ ★◆●	5	
Chem 121 (General Chemistry I)	5		Diversity Experiences	0 Hours*	
Chem 122 (General Chemistry II)	5		Social Diversity in the U.S. ¹ ●	5*	
Chemistry: Additional coursework in Chemistry or Bio Chem required for some options only (see specific option for requirements)			International Issues Western Focus (non-U.S.) ¹ ★ A Study Abroad experience may be used toward this requirement with degree unit approval.	5*	
Biology 113 ⁴ (Energy Transfer & Development)	5		International Issues Non-western/Global Focus ¹ ◆ A Study Abroad experience may be used toward this requirement with degree unit approval.	5*	
Biology 114 (Form, Function, Diversity & Ecology)	5				
Physics: Additional coursework in Physics required for some options only (see specific options for requirement)					
NATURAL RESOURCES CORE REQUIREMENTS	15 Hours		OPTION COURSES (see Option Guides)		
ENR 201 (Introduction to Environmental Science)	5		Forest Ecosystem Science & Management Option	65 Hours	
ENR 203 (Society and Natural Resources)	5		Urban Forestry & Wildlife Management Option	68 Hours	
ENR 300.01 (Introduction to Soil Science)	3		Fisheries & Wildlife Science Option	72 Hours	
ENR 300.02 (Soil Science Laboratory)	2		Fisheries Science Option	81 Hours	
FORESTRY, FISHERIES & WILDLIFE MAJOR	9 Hours		Wildlife Science Option	81 Hours	
ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)	1		Wildlife & Pre-Veterinary Science Option	81 Hours	
ENR 319 (Introduction to Forestry, Fisheries & Wildlife)	3		Forestry & Wildlife Management Option	85 Hours	
ENR 606.02 (Natural Resources Management)	5		MINIMUM HRS FOR GRADUATION (varies per option)	181 Hrs	

¹ From GEC list.

² Selected course may not be double counted in the major.

³ Other 367 courses may be substituted for the 2nd writing requirement. Five additional hours required from Part B of Arts & Humanities (Analysis of Texts & Works of Art).

* Requirements may be double counted with another GEC requirement. If you do not overlap these courses, additional coursework will be required to complete your degree requirements.

† Fulfills both GEC 2nd writing & GEC Cultures & Ideas requirements simultaneously.

★ Students are permitted and recommended to double count their GEC International Issues: Western Focus (non U.S.) requirement with another GEC category.

◆ Students are permitted and recommended to double count their GEC International Issues: Non-western/Global requirements with another GEC category.

● Students are permitted and recommended to double count their GEC Social Diversity requirement with another GEC category.

Forest Ecosystem Science and Management Option	Credit Hours	
AGSYSMGT 370 (Principles of Hydrology)	3	
ENR 221 (Biology and Identification of Woody Forest Plants)	5	
ENR 322 (Forest Ecosystems)	5	
ENR 323 (Forest Biometry)	5	
ENR 324 (Photointerpretation)	3	
ENR 333 (Silviculture)	5	
ENR 340 (Concepts of Parks & Recreation) or ENR 545 (Adv. Perspectives of Nat. Resource Admin.)	3-5	
ENR 432 (Forest Industries)	5	
ENR/AED Econ 531 (Environmental & Nat. Res. Economics)	5	
ENR 635 (Forest Management)	4	
ENR 734 (Forest Ecosystem Management)	4	
ENTOMOL 461 (Forest Entomology)	3	
PLNT PTH 610 (Forest Pathology)	4	
Additional Specialization Courses ** (soils, recreation, wildlife, geo-spatial analysis, etc.)	9-11	
Minimum Option Total	65 Hours	
Free Electives	10-11	
Degree Total	181 Hours	

** Courses requiring advisor approval. Must be 200-level or higher. Additional courses selected in ENR or related disciplines in consultation with faculty advisor.

Urban Forestry and Wildlife Management Option	Credit Hours	
C&R PLAN 310 (Intro to City & Reg Planning)	4	
EEOB 322 (Ornithology)	5	
ENR 221 (Biology and Identification of Woody Forest Plants) or H&CS 234 (Landscape Plants)	5	
ENR 322 (Forest Ecosystems) or H&CS 300 (General Plant Biology)	5	
ENR 232 (Landscape Maintenance)	4	
ENR 323 (Forest Biometry) or ENR 662 (Wildlife Ecology Methods)	5	
ENR 333 (Silviculture)	5	
ENR 623 (Principles of Wildlife Ecology & Management)	5	
ENR 624 (Wildlife Identification and Management)	5	
ENR 625 (Management of Wildlife Habitat)	3	
ENR 631 (Arboriculture)	5	
ENTOMOL 461 (Forest Entomology)	3	
PLNT PTH 610 (Forest Pathology)	4	
Additional Specialization Courses **	5	
Minimum Option Total	68 Hours	
Free Electives	9-10	
Degree Total	181 Hours	

** Courses requiring advisor approval. Must be 200-level or higher. Additional courses selected in ENR or related disciplines in consultation with faculty advisor.

Wildlife and Fisheries Science Option	Credit Hours	
EEOB 322 (Ornithology)	5	
EEOB 400 (Evolution)	5	
EEOB 405.01 (Systematics & Diversity of Organisms Lecture)	4	
EEOB 625 (Mammalogy)	5	
EEOB 626 (Biology of Fishes) or EEOB 621 (Ichthyology)* or EEOB 653 (Fish Biology)*	5	
ENR 221 (Biology and Identification of Woody Forest Plants)	5	
ENR 410 (Environmental Interpretation & Visitor Services) or ENR 615 (Environmental Risk Communication) or Comm 200 (Communication in Society) or Comm 320 (Intro. Interpersonal and Org. Communication) or Comm 321 (Principles of Effective Public Speaking)	5	
ENR 620 (Principles of Fisheries Ecology & Management)	5	
ENR 623 (Principles of Wildlife Ecology & Management)	5	
ENR 624 (Wildlife Identification and Management)	5	
ENR 625 (Management of Wildlife Habitat)	3	
ENR 626 (Field Techniques in Fisheries Management)	5	
ENR 627 (Ecology & Management of Aquatic Inverts.) or ENTOMOL 612 (Aquatic Entomology)* or EEOB 647 (Plankton)	5	
ENR 662 (Wildlife Ecology Methods)	5	
ENR 725 (Wetland Ecology and Management) or EEOB 652* (Limnology at Stone Lab) or EEOB 655 (Limnology)	5	
Minimum Option Total	72 Hours	
Free or Directed Electives: An additional 7 credit hours from the courses listed below are required for certification by the American Fisheries Society. AFS Certification in this option is not required for graduation.	3-4	
BIOCHEM 211 (Elements of Biochemistry I) BIOCHEM 212 (Elements of Biochemistry II) CHEM 123 (General Chemistry III) CHEM 231 (Intro Org Chem) CHEM 245 (Org Chem Lab) PHYSICS 111 (General Physics; Mechanics& Heat) PHYSICS 112 (General Physics: Electricity, Magnetism, & Light)		
Degree Total	181 Hours	

* Courses offered only at Stone Laboratory

Fisheries Science Option	Credit Hours	
BIOCHEM 211/212 (Elements of Biochemistry I, II) or CHEM 123 (General Chemistry III) or CHEM 231 (Introd. Org Chem) and CHEM 245 (Org Chem Lab)	5-6	
EEOB 400 (Evolution)	5	
EEOB 405.01 (Systematics & Diversity of Organisms Lecture)	4	
EEOB 405.02 (Animal Diversity & Systematics Lab)	2	
EEOB 503.01 (Introduction to Ecology Lecture)	4	
EEOB 503.02 (Introduction to Ecology Laboratory)	2	
EEOB 626 (Biology of Fishes) or EEOB 621 (Ichthyology)*	5	
EEOB 647 (Plankton)	5	
EEOB 652* (Limnology at Stone Lab) or EEOB 655 (Limnology)	5	
EEOB 653* (Fish Ecology) or EEOB 440 (Introduction to Ethology)	5	
ENR 620 (Principles of Fisheries Ecology & Management)	5	
ENR 626 (Field Techniques in Fisheries Management)	5	
ENR 627 (Ecology & Management of Aquatic Inverts.) or ENTOMOL 612 (Aquatic Entomology)*	5	
ENR 725 (Wetland Ecology and Management)	5	
PHYSICS 111 (General Physics; Mechanics & Heat)	5	
Additional Specialization Courses** The following 2 courses are recommended	13-14 Hours	
ENR 355 (Water Quality Management)	3	
ENR 628 (Aquaculture)	5	
Minimum Option Total	81 Hours	
Degree Total	186 Hours	

* Courses offered only at Stone Laboratory

** Courses requiring advisor approval. Must be 200-level or higher. Additional courses selected in ENR or related disciplines in consultation with faculty advisor.

Wildlife Science Option	Credit Hours	
ANIM SCI 310 (Principles of Animal Systems Physiology) or EEOB 470 (Biology of Vertebrates) or EEOB 410 (Animal Form and Function) or PLNT BIO 436 (Introductory Plant Physiology)	3-5	
BIOCHEM 211/212 (Elements of Biochemistry I, II) or CHEM 123 (General Chemistry III) or CHEM 231 (Introd. Org Chem) and CHEM 245 (Org Chem Lab)	5-6	
EEOB 210 (Local Flora)	5	
EEOB 322 (Ornithology)	5	
EEOB 400 (Evolution)	5	
EEOB 405.01 (Systematics & Diversity of Organisms Lecture)	4	
EEOB 625 (Mammalogy)	5	
ENR 221 (Biology & Identification of Woody Forest Plants)	5	
ENR 410 (Environmental Interpretation & Visitor Services) or ENR 615 (Environmental Risk Communication) or COMM 200 (Communication in Society) or COMM 320 (Intro. Interpersonal and Org. Communication) or COMM 321 (Principles of Effective Public Speaking)	5	
ENR 623 (Principles of Wildlife Ecology & Management)	5	
ENR 624 (Wildlife Identification and Management)	5	
ENR 625 (Management of Wildlife Habitat)	5	
ENR 627 (Ecology & Management of Aquatic Inverts.) or ENTOMOL 461 (Forest Entomology) or ENTOMOL 612 (Aquatic Entomology)*	3-5	
ENR 662 (Wildlife Ecology Methods)	5	
PHYSICS 111 (General Physics; Mechanics & Heat)	5	
PHYSICS 112 (General Physics: Electricity, Magnetism & Light)	5	
Specialization Courses**	3-8 Hours	
Minimum Option Total	81 Hours	
Degree Total	186 Hours	

* Courses offered only at Stone Laboratory

** Courses requiring advisor approval. Must be 200-level or higher. Additional courses selected in ENR or related disciplines in consultation with faculty advisor.

