REQUIREMENTS FOR CATALOGUE EDITIONS STARTING 2017

RUBENSTEIN SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES
UNIVERSITY OF VERMONT
Approved by the Natural Resources Curriculum Faculty Spring 2017

PROGRAM: Natural Resources Curriculum
Mission: Provide an academic foundation & framework that allows students to define & pursue planned & emergent interests according to their personal & professional goals. Our breadth of educational opportunities engages students in building a knowledge & skill set with a concentration in ecological dimensions (Resource Ecology), or social science dimensions (Resource Planning), or an integration of the two dimensions (Integrated Natural Resources) of environment & natural resources.

OPTION: Resource Ecology
Learning Outcomes. Students in Resource Ecology will

- Identify & explain foundational principles & concepts from biology, chemistry & geology as they apply to ecological systems
- Describe components, structures, processes, and functions of ecological systems, including relationships between abiotic and biotic dimensions, at multiple scales (e.g. community, landscape, global)
- Gather, analyze, and evaluate scientific data (including field data) to characterize at least one type of ecological system. This includes capacity to translate ecological data into maps using computer systems
- Identify and explain factors that contribute to and detract from the resilience of ecological processes/systems

Catalogue Description: The Resource Ecology curriculum explores the biology & ecology of plants & animals in both aquatic & terrestrial systems & allows students to select courses around specific individual interests. A total of 120 credits are required for the degree. Required courses: BIOL 1, 2; GEOL 1 or PSS 161; *MATH 19; *NR 140; CHEM 23 or CHEM 31, 32; CHEM 26 or CHEM 42 or CHEM 141, 142; FOR 111; NR 143/GEOG 184 or NR/FOR 146/GEOG 185; 27 additional credits in *Option Electives* to be chosen from approved list in consultation with student's academic advisor. **Any course substitution request should be approved prior to the end of the add/drop period for the semester in which the student enrolls in the course.**

*Also fulfills RSENR general education requirement.

Degree Requirements:
All students who enroll in the Natural Resources Curriculum must meet the following requirements for graduation:

1. Completion of the RSENR core curriculum courses.
2. Completion of the RSENR general education course requirements.
3. Completion of a minimum of 120 semester hours of courses with a cumulative grade-point average of 2.0 or above.
4. Completion of option requirements for Resource Planning, Resource Ecology, or Integrated Natural Resources.

Option Distribution Requirements (34 credits minimum with 7 double counting for RSENR Gen Ed Requirements)

Credits	Course #	Course Name
4	BIOL 1 (BCOR 11 accepted)	Principles of Biology
4	BIOL 2 (BCOR 12 accepted)	Principles of Biology
4 or 5	GEOL 1 **or** PSS 161	Earth System Science or Fundamentals of Soil Science
3	Math 19 or higher*	Fundamentals of Calculus 1
4	NR 140*	Applied Environmental Statistics
4	CHEM 23 **or** CHEM 31, 32	Outline of General Chemistry or General Chemistry 1 & 2
4	CHEM 26 **or** CHEM 42 **or** CHEM 141, 142	Outline of Organic Chemistry or Intro Organic Chemistry or Organic Chemistry 1 and 2
4	FOR 111	Nat Res Ecol and Assessment 1
3	NR 143/GEOG 184 **or** NR/FOR 146/GEOG 185	Intro to Geog Info Systems/Geog Info: Concepts & Apps or Remote Sensing of Natural Resources

*Also fulfills RSENR general education requirement
See next page for Option Electives

RESOURCE ECOLOGY OPTION - Approved Option Elective Courses
Take at least 27 credits overall
Courses taken for Option Electives may not be double-counted for Distribution Requirements

<u>Courses covering or built on strong ecological content</u> (at least 9 credits from this category)

Offered Regularly

BCOR 102	Ecology and Evolution	GEOG 140	Biogeography
BIOL 225	Physiological Ecology	GEOL 234	Global Biogeochemical Cycles
BIOL 238	Winter Ecology	NR 250	Limnology
BIOL 246	Ecological Parasitology	NR 260	Wetlands Ecology
BIOL 264	Community Ecology	NR 280	Stream Ecology
BIOL 269	Plant-Animal Interactions	PSS212/ENVS212	Advanced Agroecology
BIOL 276	Behavioral Ecology	PSS/NR 268	Soil Ecology
BIOL 280	Molecular Ecology	WFB/NR 224	Conservation Biology
ENSC 201	Recovery/Restor Altered Ecosystems	WFB 283 (WFB 273/4)	Terrestrial Wildlife
FOR 122	Forest Ecosystem Analysis	WFB 279	Marine Ecology & Conservation
FOR 235	Forest Ecosystem Health		