Wildlife and Pre-Veterinary Science Option	Credit Hours	
BIOCHEM 511 (Intro. Biological Chemistry)	5	
CHEM 123 (General Chemistry III)	5	
CHEM 251 (Organic Chemistry)	3	
CHEM 252 (Organic Chemistry)	3	
EEOB 322 (Ornithology)	5	
EEOB 400 (Evolution)	5	
EEOB 405.01 (Systematics & Diversity of Organisms Lecture)	4	
EEOB 625 (Mammalogy)	5	
ENR 221 (Biology & Identification of Woody Forest Plants)	5	
ENR 623 (Principles of Wildlife Ecology & Management)	5	
ENR 624 (Wildlife Identification and Management)	5	
ENR 625 (Management of Wildlife Habitat)	5	
ENR 662 (Wildlife Ecology Methods)	5	
MICRBIOL 509 or MICRBIOL 520/521 (Microbiology)	5-12	
MOL GEN 500 (General Genetics)	5	
PHYSICS 111 (General Physics; Mechanics & Heat)	5	
PHYSICS 112 (General Physics: Electricity, Magnetism & Light)	5	
Specialization Courses	0-3 Hours	
Minimum Option Total	81 Hours	
Directed Electives: Select 1 course from each of the 2 categories listed below in order to fulfill Wildlife certification requirements. It is recommended that you use directed electives toward this requirement. These courses are not required for graduation in this option.	10 Hours	
COMM 200 (Communication in Society) or COMM 320 (Intro. Interpersonal and Org. Communication) or COMM 321 (Principles of Effective Public Speaking) or ENR 410 (Environmental Interpretation & Visitor Services) or ENR 615 (Environmental Risk Communication)	5	
EEOB 210 (Local Flora)	5	
Degree Total	186 Hours	

Forestry and Wildlife Management Option	Credit Hours	
EEOB 210 (Local Flora)	5	
EEOB 322 (Ornithology)	5	
EEOB 400 (Evolution)	5	
EEOB 405.01 (Systematics & Diversity of Organisms Lecture)	4	
EEOB 625 (Mammalogy)	5	
ENR 221 (Biology & Identification of Woody Forest Plants)	5	
ENR 322 (Forest Ecosystems)	5	
ENR 323 (Forest Biometry)	5	
ENR 324 (Natural Resources Photointerpretation)	3	
ENR 333 (Silviculture)	5	
ENR 340 (Concepts of Parks and Recreation) or ENR 545 (Adv. Perspectives of Nat. Resource Ad- min.)	3-5	
ENR 410 (Environmental Interpretation & Visitor Services) or ENR 615 (Environmental Risk Com- munication) or COMM 200 (Communication in Society) or COMM 320 (Intro. Interpersonal and Org. Communication) or COMM 321 (Principles of Effective Public Speaking	5	
ENR/AED Econ 531 (Env & Nat Res Economics)	5	
ENR 623 (Principles of Wildlife Ecology & Management)	5	
ENR 624 (Wildlife Identification and Management)	5	
ENR 625 (Management of Wildlife Habitat)	5	
ENR 635 (Forest Management)	4	
ENR 662 (Wildlife Ecology Methods)	5	
ENTOMOL 461 (Forest Entomology) or PLNT PTH 610 (Forest Pathology)	3-4	
Minimum Option Total	85 Hours	
Degree Total	190 Hours	

SUGGESTED 4 YEAR SEMESTER PLAN FOR BS-FFW

FIRST YEAR**Autumn Semester**

ENR 1000	1
MATH 1156	5
CHEM 1210	5
ENR 2100	3
ENGLISH X110 or GE History/Soc Sci/Humanities	3
	<hr/>
	17

Spring Semester

ENR 2000 or Stat X145	3
BIOLOGY 1113	4
ENR 2300	3
ENR 3300	3
ENGLISH X110 or GE History/Soc Sci/Humanities	3
	<hr/>
	16

May Term**SECOND YEAR****Autumn Semester**

BIOLOGY 1114 or additional BIO or PHYS SCI or FFW Specialization	4
ENR 3400/3500 or AED ECON 2001	3
GE History/Soc Sci/Humanities or ENR 3000/3001	3-4
GE second writing or GE History/Soc Sci or Humanities	3
FFW Specialization	0-3
	<hr/>
	13-17

Spring Semester

BIOLOGY 1114 or additional BIO or PHYS SCI or FFW Specialization	4
ENR 3400/3500 or AED 2001	3
GE History/Soc Sci/Humanities or ENR 3000/3001	3-4
GE second writing or GE History/Soc Sci or Humanities	3
FFW Specialization	0-3
	<hr/>
	13-17

May Term**THIRD YEAR****Autumn Semester**

ENR 4000 or FFW Specialization	3
ENR 3700 or FFW Specialization	2-3
FFW Specialization	3
FFW Specialization	3
GE History/Soc Sci or Humanities	3
	<hr/>
	14-15

Spring Semester

ENR 4000 or FFW Specialization	3
ENR 3700 or FFW Specialization	2-3
FFW Specialization	3
FFW Specialization	3
GE History/Soc Sci or Humanities	3
	<hr/>
	14-15

May Term

ENR 4900.02 3

FOURTH YEAR**Autumn Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3
	<hr/>
	12-14

Spring Semester

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3
	<hr/>
	12-14

May Term

Transition Plan - 4 YEAR SEMESTER PLAN FOR BS-FFW
1st year under Quarters with remaining three years under Semesters

FIRST YEAR**Autumn Quarter**

FAES 100	1
MATH 151	5
CHEM 121	5
ENR 201	5

17**Winter Quarter**

CHEM 122	5
ENR 300.01/300.02	5
ENGLISH 110	5
ENR 119.02	1

16**Spring Quarter**

ENR 222 or Stat 145	5
ENR 203	5
BIOLOGY 113	5
ENR 319	3

18**SECOND YEAR****Autumn Semester**

BIOLOGY 1114 or additional BIO or PHYS SCI or FFW Specialization	4
ENR 3400/3500 or AED ECON 2001	3
GE History/Soc Sci/Humanities or ENR 3000/3001	3-4
GE second writing or GE History/Soc Sci or Humanities	3
FFW Specialization	0-3

13-17**Spring Semester**

BIOLOGY 1114 or additional BIO or PHYS SCI or FFW Specialization	4
ENR 3400/3500 or AED 2001	3
GE History/Soc Sci/Humanities or ENR 3000/3001	3-4
GE second writing or GE History/Soc Sci or Humanities	3
FFW Specialization	0-3

13-17**May Term****THIRD YEAR****Autumn Semester**

ENR 4000 or FFW Specialization	3
ENR 3700 or FFW Specialization	2-3
FFW Specialization	3
FFW Specialization	3
GE History/Soc Sci or Humanities	3

14-15**Spring Semester**

ENR 4000 or FFW Specialization	3
ENR 3700 or FFW Specialization	2-3
FFW Specialization	3
FFW Specialization	3
GE History/Soc Sci or Humanities	3

14-15**May Term**

ENR 4900.02	3
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FOURTH YEAR**Autumn Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3

12-14**Spring Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3

12-14**May Term**

Transition Plan - 4 YEAR SEMESTER PLAN FOR BS-FFW
1st and 2nd years under Quarters with remaining two years under Semesters

FIRST YEAR**Autumn Quarter**

FAES 100	1
MATH 151	5
CHEM 121	5
ENR 201	5

17**Winter Quarter**

CHEM 122	5
ENR 300.01/300.02	5
ENGLISH 110	5
ENR 119.02	1

16**Spring Quarter**

ENR 222 or Stat 145	5
ENR 203	5
BIOLOGY 113	5
ENR 319	3

18**SECOND YEAR****Autumn Quarter**

BIOLOGY 114	5
FFW SPECIALIZATION	5
FFW SPECIALIZATION	5

17**Winter Quarter**

GEC 2 nd writing	5
FFW SPECIALIZATION	5
GEC COURSE	5

16**Spring Quarter**

AED ECON 200	5
FFW SPECIALIZATION	3
FFW SPECIALIZATION	5
FFW SPECIALIZATION	3

18**THIRD YEAR****Autumn Semester**

ENR 4000 or FFW Specialization	3
ENR 3700 or FFW Specialization	2-3
FFW Specialization	3
FFW Specialization	3
GE History/Soc Sci or Humanities	3

14-15**Spring Semester**

ENR 4000 or FFW Specialization	3
ENR 3700 or FFW Specialization	2-3
FFW Specialization	3
FFW Specialization	3
GE History/Soc Sci or Humanities	3

14-15**May Term**

ENR 4900.02	3
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FOURTH YEAR**Autumn Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3

12-14**Spring Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3

12-14**May Term**

Transition Plan - 4 YEAR SEMESTER PLAN FOR BS-FFW
1st, 2nd and 3rd years under Quarters with a remaining year under Semesters

FIRST YEAR**Autumn Quarter**

FAES 100	1
MATH 151	5
CHEM 121	5
ENR 201	5

16**Winter Quarter**

CHEM 122	5
ENR 300.01/300.02	5
ENGLISH 110	5
ENR 119.02	1

16**Spring Quarter**

ENR 222 or Stat 145	5
ENR 203	5
BIOLOGY 113	5
ENR 319	3

18**SECOND YEAR****Autumn Quarter**

BIOLOGY 114	5
FFW SPECIALIZATION	5
FFW SPECIALIZATION	5

15**Winter Quarter**

GEC 2 nd writing	5
FFW MAJOR COURSE	5
GEC COURSE	5

15**Spring Quarter**

AED ECON 200	5
FFW MAJOR COURSE	3
FFW SPECIALIZATION	5
FFW SPECIALIZATION	3

16**THIRD YEAR****Autumn Quarter**

ENR 567	5
GEC COURSE	5
FFW SPECIALIZATION	3
FFW MAJOR COURSE	3

16**Winter Quarter**

ENR 400	5
FFW MAJOR COURSE	5
GEC COURSE	5
FFW MAJOR COURSE	3

18**Spring Quarter**

FFW MAJOR COURSE	5
GEC COURSE	5
FFW MAJOR COURSE	5

15**FOURTH YEAR****Autumn Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3

12-14**Spring Semester**

FFW Specialization	3
FFW Specialization	3
FFW Specialization	3
FFW Specialization	0-2
GE History/Soc Sci or Humanities	3

12-14**May Term**

Unit	Qtr # plus suffix	Semester #	Sem units	1c: Course Title Long note: various colors in rows below are not important, but indicate some sort of revised or new course information	rank
ENR	100/119.01 ,02,03	1000	1	Environment and Natural Resources Survey	freshman, sophomore, junior, senior
ENR	100H	1000H	1	Environment and Natural Resources Survey	honors freshman
ENR	101	1010	4	Soils in Our Environment	freshman, sophomore Freshman,
RURLSOC	105	1500	3	Introduction to Rural Sociology	Sophomore, Junior, Senior
ENR	222	2000	3	Natural Resources Data Analysis	Sophmores freshmen,
ENR	201	2100	3	Introduction to Environmental Science	sophomores, juniors, seniors

each major
 will get
 assigned to a
 different
 section
 (rather than
 doing
 1000.01, .02,
 etc)

(Planet Earth -
 The Fragile
 Skin) had
 been
 discussed as
 a new title?

ENR	155	2155	4	Energy and Environment Natural Resources	freshman, sophomore, junior, senior
ENR	289	2191	1 or 2	Practicum	sophomore, junior, senior
ENR	203	2300	3	Society and Natural Resources	Freshmen, Sophomores
ENR	232	2320	3	Landscape Maintenance	Freshman, Sophomore, Junior, Senior
ENR	230	2360	3	Ecology and Conservation of Birds	Freshman, Sophomore, Junior and Senior
ENR	567	2367	3	Communicating Environmental and Natural Resources Information	freshman, sophomore, junior
ENR	300.01	3000	3	Soil Science	sophomore, junior, senior
ENR	300.02	3001	1	Soil Science Laboratory	sophomore, junior, senior
ENR	355	3280	2	Water Quality Management	sophomore freshman,
ENR	319	3300	3	Introduction to Forestry Fisheries and Wildlife	sophomore, junior, senior

old 567
 converted to
 new GE 2367.
 "issues" was
 considered in
 title in place
 of
 "information"

ENR	221	3321	3	Biology and Identification of Woody Forest Plants	freshman, sophomore, junior, senior
ENR	322	3322	3	Forest Ecosystems	freshman, sophomore, junior, senior
ENR	323	3323	3	Forest Biometrics	freshman, sophomore, junior, senior
ENR	333	3333	3	Silviculture	freshman, sophomore, junior, senior
ENR	350.01	3335.01	2	Introduction to Wildland Fire Management	freshman, sophomore, junior, senior
ENR	350.02	3335.02	1	Wildland Fire Management Laboratory	freshman, sophomore, junior, senior
ENR	3XX	3400	3	Psychology of Environmental Problems	Freshman, Sophomore, Junior
ENR	347	3470	3	Religion and Environmental Values in America	freshman, sophomore, junior
ENR/RS	3xy	3500	3	Community, Environment and Development	freshman, sophomore, junior, senior
WS/ENR	3xx	3530	3	Women, Environment and Development	freshman, sophomore, junior, senior
RURLSOC	378	3580	3	Social Groups in Developing Societies	freshman, sophomore, junior, senior

GE, Arts and Humanities, Cultures and Ideas

ENR	340	3600	2	Management of Public Lands	sophomore, junior
ENR	311	3611	2	Foundations for Environmental Communications, Education and Interpretation	Soph,Junior,Senior
ENR	324.02	3700	2	Introduction to Spatial Information for Environment and Natural Resources	sophomore, junior, senior
ENR	324.01	3750	3	Applied Remote Sensing for Environment and Natural Resources	junior, senior
ENR	400	4000	3	Environmental and Natural Resources Policy	sophomore, junior, senior
ENR	689	4191	2	Professional Practice in Environment and Natural Resources	freshman, sophomore, junior, senior
ENR	693	4193	1 to 3	Individual Studies in Environment and Natural Resources	freshman, sophomore, junior, senior
ENR	694/494	4194	1 to 3	Group Studies	freshman, sophomore, junior, senior, masters, doctoral, professional

					freshman, sophomore, junior, senior, masters, doctoral, professional
ENR	694	4194	1 to 3	Group Studies	junior, senior
ENR	442	4260	3	Soil Resource Management Sustainable Forest Products	junior, senior
ENR	432	4320	3	Zoo Science and Management	junior, senior
ENR	415	4360	2		sophomore, junior, senior
ENR	694	4400	3	Law and Legal Process	Freshman, Sophomore,
RURLSOC	542	4500	3	Leadership and Community Development	Junior and Senior
ENR	597	4597	3	Contemporary Issues in Environment and Natural Resources	junior, senior, masters, doctoral, professional
ENR	510	4610	3	Natural History of Ohio Environmental Interpretation and Visitor Services	freshman, sophomore, junior, senior, graduate
ENR	410	4611	3	Environment and Natural Resources Law Enforcement	Soph, Junior, Senior
ENR	448	4648	3		sophomore, juni or, senior
ENR	693	4683	1 to 3	Undergraduate Research	Soph, Junior, Senior
ENR	683H	4683H	3	Honors Projects	junior, senior

ENR	606.01	4900.01	3	Environment and Natural Resources Management	Senior
ENR	606.02	4900.02	3	Environment and Natural Resources Management for Forestry Fisheries and Wildlife	junior, senior junior, senior, masters, doctoral, professional
ENR	601	5210	3	Evaluation of Environmental Impact	junior, senior, masters, doctoral, professional
ENR	602	5211	3	International Environmental Impact Assessment	junior, senior, masters, doctoral, professional
ENR	656	5220	2	Ecosystems of the World: Temperate, Boreal and High Latitude Ecosystems	senior, masters, doctoral, professional
ENR	618	5222	3	Ecological Engineering and Ecosystem Restoration	junior, senior, masters, doctoral, professional
ENR	760	5225	3	Ecosystem Modeling	junior, senior, masters, doctoral, professional
ENR	894	5240	2	Environmental Molecular Sciences	senior, masters, doctoral
ENR	725.01	5250.01	3	Wetland Ecology and Restoration	senior, masters, doctoral, professional

ENR	725.02	5250.02	1	Wetland Field Laboratory	senior, masters, doctoral, professional	
ENR	650	5260	3	Soil Landscapes: Morphology, Genesis and Classification	junior, senior, masters, doctoral	
ENR	655/671	5261	3	Environmental Soil Physics	senior, masters, doctoral, professional Junior, senior, masters, doctoral	671 and 655 are absorbed into 5261
ENR	660	5262	3	Soil Chemical Processes and Environmental Quality	professional junior, senior, masters, doctoral	
ENR	665	5263	3	Biology of Soil Ecosystems	junior, senior, masters, doctoral	
ENR	720	5265	2	Characterization of Soil in the Field and Laboratory: Sampling	masters, doctoral, professional junior, senior, masters, doctoral, professional	
ENR	740	5266	3	Field Soil Investigation: Soil Chemistry, Fertility and Biology	masters, doctoral, professional	
ENR	580	5270	3	Soil Fertility	Juniors, Seniors, Masters	"and fertilizers" used to be part of the title

ENR	630	5271	3	Soils of Forest Ecosystems	Juniors, Seniors, Masters
ENR	540	5272	3	Urban and Sports Turf Soils	junior, senior, graduate
ENR	675	5273	3	Environmental Fate and Impact of Contaminants in Soil and Water	Junior, senior, masters, doctoral, professional
ENR	730	5274	2	Computer Simulation of Soil Hydrological and Biogeochemical Processes	junior, senior, masters, doctoral, professional
ENR	xxx	5279	3	Urban Soil and Ecosystem Services: Assessment and Restoration	junior, senior, masters, doctoral, professional
ENR	622	5280	4	Stream Ecology	sophomore, junior, senior, masters, doctoral, professional
ENR	635	5320	3	Forest Management	seniors, masters, doctoral, professional
ENR	631	5322	3	Arboriculture	seniors, masters, doctoral, professional

ENR	736	5325	3	Public Forest and Lands Policy	junior, senior, masters, doctoral, professional
ENR	734	5340	3	Forest Ecosystem Management	Senior, masters, doctoral, professional sophomore, junior, senior, masters,
ENR	620	5342	3	Principles of Fisheries Ecology and Management	doctoral, professional sophomore, junior, senior, masters, doctoral,
ENR	626	5345	4	Methods in Aquatic Ecology	professional sophomore, junior, senior, masters, doctoral,
ENR	627	5350.01	3	Taxonomy and Behavior of Aquatic Invertebrates	doctoral, professional sophomore, junior, senior, masters,
ENR	627x	5350.02	3	Taxonomy and Behavior of Fishes	doctoral, professional
ENR	628	5355	3	Aquaculture	junior, senior, masters, doctoral
ENR	623	5360	3	Principles of Wildlife Ecology and Management	ranks 3+
ENR	662	5362	3	Wildlife Ecology Methods	junior

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 Full SENR semester course
 list, including courses
 required for SENR
 programs and all elective
 courses

ENR	624A	5364.01	3	Mammalian Wildlife Biology and Management	junior or senior
ENR	624B	5364.02	3	Avian Wildlife Biology and Management	junior or senior
ENR	625	5370	2	Management of Wildlife Habitat	junior or senior
ENR	629	5375	2	Ecology and Management of Wetlands Birds	senior, masters, doctoral, professional junior, senior,
ENR	648H	5448H	3	Tragedy of the Commons? Environment, Government and Collective Action	masters, doctoral, professional doctoral,master s, professional,se
RURLSOC	662	5500	3	Diffusion of Innovations	nior,junior Freshman, Sophomore,
RURLSOC	622	5520	3	Amish Society	Junior, Senior masters,
RURLSOC	733	5530	3	Sociology of Agriculture and Food Systems	doctoral, professional junior, senior, masters,
RURLSOC	744	5540	3	Population, Place and Environment	doctoral, professional seniors, masters,
ENR	756	5560	2	Rehabilitation/Restoration of Ecosystems	doctoral, professional

was: Rural
 Sociology
 Demography

RURLSOC	678	5570	3	Women in Rural Society	doctoral, masters, professional, junior, senior, sophomore	title used to include: of Domestic Development
RURLSOC	688	5580	3	Social Impact Assessment	junior, senior, masters, doctoral	
ENR	611	5611	2	Great Lakes Education Workshop	junior, senior, masters, doctoral, professional	was "I", and "II" not converted
ENR	614	5614	2	Marine and Aquatic Education	junior, senior, masters, doctoral, professional	
ENR	640	5640	4	Natural Resources Program Planning	junior, senior, masters	
ENR	642	5642	3	Environment and Natural Resources Administration	Junior, Senior, Masters	
ENR	649	5649	3	Wildlife Conservation Policy	junior, senior, masters, doctoral, professional	
ENR	690	5690	2	Workshop in Environmental Education	junior, senior, masters, doctoral, professional	