Listed in the catalog but not offered regularly

BIOL 203	Population Ecology	NR/FOR 228	Ecosystems Ecology
ENSC/NR 222	Pollution Ecology	NR 256	Ecology of a Large Lake
FOR 121	Forest Ecology Laboratory	PBIO 213	Plant Communities
FOR 225	Tree Structure & Function	PBIO 260	Plant Population Biology
MMG 220	Environmental Microbiology	PBIO 275	Global Change Ecology
NR 220	Landscape Ecology		

<u>Other courses that contribute to or expand ecological understanding</u>

Offered Regularly

BIOL 209	Field Zoology	NR 143	Intro to Geog Info Systems*****
BIOL 217	Mammalogy	NR/FOR 146	Remote Sensing of Natural Res*****
BIOL 277	Sociobiology	NR 288	Ecol Design & Living Technol
BIOL 254	Population Genetics	PBIO 104	Physiology of the Plant Body
BIOL 270	Speciation and Phylogeny	PBIO 108	Morph & Evol of Vascular Plants
ENVS 173	Landscape Natural History	PBIO 109	Plant Systematics
ENVS 188	Sustainbility Science	PBIO 151	Plant Anatomy
ENSC 274	Climate Chg: Sci & Percept	PBIO 177	Biology of Fungi
FOR 21	Dendrology	PBIO 209	Biology of Ferns
FOR 112	Nat Res Ecol & Assessment 2	PBIO 241	Tropical Plant Systematics
FOR 223	Multi-Resource Silviculture	PSS 112	Weed Ecology & Mgmt
GEOG 40	Weather, Climate & Landscapes	PSS 161	Fundamentals of Soil Science*
GEOG 143	Climatology	PSS/CDAE/ENVS/NR 238	Ecological Landscape Design
GEOG 153	The Circumpolar Arctic	PSS 264	Chemistry of Soil & Water
GEOL 1	Earth System Science*	WFB/FOR 013	Intro to Wildlife Tracking
GEOL 55	Environmental Geology	WFB 130	Ornithology
GEOL 101	Field Geology	WFB 141	Field Herpetology
GEOL 135	Environmental Geochemistry	WFB 232	Ichthyology
GEOL 151/GEOG 144	Geomorphology	WFB 271	Wetlands Wildlife
GEOL 233	Environmental Isotope Geochemistry	WFB 275	Wildlife Behavior
GEOL 235	Geochemistry of Natural Waters	WFB 131 Field Ornithology OR WFB 176 Florida Ecol Field Trip OR WFB 177 Texas Wildlife Field Trip	
NR 102	Water as a Natural Resource		

Listed in the catalog but not offered regularly

BIOL 202	Quantitative Biology	GEOL 172	Regional Geology
GEOL 10	Geological Oceanography	NR 270	Toxic & Hzrd Subst in Surface Waters
GEOL 153	Stratigraphy & Sedimentology	PBIO 294	Ecological Modeling

*****May be counted as either distribution requirement or option elective but may not be double-counted.

Up to 6 credits of Internship/Independent Study may be requested for approval from NRC program faculty for credit in either category. Submit substitution request in consultation with your advisor and then to Clare Ginger, 308F Aiken.

Up to 3 credits of NR 299 Honors may be requested for approval from NRC program faculty for credit in either category. Submit substitution request in consultation with your advisor and then to Clare Ginger, Aiken 308F.

Approved by NRC Faculty May 10, 2017

Overall Credit Breakdown for Option in Resource Ecology

RSENR General Education:	24-25 credit hours (includes a 3-credit D1 or D2 course in addition to NR 6 & 207)
RSENR Core Curriculum:	23 credit hours (includes NR 6 & NR 207 as D1 credit)
Option Distribution:	27 credit hours plus 7 credits that double count towards General Education (Math 19 & NR 140
Option Electives:	27 credit hours (at least 9 strong ecological content plus an additional 18 of either strong ecological content or contributes to/expands ecological knowledge)
Free Electives:	18-19 credit hours
TOTAL:	120 credit hours