ENR	799	5699	1	Current Topics in Environment and Engineering	freshman, sophomore, junior, senior, masters, doctoral, professional	
ENR	697	5797	1 to 15	Study at a Foreign Institution	junior, senior, masters, doctoral, professional	was Long-term Study Abroad
RURLSOC	697	5797	1 to 15	Study at a Foreign Institution	junior, senior, masters, doctoral, professional	
ENR	800	6000	2	Research in Environment and Natural Resources	Masters, doctoral	
ENR	693	6193	1 to 3	Individual Studies in Environment and Natural Resources	masters, doctoral, professional	
ENR	651	6451	3	Water Law	senior, masters, doctoral, professional	was Water Resources Institutions and Policies
RURLSOC	666	6500	3	Rural Poverty	doctoral, professional, masters, senior, junior	title was Sociological Theory Applied to Domestic Development
RURLSOC	788	6550	3	The Change Agent	masters, doctoral, professional	

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 Full SENR semester course
 list, including courses
 required for SENR
 programs and all elective
 courses

ENR	761	6610	2	Soil and Environmental Biochemistry	masters, doctoral, professional (junior, senior possible)
ENR	731	7310	2	Principles and Applications of Forest Ecosystem Restoration	Masters, doctoral
ENR	733	7333	3	Successional Dynamics of Forests	masters, doctoral Masters, Doctoral, some seniors
ENR	738	7380	3	Climate and Society	seniors
ENR	7XX	7400	2	Communicating Environmental Risk	Masters, Doctoral, Professional
ENR	750	7500	3	Resolving Social Conflict	masters, doctoral, professional
ENR	752	7520	3	Environmental Science and Law	senior, masters, doctoral, professional seniors, masters, doctoral
ENR	753	7530	3	Soil Mineralogy	senior, masters, doctoral
RURLSOC	788	7542	3	The Change Agent: Sociological Theory Applied to Domestic Development	Masters, Doctoral, Professional

RURLSOC	888	7550	3	Rural Community Development in Theory and Practice	masters, doctoral, professional	was: Social Action in Community Development
RURLSOC	766	7560	3	Environmental Sociology	Masters, doctoral, professional seniors,	
RURLSOC	742	7600	3	Concepts and Theories in Rural Sociology	masters, doctoral	
ENR	770	7700	3	Watershed Ecology and Restoration	masters, doctoral	
ENR	893	7888	1 to 3	MENR Project	masters	
ENR	812	8120	2	Spatial Methods in Environment and Natural Resources	masters, doctoral, professional	
ENR	815	8150	3	Advanced Environment, Risk and Decision Making	Masters, Doctoral, Professional	
ENR	835	8350	3	Ecosystem Management Policy	masters, doctoral, professional	
ENR	840	8400	2	Theoretical Foundations in the Human Dimensions of Ecosystem Management	masters, doctoral, professional	
RURLSOC	892	8500	3	Development Sociology in Theory and Practice	masters, doctoral, professional	was: Rural Sociology of Development and Social Change

ENR	851	8510	3	Research Design for Environmental Social Sciences	masters, doctoral Masters, Doctoral,
ENR	871	8710	3	Soils and Climate Change Quantitative Methods for Environment and Natural Resources	Professional masters, doctoral, professional masters, doctoral
ENR	822	8780	3	Research Paradigms	professional masters, doctoral
ENR	899.01	8890.01	1 to 12	Fish and Wildlife Management Seminar	professional masters, doctoral
ENR	899.02	8890.02	1 to 12	Watershed Ecology and Management Seminar	professional masters, doctoral
ENR	899.03	8890.03	1 to 12	Environmental Science Seminar	professional masters, doctoral
ENR	899.04	8890.04	1 to 12	Soil Science Seminar	professional masters, doctoral
ENR	899.05	8890.05	1 to 12	Forest Science and Management Seminar	professional masters, doctoral

title was:
 Human
 Dimensions
 Theory
 Building in
 Natural
 Resources

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 Full SENR semester course list, including courses required for SENR programs and all elective courses

ENR	899.06	8890.06	1 to 12	Environmental Policy and Decision-Making Seminar	masters, doctoral, professional
ENR	899.07	8890.07	1 to 12	Environmental Education and Communication Seminar	masters, doctoral, professional
ENR	899.08	8890.08	1 to 12	Parks and Recreation Management Seminar	masters, doctoral, professional
ENR	xxx	8890.09	1 to 12	Rural Sociology Seminar	professional
ENR	897	8897	1	Research Proposal Symposium	graduate masters,
ENR	880	8980	1	Environment and Natural Resources Seminar	doctoral, professional
ENR	999	8998	3 to 15	Research	Masters, doctoral

Unit	Qtr # plus suffix	Semester #	Sem units	1c: Course Title Long	rank
ENR	100H	1000H	1	Environment and Natural Resources Survey	honors freshman
ENR	683H	4683H	3	Honors Projects	junior, senior
ENR	590H	4890H	1	Honors Colloquium	Junior
ENR	648H	5448H	3	Tragedy of the Commons? Environment, Government and Collective Action	junior, senior, masters, doctoral, professional
ENR	119.01	xx (1000)	1	Survey of Park and Policy Careers	freshman, sophomore, junior, senior

119 is merged w 100 as 1000

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Full SENR semester course
list, including courses
required for SENR
programs and all elective
courses

ENR	119.02	xx (1000)	1	Professional Survey of Forestry, Fisheries and Wildlife	freshman, sophomore	119 is merged w 100 as 1000
ENR	119.03	xx (1000)	1	Professional Survey of Environmental Science	freshman, sophomore, junior, senior	119 is merged w 100 as 1000

School of Environment and Natural Resources **Transition Plan for ENR Majors**

This transition plan covers all existing ENR undergraduate majors, including:

Environmental Policy and Decision Making Major (*modified in title (was Environmental Policy and Management) and three specializations added*)

Environmental Science Major (*modified from four to five specializations*)

Forestry, Fisheries, and Wildlife Major (*converted as semester equivalent*)

Natural Resource Management Major (*modified in title (was Parks, Recreation & Tourism) and three specializations added*)

Students in all ENR majors may complete the major as it was offered in quarters, simply by completing the semester equivalents of the courses they would have completed to meet the requirements of the major under quarters. Each major includes a sufficient selection of converting courses to make completion possible; any courses not converted to semesters will simply be unavailable as options starting in Autumn of 2012. There will be no attempt to create bridge courses.

Current students in ENR majors will be contacted before the start of the Autumn 2011 quarter with a list of available semester courses to complete their major; any courses that will be terminated in semesters will be highlighted with encouragement for interested students to take them in 2011-2012.

Students finishing their degrees under semesters in the **Environmental Policy and Decision Making** Major and the **Natural Resources Management** Major will have the option of either completing their major with no specialization as these degrees were offered in quarters, or if their course of study allows them to do so, they may complete their degree under one of the three specializations now specified in these two majors. Students in the **Environmental Science** Major will have the option of either completing their current specialization with semester equivalent courses, or changing their specialization to one of the re-named specializations offered under semesters. Students completing the **Forestry, Fisheries, and Wildlife** Major (FFW) will see no change in their specialization options, and will simply complete their specialization with semester equivalent versions of courses, as suggested in the four year plan above and as guided by the FFW semester advising sheets above.

SENR Semester Programs: Assessment Plans

SENR programs do not have assessment plans already on file with the University. The following selections below have been indicated in the online program proposal system to describe the preliminary assessment plans for SENR programs. Full plans for undergraduate and graduate programs will be completed for submission to the University in September of 2011, in collaboration with Dr. Warren Flood and his work to finalize assessment plans in the College of Food, Agricultural and Environmental Sciences. An important basis for assessment is the set of program learning goals detailed in the different curriculum maps for each SENR undergraduate major and several SENR graduate programs. Details have been added below to specify the measures currently used to assess SENR programs. Different assessment methods are used across the range of SENR degree programs, as indicated below,

Direct Methods of Assessment:

Undergraduate:

Standardized tests:

-Certification or licensure examinations for FFW students: *The Wildlife Society, American Fisheries Society, and Society of American Foresters certifications are available to students completing various specializations in the FFW major.*

Classroom Assignments:

-Other classroom assignment methods: *Current SENR students must complete ENR 567 (3rd writing course), which evaluates written and oral communication skills. Portions of what is currently assessed in ENR 567 will be shifted in semesters to ENR 2367 (a 2nd writing course), ENR 4900.01/4900.02 (the ENR capstone courses, with integrative projects and assignments, written and oral, to assess students' mastery of a range of ENR knowledge and skills), and to an additional writing assessment component that will be added to an upper level required course in each major that includes a significant writing component (e.g., 4900.01, 662/5362, 642/5642). In this latter case, writing assignments in these upper level courses will be graded both by the content instructor and by a qualified writing instructor designated by the School, to assure that students achieve a satisfactory level of writing mastery.*

Evaluation of a body of work produced by the student:

-Capstone course reports, papers, or presentations: *ENR 606.01/4900.01 and 606.02/4900.02 are the SENR capstone courses, which require students to demonstrate an integrative knowledge and proficiency following on their environment and natural resource education and training in SENR.*

Graduate:

Direct assessment methods specifically applicable to graduate programs:

- Candidacy exams: *PhD students must complete a written and oral candidacy exam prior to proceeding with their dissertation research.*
- Research proposals written: *PhD students must complete a research proposal approved by their committee to proceed with dissertation research; MS students enroll in a research course (800/8998) and a research proposal symposium (897/8897) to develop and present their thesis research proposal; MENR students must gain approval of their project topic by their advisory committee and the director of graduate studies, and their independent project and program of study must also be approved by their committee.*
- Thesis/dissertation oral defense and/or other oral presentation: *MS and PhD students must pass an oral defense, and also give a public thesis presentation (PhD students present their research in the SENR seminar series); MENR students complete an oral Final Master's Examination.*
- Thesis/dissertation (written): *MS and PhD students complete written theses and dissertations; MENR students complete a written Final Master's Examination.*

Indirect Methods of Assessment:

Undergraduate:

Surveys and Interviews:

- Student survey: *SENR social science faculty have created a pre- and post-test survey instrument for SENR students, which students complete upon entering SENR and then again in their final semester. The survey evaluates environmental learning, attitudes, career interests, and other measures of student progress and experiences linked to SENR program objectives, and these results inform program vision and revision.*
- Alumni survey: *SENR social science faculty periodically complete phone interviews with SENR alumni to examine their long-term learning, job success, and retrospective views of SENR programs; these results inform program vision and revision.*
- Student Evaluation of Instruction: *SENR instructors use SEI's to evaluate their own teaching; SENR administration uses SEI's in part to gauge instructor success.*
- Student interviews or focus groups: *SENR director and other administrators conduct exit interviews with a sample of graduating SENR students to evaluate their success and satisfaction with SENR programs. These interviews inform shaping and direction of current and future programs.*

Graduate:

Additional types of indirect evidence:

-Job or post-baccalaureate education placement: *SENR administrators keep track of job placement of graduates as a measure of program success.*

How the program uses or will use the evaluation data to make evidence-based improvements to the program periodically (select all that apply):

-Meet with students directly to discuss their performance: *Meetings with students occur throughout the SENR curriculum, particularly in relation to term projects, capstone projects, and graduate theses and projects.*

-Analyze and discuss trends with unit's faculty: *results of surveys and exit interviews are shared in faculty meetings, and have been used extensively in preparing the SENR semester curriculum; ongoing review of the semester curriculum, particularly during 2012-2014, with continue this process.*

-Analyze and report to college/school: *survey results have been reported to the College and across the university.*

-Make improvements in curricular requirements: *survey and interview results were used extensively to shape the semester curriculum, and will be similarly employed to shape revisions to the semester curriculum in coming years.*

-Make improvements in course content: *information from meetings with students, SEI's, surveys and interviews are all used to improve course content; course revisions and improvements were a particular focus of the curriculum planning process for the Q2S conversion, and will remain a focus particularly during 2012-2014 as the semester curriculum is refined and optimized.*

-Periodically confirm that current curriculum and courses are facilitating student attainment of program goals: *survey results are particularly useful as evidence of success in this area.*

Units	CONCEPTS				TECHNICAL							CRIT. THINKING			PROF & PERS DEV			
	I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4
University General Education																		
5 English 110.01 or 110.02 (Composition)										F							F	
3 ENR 367 (Environment and Natural Resources Communication)										R							R	
3 Literature																		
3 Arts				F														
3 Historical Study																		
3 Social Science 1				F														
3 Social Science 2				F														
3 Culture and Ideas, or Historical Study, or Social Science																		
5 AED Econ 200 or Economics 200 (Microeconomics)			F							R								
3 Math 150 (Trig & Elementary Functions)										F		F		F				
5 Math 151/152 (Calculus)										F		R		R				
ENR 222 or Stat 145 or H&CS 260 or Stat 528 (Data Analysis I) and Stat 529 (Data Analysis II)							I			I/R		I	I	I				
4 Biology 113 (Energy Transfer & Development)	F	F																
4 Biology 114 (Form, Function, Diversity & Ecology)	F	F																
4 Chem 121 (General Chemistry I)	F																	
4 Chem 122 (General Chemistry II)	F																	
44 TOTAL																		
SENR Core																		
4 ENR 201 (Introduction to Environmental Science)	I	I	I	I													I	I
4 ENR 203 (Society and Natural Resources)			F/I	F/I					I			I	I				I	I
3 ENR 300.01 (Introduction to Soil Science)	I/R																	
2 ENR 300.02 (Soil Science Laboratory)	I/R																	
3 ENR 319 (Introduction to Forestry, Fisheries & Wildlife)	I/R	I/R	I	I					I	I		I/R		I			I	I
3 ENR 3xx (Psych. Env. Prob) or 3xy (Commun, Env. & Dev.)																		
4 ENR 400 (Natural Resources Policy)			I/R	I/R					R	R		I						
1 ENR xxx (Introduction to Geographical Information Systems)																		
5 ENR 606.02 (Natural Resources Management)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		R-A	A
16 TOTAL																		
FFW Major Option																		
1 ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)			F	F													I	I
60 Courses specific to major option																		
Free Electives??																		

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

I. CONCEPTS:

- I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
- I-4 Knowledge and comprehension of ecosystems within the human/social contexts.

II. TECHNICAL:

- II-1 Knowledge and use of identification skills.
- II-2 Knowledge and understanding of natural history.
- II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
- II-4 Ability to perform effective communication.
- II-5 Ability to find appropriate sources of information.
- II-6 Ability to quantify and interpret information and data.
- II-7 Knowledge and application of spatial information systems (GPS and GIS).

III. CRITICAL THINKING

- III-1 Ability and skills necessary for problem solving.
- III-2 Ability to apply theory and perform appropriate testing.
- III-3 Ability to perform critical analysis of information and forms of communication.

IV. PROFESSIONAL AND PERSONAL DEVELOPMENT

- IV-1 Ability and skills to work collaboratively.
- IV-2 Has global awareness of the profession or discipline.
- IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
- IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

Wildlife Science Option		CONCEPTS				TECHNICAL							RIT. THINKIN			PROF & PERS DEV				
		I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4	
1	ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)			F	F													I	I	
TWS Certification Category/Subcategory																				
Wildlife Management (6 units)																				
3	ENR 623 (Principles of Wildlife Ecology & Management)	R	R	R	R		R	I	R/A	R/A	R/A	I	R/A	R/A	R/A	R/A	R/A	R	R	R
3	ENR 662 (Wildlife Ecology Methods)	R-A	R-A			R-A	A	R/A	R/A	A	R/A	R/A	R/A	R/A	A			R-A	R	
Wildlife Biology (9 units)																				
3	ENR 624 (Wildlife Identification and Management-Birds)		R	R	R	R	R		R	R	I									R
3	ENR 624 (Wildlife Identification and Management-Mammals)		R	R	R	R	R		R	R	I									R
3	ENR elective course (Wildlife Biology)																			
Ecology (3 units)																				
3	Met with ENR 203 in SENR Core																			
Zoology (9 units)																				
4	Met with one-half of Biology 113/114 units																			
3	EEOB 400 (Evolution)	IR	IR																	
3	EEOB elective course	R	R			R	R	R												
Botany (9 units)																				
4	Met with one-half of Biology 113/114 units																			
3	EEOB 210 (Local Flora)		F			I	I													
3	ENR 221 (Biology & Identification of Woody Forest Plants)	I	I			R	I/R													
Physical Sciences (9 units)																				
9	Met with Chem 120, Chem 121, and ENR 300 Univ GEC and SENR Core																			
4	PHYSICS 111 (General Physics: Mechanics & Heat)	F																		
4	PHYSICS 112 (General Physics: Electricity, Magnetism & Light)		I/R	I/R				R	R			I								
3	BIOCHEM 211/212 (Elem Biochem I, II) or CHEM 123 (Gen Chem III) or CHEM 231 (Intro Org Chem) and CHEM 245 (Org Chem Lab)	F	F																	
Quantitative Sciences (9 units)																				
9	Met with MATH 150, Math151, and ENR 222 or Stat 145 in Univ GEC																			
Humanities and Social Sciences (9 units)																				
9	Met with Univ GEC																			
Communications (12 units)																				
6	Met with ENGL 100 or 110 and ENR 367 in Univ GEC and SENR Core																			
6	ENR 410 (Env Int) or ENR 615 (Risk Comm) or COMM 200 (Comm in Soc) or COMM 320 (Interprs & Org Comm) or COMM 321 (Pub Spk)																			
Policy Administration and Law (6 units)																				
3	Met with ENR 400 in SENR Core																			
3	ENR 649 (Wildlife Conservation Policy)			R	I/R			R	I/R			R	R	R	R	R	R	R	R	I/R
Specialization Electives																				
19	Elective Courses 200 and above that support major with advisor consent																			

60 Major Option Total
44 Univ GEC Total
16 SENR Core Total
120 Degree Total

ENR Elective Wildlife Biology Courses

3	ENR 230 (Ecology and Conservation of Birds)	I																		
3	ENR 230 (Ecology and Conservation of Birds-SL)	I																		
3	ENR 629 (Ecology and Management of Wetland Birds)																			

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

- I. CONCEPTS:**
 - I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
 - I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
 - I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
 - I-4 Knowledge and comprehension of ecosystems within the human/social contexts.
- II. TECHNICAL:**
 - II-1 Knowledge and use of identification skills.
 - II-2 Knowledge and understanding of natural history.
 - II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
 - II-4 Ability to communicate effectively.
 - II-5 Ability to find appropriate sources of information.
 - II-6 Ability to quantify and interpret information and data.
 - II-7 Knowledge and application of spatial information systems (GPS and GIS).
- III. CRITICAL THINKING**
 - III-1 Ability and skills necessary for problem solving.
 - III-2 Ability to apply theory and perform appropriate testing.
 - III-3 Ability to perform critical analysis of information and forms of communication.
- IV. PROFESSIONAL AND PERSONAL DEVELOPMENT**
 - IV-1 Ability and skills to work collaboratively.
 - IV-2 Has global awareness of the profession or discipline.
 - IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
 - IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

F Foundational
I Introduced
R Reinforced
A Applied

Wildlife and Pre-Veterinary Science Option		CONCEPTS				TECHNICAL							CRIT. THINKING			PROF & PERS DEV					
		I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4		
1	ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)			F	F													I	I	I	
TWS Certification Category/Subcategory																					
Wildlife Management (6 units)																					
3	ENR 623 (Principles of Wildlife Ecology & Management)	R	R	R	R				R	I	R/A	R/A	R/A	I	R/A	R/A	R/A	R/A	R/A	R	R
3	ENR 662 (Wildlife Ecology Methods)	R-A	R-A			R-A	A	R/A	R/A	A	R/A	R/A	R/A	R/A	R/A	R/A	R/A			R-A	R
Wildlife Biology (6 units)																					
3	ENR 624 (Wildlife Identification and Management-Birds)		R	R	R	R	R		R	R	I									R	
3	ENR 624 (Wildlife Identification and Management-Mammals)		R	R	R	R	R		R	R	I									R	
Ecology (3 units)																					
3	Met with ENR 203 in SENR Core																				
Zoology (12 units)																					
4	Met with one-half of Biology 113/114 units																				
3	EEOB 400 (Evolution)		IR	IR																	
3	Category		R	R		R	R	R													
3	Met with Mol Gen 500 in Pre-Vet. Category																				
Botany (9 units)																					
4	Met with one-half of Biology 113/114 units																				
3	EEOB 210 (Local Flora)			F			I	I													
3	ENR 221 (Biology & Identification of Woody Forest Plants)		I	I		R	I/R														
Physical Sciences (9 units)																					
9	Met with Chem 120, Chem 121, and ENR 300 Univ GEC and SENR Core																				
Quantitative Sciences (9 units)																					
9	Met with MATH 150, Math151, and ENR 222 or Stat 145 in Univ GEC																				
Humanities and Social Sciences (9 units)																					
9	Met with Univ GEC																				
Communications (12 units)																					
6	Met with ENGL 100 or 110 and ENR 367 in Univ GEC and SENR Core																				
6	ENR 410 (Env Int) or ENR 615 (Risk Comm) or COMM 200 (Comm in Soc) or COMM 320 (Interpr & Org Comm) or COMM 321 (Pub Spk)																				
Policy Administration and Law (6 units)																					
3	Met with ENR 400 in SENR Core																				
3	ENR 649 (Wildlife Conservation Policy)			R	I/R				R	I/R			R	R	R	R	R	R	R	R	I/R
Pre-Veterinary Courses (28 units)																					
4	PHYSICS 111 (General Physics: Mechanics & Heat)																				
4	PHYSICS 112 (General Physics: Electricity, Magnetism & Light)																				
4	CHEM 123 (General Chemistry III)																				
4	CHEM 251 (Organic Chemistry)																				
2	CHEM 252 (Organic Chemistry)																				
3	BIOCHEM 511 (Intro. Biological Chemistry)																				
3	MICRBIOL 509 or MICRBIOL 520/521 (Microbiology)																				
3	MOL GEN 500 (General Genetics)																				
Specialization Electives																					
0	Elective Courses 200 and above that support major with advisor consent																				

Major Option Total 60
 Univ GEC Total 44
 SENR Core Total 16
 Degree Total 120

Major Option Total
63

ENR Elective Wildlife Biology Courses

3	ENR 230 (Ecology and Conservation of Birds)																				
3	ENR 230 (Ecology and Conservation of Birds-SL)																				
3	ENR 629 (Ecology and Management of Wetland Birds)																				

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

- I. CONCEPTS:**
 - I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
 - I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
 - I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
 - I-4 Knowledge and comprehension of ecosystems within the human/social contexts.
- II. TECHNICAL:**
 - II-1 Knowledge and use of identification skills.
 - II-2 Knowledge and understanding of natural history.
 - II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
 - II-4 Ability to communicate effectively.
 - II-5 Ability to find appropriate sources of information.
 - II-6 Ability to quantify and interpret information and data.
 - II-7 Knowledge and application of spatial information systems (GPS and GIS).
- III. CRITICAL THINKING**
 - III-1 Ability and skills necessary for problem solving.
 - III-2 Ability to apply theory and perform appropriate testing.
 - III-3 Ability to perform critical analysis of information and forms of communication.
- IV. PROFESSIONAL AND PERSONAL DEVELOPMENT**
 - IV-1 Ability and skills to work collaboratively.
 - IV-2 Has global awareness of the profession or discipline.
 - IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
 - IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

F Foundational
 I Introduced
 R Reinforced
 A Applied

Fisheries Science Option		CONCEPTS				TECHNICAL							CRIT. THINKING			PROF & PERS DEV					
		I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4		
1	ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)			F	F													I	I	I	
SAF Certification Category/Subcategory																					
Required (72 hrs min)																					
	AGSYSMT 370 (Principles of Hydrology)	I		I									R		R					I	
	BIOCHEM 211/212 (Elem Biochem I, II) OR CHEM 123 (Gen Chem III) OR CHEM 231 (Intro Org Chem) and CHEM 245 (Org Chem Lab)	F	F																	I	
	PHYSICS 111 (General Physics: Mechanics & Heat)	F																		I	
	EEOB 655 (Limnology) OR EEOB 652 (Limnology at Stone Lab)	R	R	R	I			R	I											R	I
	ENR 622 (Stream Ecology)	R	R	R	I			R	I											R	I
	ENR 725 (Wetland Ecology & Management) OR <i>ENR Proposed Class (Riparian Ecology & Management)</i>	R	R	R	I			R	I											R	I
	EEOB 400 (Evolution)	IR	IR																		
	EEOB 405.1 (Systematics & Diversity of Organisms Lecture)	IR	IR			R	R														
	EEOB 405.2 (Animal Diversity & Systematics Laboratory)																				
	EEOB 503.01 (Introduction to Ecology Lecture)																				
	EEOB 503.02 (Introduction to Ecology Laboratory)																				
	ENR 620 (Principles of Fisheries Ecology & Management) <i>ENR Proposed Class (Propagated Fish in Resource Management)</i>	R	A	A	R	A	R	R	R	I	I			R	R	R			R	R	R
	EEOB 626 (Biology of Fishes) OR EEOB 653 (Fish Ecology at Stone Lab)	R	R			I	R	I													R
	<i>ENR Proposed Class (Taxonomy and Behavior of Fishes)</i> OR EEOB 621 (Ichthyology at Stone Lab)	R	R			A	R	A		R	R			R						R	R
	ENR 627 (Taxonomy and Behavior of Aquatic Invertebrates)	R	R			A	R	A		R	R			R						R	R
	ENR 626 (Methods in Aquatic Ecology)	A	A	R	R	A	R	A	A	A	A	R	A	A	A	A	R	A	R	R	R
	GEOG 607 (Fundamentals of GIS)	I				I	R	R	R	R	R			R							R
Directed Electives: Suggested Options (9 hrs min)																					
	EEOB 440 (Introduction to Ethology)																				
	EEOB 505 (Marine Biology and Ecology)																				
	EEOB 647 (Plankton)																				
	EEOB 611 (Aquatic and Wetland Plants)																				
	EEOB 654 (Ecological Physiology)																				
	ENR 355 (Water Quality Management)																				
	ENR 628 (Advances in Aquaculture)																				
	ENR 770 (Watershed Ecology & Restoration)																				
	GEOG 420 (Global Climate Change: Causes & Consequences)																				
Specialization Electives																					
53	Elective Courses 200 and above that support major with advisor consent																				

- 60 Major Option Total
- 44 Univ GEC Total
- 16 SENR Core Total
- 120 Degree Total

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

I. CONCEPTS:

- I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
- I-4 Knowledge and comprehension of ecosystems within the human/social contexts.

II. TECHNICAL:

- II-1 Knowledge and use of identification skills.
- II-2 Knowledge and understanding of natural history.
- II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
- II-4 Ability to perform effective communication.
- II-5 Ability to find appropriate sources of information.
- II-6 Ability to quantify and interpret information and data.
- II-7 Knowledge and application of spatial information systems (GPS and GIS).

III. CRITICAL THINKING

- III-1 Ability and skills necessary for problem solving.
- III-2 Ability to apply theory and perform appropriate testing.
- III-3 Ability to perform critical analysis of information and forms of communication.

IV. PROFESSIONAL AND PERSONAL DEVELOPMENT

- IV-1 Ability and skills to work collaboratively.
- IV-2 Has global awareness of the profession or discipline.
- IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
- IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

- F Foundational
- I Introduced
- R Reinforced
- A Applied

Wildlife and Fisheries Science Option	CONCEPTS				TECHNICAL							CRIT. THINKING			PROF & PERS DEV			
	I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4
1 ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)		F	F												I	I	I	
TWS Certification Category/Subcategory																		
Wildlife Management (6 units)																		
3 ENR 623 (Principles of Wildlife Ecology & Management)	R	R	R	R	R	I	R/A	R/A	R/A	I	R/A	R/A	R/A	R/A	R/A	R	R	
3 ENR 662 (Wildlife Ecology Methods)	R-A	R-A			R-A	A	R/A	R/A	A	R/A	R/A	R/A	R/A	R/A	A		R-A	R
Wildlife Biology (9 units)																		
3 ENR 624 (Wildlife Identification and Management-Birds)		R	R	R	R	R	R	R	I								R	
3 ENR 624 (Wildlife Identification and Management-Mammals)		R	R	R	R	R	R	R	I								R	
3 ENR elective course (Wildlife Biology)																		
Ecology (3 units)																		
3 Met with ENR 203 in SENR Core																		
Zoology (9 units)																		
4 Met with one-half of Biology 113/114 units																		
3 EEOB 400 (Evolution)	IR	IR																
3 EEOB elective course	R	R			R	R	R											
Botany (9 units)																		
4 Met with one-half of Biology 113/114 units																		
3 EEOB 210 (Local Flora)		F			I	I												
3 Met with ENR 221 in SAF certification requirements	I	I			R	I/R												
Physical Sciences (9 units)																		
9 Met with Chem 120, Chem 121, and ENR 300 in Univ GEC and SENR Core																		
Quantitative Sciences (9 units)																		
9 Met with MATH 150, Math151, and ENR 222 or Stat 145 in Univ GEC																		
Humanities and Social Sciences (9 units)																		
9 Met with Univ GEC																		
Communications (12 units)																		
6 Met with ENGL 100 or 110 and ENR 367 in Univ GEC and SENR Core																		
6 ENR 410 (Env Int) or ENR 615 (Risk Comm) or COMM 200 (Comm in Soc) or COMM 320 (Interprts & Org Comm) or COMM 321 (Pub Spk)																		
Policy Administration and Law (6 units)																		
3 Met with ENR 400 in SENR Core																		
3 ENR 649 (Wildlife Conservation Policy)			R	I/R			R	I/R			R	R	R	R	R	R	R	I/R
AFS Certification Category/Subcategory (34 units?)																		
Physical Science (7 units?)																		
* 4 PHYSICS 111 (General Physics: Mechanics & Heat)	F																	I
* 3 AGSYSMGT 370	I		I		I							R		R				I
** 4 BIOCHEM 211/212 (Elem Biochem I, II) OR CHEM 123 (Gen Chem III) OR CHEM 231 (Intro Org Chem) and CHEM 245 (Org Chem Lab)	F	F																I
Fisheries and Aquatic Science (21 units?)																		
3 ENR 620 (Principles of Fisheries Ecology & Management)	R	A	A	R	A	R	R	R	I	I		R	R	R	R	R	R	R
3 ENR 626 (Methods in Aquatic Ecology)	A	A	R	R	A	R	A	A	A	A	R	A	A	A	A	R	R	R
3 ENR 622 (Stream Ecology)	R	R	R	I	I	R	I	R	I	I	I	I	I	R	R	I	R	I
* 3 ENR Proposed Class (Taxonomy and Behavior of Fishes) OR EEOB 621 (Ichthyology at Stone Lab)	R	R			A	R	A	R	R		R			R		R		
* 3 ENR 627 (Taxonomy and Behavior of Aq Inv)	R	R			A	R	A	R	R		R			R		R		
* 3 EEOB 652 (Limnology @ S.L.) / EEOB 655 (Limnology)	R	R	R	I		R	I										R	I
3 Directed Electives, 3? units are required from this list (*)																		
Other Biology 6 units																		
6 Met by TWS Certification Requirements																		
Mathematics and Statistics																		
7 Met by Univ GE and SENR Core courses																		
Communications																		
7 Met by Univ GE and SENR Core courses																		
Human Dimensions																		
7 Met by Univ GE and SENR Core courses																		
Specialization Electives																		
-1 Elective Courses 200 and above that support major with advisor consent																		

60 Major Option Total
44 Univ GEC Total
16 SENR Core Total
120 Degree Total

ENR Elective Wildlife Biology Courses

3 ENR 230 (Ecology and Conservation of Birds)	I																	
3 ENR 230 (Ecology and Conservation of Birds-SL)	I																	
3 ENR 629 (Ecology and Management of Wetland Birds)																		

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

I. CONCEPTS:

- I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
- I-4 Knowledge and comprehension of ecosystems within the human/social contexts.

II. TECHNICAL:

- II-1 Knowledge and use of identification skills.
- II-2 Knowledge and understanding of natural history.
- II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
- II-4 Ability to communicate effectively.
- II-5 Ability to find appropriate sources of information.
- II-6 Ability to quantify and interpret information and data.
- II-7 Knowledge and application of spatial information systems (GPS and GIS).

III. CRITICAL THINKING

- III-1 Ability and skills necessary for problem solving.
- III-2 Ability to apply theory and perform appropriate testing.
- III-3 Ability to perform critical analysis of information and forms of communication.

IV. PROFESSIONAL AND PERSONAL DEVELOPMENT

- IV-1 Ability and skills to work collaboratively.
- IV-2 Has global awareness of the profession or discipline.
- IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
- IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

F Foundational
I Introduced
R Reinforced
A Applied

Forest Ecosystem Science and Management Option		CONCEPTS				TECHNICAL							CRIT. THINKING			PROF & PERS DEV			
		I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4
1	ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)			F	F														
SAF Certification Category/Subcategory																			
2	AGSYSMGT 370 (Principles of Hydrology)																		
3	ENR 221 (Biology and Identification of Woody Forest Plants)																		
3	ENR 322 (Forest Ecosystems)																		
3	ENR 323 (Forest Biometry)																		
2	ENR 324 (Photointerpretation)																		
3	ENR 333 (Silviculture)																		
2	ENR 340 (Concepts of Parks & Recreation)																		
3	ENR 350 (Intro to Wildland Fire Management)																		
3	ENR 432 (Forest Industries)																		
3	ENR/AED Econ 531 (Environmental & Nat. Res. Economics)																		
3	ENR 545 (Adv. Perspectives of Nat. Resource Admin.)																		
3	ENR 635 (Forest Management)																		
3	ENR 734 (Forest Ecosystem Management)																		
3	ENTOM/PLNT PATH xxx (new course)																		
Specialization Electives																			
20	Elective Courses 200 and above that support major with advisor consent (soils, recreation, wildlife, geo-spatial analysis, etc.)																		

60 Major Option Total
 44 Univ GEC Total
 16 SENR Core Total
 120 Degree Total

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

I. CONCEPTS:

- I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
- I-4 Knowledge and comprehension of ecosystems within the human/social contexts.

II. TECHNICAL:

- II-1 Knowledge and use of identification skills.
- II-2 Knowledge and understanding of natural history.
- II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
- II-4 Ability to perform effective communication.
- II-5 Ability to find appropriate sources of information.
- II-6 Ability to quantify and interpret information and data.
- II-7 Knowledge and application of spatial information systems (GPS and GIS).

III. CRITICAL THINKING

- III-1 Ability and skills necessary for problem solving.
- III-2 Ability to apply theory and perform appropriate testing.
- III-3 Ability to perform critical analysis of information and forms of communication.

IV. PROFESSIONAL AND PERSONAL DEVELOPMENT

- IV-1 Ability and skills to work collaboratively.
- IV-2 Has global awareness of the profession or discipline.
- IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
- IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

F Foundational
 I Introduced
 R Reinforced
 A Applied

Forestry and Wildlife Option		CONCEPTS				TECHNICAL							CRIT. THINKIN			PROF & PERS DEV			
		I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4
1	ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)		F	F															
TWS Certification Category/Subcategory																			
Wildlife Management (6 units)																			
3	ENR 623 (Principles of Wildlife Ecology & Management)	R	R	R	R		R	I	R/A	R/A	R/A	I	R/A	R/A	R/A	R/A	R/A	R	R
3	ENR 662 (Wildlife Ecology Methods)	R-A	R-A				R-A	A	R/A	R/A	A	R/A	R/A	R/A	R/A	A		R-A	R
Wildlife Biology (9 units)																			
3	ENR 624 (Wildlife Identification and Management-Birds)		R	R	R		R	R		R	I								R
3	ENR 624 (Wildlife Identification and Management-Mammals)		R	R	R		R	R		R	I								R
3	ENR elective course (Wildlife Biology)																		
Ecology (3 units)																			
3	Met with ENR 203 in SENR Core																		
Zoology (9 units)																			
4	Met with one-half of Biology 113/114 units																		
3	EEOB 400 (Evolution)	IR	IR																
3	EEOB elective course	R	R				R	R	R										
Botany (9 units)																			
4	Met with one-half of Biology 113/114 units																		
3	EEOB 210 (Local Flora)								I	I									
3	Met with ENR 221 in SAF certification requirements	I	I				R	I/R											
Physical Sciences (9 units)																			
9	Met with Chem 120, Chem 121, and ENR 300 in Univ GEC and SENR Core																		
Quantitative Sciences (9 units)																			
9	Met with MATH 150, Math 151, and ENR 222 or Stat 145 in Univ GEC																		
Humanities and Social Sciences (9 units)																			
9	Met with Univ GEC																		
Communications (12 units)																			
6	Met with ENGL 100 or 110 and ENR 367 in Univ GEC and SENR Core																		
6	ENR 410 (Env Int) or ENR 615 (Risk Comm) or COMM 200 (Comm in Soc) or COMM 320 (Interps & Org Comm) or COMM 321 (Pub Spk)																		
Policy Administration and Law (6 units)																			
3	Met with ENR 400 in SENR Core																		
3	ENR 649 (Wildlife Conservation Policy)				R	I/R			R	I/R			R	R	R	R	R	R	I/R
SAF Certification Category/Subcategory																			
3	ENR 221 (Biology and Identification of Woody Forest Plants)																		
3	ENR 322 (Forest Ecosystems)																		
3	ENR 323 (Forest Biometry)																		
2	ENR 324 (Photointerpretation)																		
3	ENR 333 (Silviculture)																		
2	ENR 340 (Concepts of Parks and Recreation) or ENR 545 (Adv. Perspectives of Nat. Resource Admin.)																		
3	ENR/AED Econ 531 (Environmental & Nat. Res. Economics)																		
3	ENR 635 (Forest Management)																		
3	ENTOM/PLNT PATH xxx (new course)																		
Specialization Electives																			
8	Elective Courses 200 and above that support major with advisor consent																		

60 Major Option Total
44 Univ GEC Total
16 SENR Core Total
120 Degree Total

ENR Elective Wildlife Biology Courses

3	ENR 230 (Ecology and Conservation of Birds)																		
3	ENR 230 (Ecology and Conservation of Birds-SL)																		
3	ENR 629 (Ecology and Management of Wetland Birds)																		

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

I. CONCEPTS:

- I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
- I-4 Knowledge and comprehension of ecosystems within the human/social contexts.

II. TECHNICAL:

- II-1 Knowledge and use of identification skills.
- II-2 Knowledge and understanding of natural history.
- II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
- II-4 Ability to communicate effectively.
- II-5 Ability to find appropriate sources of information.
- II-6 Ability to quantify and interpret information and data.
- II-7 Knowledge and application of spatial information systems (GPS and GIS).

III. CRITICAL THINKING

- III-1 Ability and skills necessary for problem solving.
- III-2 Ability to apply theory and perform appropriate testing.
- III-3 Ability to perform critical analysis of information and forms of communication.

IV. PROFESSIONAL AND PERSONAL DEVELOPMENT

- IV-1 Ability and skills to work collaboratively.
- IV-2 Has global awareness of the profession or discipline.
- IV-3 Attain the knowledge and skills to acquire professional certification, continuing education, and sustain life-long learning.
- IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

F Foundational
I Introduced
R Reinforced
A Applied

Urban Forestry and Wildlife Option		CONCEPTS				TECHNICAL							CRIT. THINKING			PROF & PERS DEV			
		I-1	I-2	I-3	I-4	II-1	II-2	II-3	II-4	II-5	II-6	II-7	III-1	III-2	III-3	IV-1	IV-2	IV-3	IV-4
1	ENR 119.02 (Prof. Survey Forestry, Fisheries & Wildlife)			F	F														
Wildlife Ecology and Management Courses (23 units)																			
Wildlife Management (6 units)																			
3	ENR 623 (Principles of Wildlife Ecology & Management)	R	R	R	R		R	I	R/A	R/A	R/A	I	R/A	R/A	R/A	R/A	R/A	R	R
3	ENR 662 (Wildlife Ecology Methods)	R-A	R-A				R-A	A	R/A	R/A	A	R/A	R/A	R/A	R/A	A		R-A	R
Wildlife Biology (6 units)																			
3	ENR 624 (Wildlife Identification and Management-Birds)		R	R	R	R	R		R	R	I								R
3	ENR 624 (Wildlife Identification and Management-Mammals)		R	R	R	R	R		R	R	I								R
Policy Administration and Law (3 units)																			
3	ENR 649 (Wildlife Conservation Policy) or similar option in other major			R	I/R				R	I/R			R	R	R	R	R	R	I/R
Urban Forestry Courses (meets SAF Certification?) (27-30 hr)																			
3	C&R PLAN 310 (Intro to City & Reg Planning)																		
3	H&CS 234 (Landscape Plants) or ENR 221 Biol and Ident Woody Plants																		
3	ENR 322 (Forest Ecosystems)																		
3	ENR 323 (Forest Biometry)																		
3	ENR 333 (Silviculture)																		
3	ENR 232 (Landscape Maintenance)																		
3	ENR 631 (Arboriculture)																		
3	ENTOM/PLNT PATH xxx (new course)																		
3	Ag Econ 401 (PrincipleS of Agribusiness Management)																		
3	Ag Econ 402 (PrincipleS of Agribusiness Marketing)																		
3	Bus Adm 510 (Legal Environment of Business)																		
Specialization Electives																			
11	Elective Courses 200 and above that support major with advisor consent																		

60 Major Option Total
 44 Univ GEC Total
 16 SENR Core Total
 120 Degree Total

Forestry-Fisheries-Wildlife Desired Curriculum Outcomes

I. CONCEPTS:

- I-1 Knowledge and comprehension of the physical environment-soils, hydrology, and ecosystems.
- I-2 Knowledge and comprehension of biological organisms, populations, communities, and ecosystems.
- I-3 Knowledge and comprehension of the utilization and demand upon ecosystems.
- I-4 Knowledge and comprehension of ecosystems within the human/social contexts.

II. TECHNICAL:

- II-1 Knowledge and use of identification skills.
- II-2 Knowledge and understanding of natural history.
- II-3 Knowledge of, skills and application of sampling principles, methodology, and tools.
- II-4 Ability to perform effective communication.
- II-5 Ability to find appropriate sources of information.
- II-6 Ability to quantify and interpret information and data.
- II-7 Knowledge and application of spatial information systems (GPS and GIS).

III. CRITICAL THINKING

- III-1 Ability and skills necessary for problem solving.
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- III-3 Ability to perform critical analysis of information and forms of communication.

IV. PROFESSIONAL AND PERSONAL DEVELOPMENT

- IV-1 Ability and skills to work collaboratively.
- IV-2 Has global awareness of the profession or discipline.
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- IV-4 Knowledge and comprehension of scientific and professional ethics and the ability to embody these into their profession.

F Foundational
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Responses to

Working Group Two Questions for June 1 subcommittee meeting

Below are responses regarding Q2S proposals for the SENR major:

FFW-BS

(EPDM-BS, ES-BS, and NRM-BS not included here)

Many of the questions below have been clarified/resolved by the attached revised Semester Advising Sheets for each major, including detailed advising sheets for each specialization in each major (specialization sheets were missing from the previous submission). Four-year transition plans for each major have also been added for each major, attached. These and all other responses and revisions are detailed below.

Questions about any of the following can be directed to Greg Hitzhusen (hitzhusen.3@osu.edu).

BS in Environment and Natural Resources—Forestry, Fisheries and Wildlife major

1. *Typos* (These corrections refer to the FFW rationale statement (FFWrationalFINAL.doc), **attached**)

page 9:

Should it be Number 1 (instead of 10) at the top of the page? The “10” was left over from the original proposal based on an earlier numbering system in the proposal template. It has been removed.

b. should be “depth” instead of “depths” corrected

c. should read “expect” instead of “rexpect” corrected

page 48 (This correction refers to the SENR FFW Specialization Goals document (SENR_FFW_Specialization_GoalsRevsdFINAL.docx), with top heading: “Explanation of the SENR Forestry...” **attached**)

All of the bullet points should read: Students WHO (instead of students that...) changed

Page 51

*Under SEI section, it should read “gauge” instead of “guage” (This refers to the preliminary SENR Assessment Plans. Typo has been corrected in **attached** revision (SENR_Assessment_Rvsd.doc).)*

2. *What are the charts beginning on CAA page 11 actually showing us? The entire curriculum? Which are required courses and which are not? This is the full SENR course list, which therefore includes all ENR elective courses that students might choose in addition to those required or suggested as outlined in degree advising sheets.*
3. *There are quarter advising sheets for each of the specializations, but there are not semester advising sheets for each of the same. We need detailed semester advising sheets*

for the major overall (major program + Gen Ed), and for each of the specializations under semesters. Semester advising sheets for the specializations are **attached**.

4. *Throughout the document, you appear to use “option” and “specialization” interchangeably, which we feel may become confusing to students. Do these terms mean the same thing? And if so, please select one term and use it consistently throughout.*
Revised to “specialization” throughout.
5. *We noticed that the credit hour change for the major is due to the increased requirements outside the major—have the relevant units been notified about the potential increase in their classes and are they prepared to accommodate student overflow? The shift toward credits outside the unit (as reported in the chart) has mostly to do with SENR dropping a crosslist for ENR/AEDE 531 – since most FFW students used to take this as an ENR course, it now will count under semesters as an outside unit course, and enrollment will not change for AEDE’s administration of this course. The other shift out of SENR for required credits comes from SENR dropping our 3rd writing course, ENR 567, and so in specializations where an additional writing/communication course is required for certification, COMM 320 (or ENG 305) will be relied upon more than it was in quarters. We do not anticipate this posing a problem for other units. Also, having just reviewed these numbers again to answer this question, we see that the other place where additional credits will be required outside the unit comes from service courses such as Physics 111 and 112, and Chem 231, which, as far as we understand, have gone from 5 to 5 and 5 to 4 credits, respectively, in converting to semesters. So the credit expansion of these courses is causing our number of outside unit credits to go up by the remaining three credits listed on the chart as the maximum 10 additional credits outside the unit. There will be no change in course enrollment for these courses, therefore, just an increase in the number of credits it costs our students to gain those required classes. (These are a few instances where our students previously took 1 or 2 of 3 courses of a three course sequence, so the semester conversion of these to 2 semester courses is a bit problematic for us.)*
6. *It seems like they converted many of their 700 level courses to the 5000 level. Is this there a particular rationale for this? Yes, these were advanced courses that undergrads were also taking, so it was appropriate to convert them to the 5000 level to reflect enrollment of graduate and undergraduate students.*
7. *CAA pp. 28—can you explain the numbers that appear on the semester advising sheet for the Urban Forestry and Wildlife Management Option? We tried to follow your chart, but the numbers do not add up. For explain, under “Wildlife Management” you request that students take 7 units, but they would have to take at least 9 in order to meet this requirement. Likewise, you have 39 potential credits listed under Urban Forestry, but the courses you list only add up to 35. Moreover, the numbers listed in parenthesis don’t seem to add up, nor does the major requirement of 51 credits. The total number of hours actually adds up correctly under the Units Column (12 from Wildlife Management, 32 from Urban Forestry Courses, and 7 Specialization Electives for an option total of 51 units). There was a mis-labeling of the wildlife management requirement in the first gray*

row. We revised the accounting and labeling of unit requirements in the Urban Forestry and Management major advising sheet for clarity (see attached).

8. *Pp. 49---It seems problematic that students who complete the Forestry and Wildlife Management degree still need one more communications course in order to get TWS certification. Were they able to get this certification without additional coursework when the specialization was offered under quarters? Same for other specializations (Urban Forestry and Wildlife Management, Wildlife and Fisheries Science, Wildlife and Pre-Vet Sciences) where it says additional courses not counted in the degree program might be needed for certain certifications – was that also true under quarters, or is this new under semesters? How many additional hours would be needed for students to be prepared?*
OSU FFW is one of very few programs in the country that offers dual certification majors, and we are the only program we know of that offers dual cert. in 2 of 3 professional areas. That aside, the teaching faculty has tried to balance the high total unit hour requirement for dual cert. (exceeding the University's degree total unit requirement) with whatever elective options we could preserve, and the units required for a student to complete a degree option. We chose to do this by listing additional courses that a student would need for certification without demanding so many units as to create a disincentive or eliminate all elective choices. **We handled this the same way under the quarter system, so this is not a departure from what was done in the past.** We also note that the courses required for certification and left out of the dual cert. options are requirements that can be readily be satisfied with practical experience or graduate coursework.
9. *It was our understanding that all FAES majors were required to complete a minor or a minor equivalent, is that not true for FFW? If so, is there a rationale for this?* SENR students are not required to complete a minor. SENR has never adopted the College's requirement of a minor.

Response to additional subcommittee questions:

Forestry, Fisheries and Wildlife BS

1. Some of the numbers on the conversion sheets still do not add up correctly. For example, when you add the SENR core/Gen Ed numbers for the specializations in Wildlife and Fisheries Sciences and Fisheries and Aquatic Sciences, they only reach a total of 70 credit hours as opposed to the 78 that are listed in other specializations. Can you explain why? **These numbers have been corrected. It seems that this was a combination of a typo (in both cases it simply should have been "70" instead of "78"), and a difference in accounting used by the fisheries faculty member who worked up these numbers as compared with the system used by other faculty who finalized the other specialization sheets. We have reconciled all the numbers. We also found several additional changes that follow from new course information that we did not have before – in most cases this increased the number of credits for some of the specializations (Physics 111 and 112 were never taken as a three course sequence by our students in quarters, so the 5-credit semester versions of these courses are costing us extra credits). These numbers have been updated on each specialization sheet and on the advising sheet for the major.**
2. Under semesters, there is a single course (4900.02) that is listed under the May term. Can you confirm that students could take this course at another time if necessary? **Yes. This is what we currently do with this course under quarters, and we will continue the same policy. We highly encourage all FFW and NRM (PRT in quarters) students to take the field version capstone (606.02) because of its much better fit for related careers and graduate programs, but in cases where students cannot schedule this course, they can take 606.01/4900.01, which is/will be offered during spring or fall semester.**