ESF Minor Curriculum Change Proposal Form

Committee on Curriculum - ESF Faculty Governance
Office of Instruction & Graduate Studies

Date: **January 13, 2023**
Department: **Environmental Biology**
Curriculum Title: **Aquatic and Fisheries Science**

For Minor Changes in existing curriculum (check all that apply):

☒ revised courses
☐ change in total cr. hrs.
☐ new course sequence
☐ new program objectives*
☒ new courses added
☐ new accreditation/assessment requirements

*See SUNY Guidelines

1. Rationale for Change

Please provide an explanatory narrative outlining the rationale for the change, and the impacts of this change on the learning outcomes of the curriculum:

This minor curriculum change is being conducted to:
- update General Education courses in relation to new SUNY Gen Ed guidelines,
- update catalog listing of directed electives, and
- replace the PHY 101 (Major Concepts of Physics) requirement with the new FOR 110 (Environmental Physics) course

Required Courses

Course		Codes*	Credits
APM 105	Survey of Calculus and Its Applications I	G	4
APM 391	Introduction to Probability and Statistics	G	3
XXX ###	Diversity, Equity, Inclusion, and Social Justice Gen Ed Course	G	3
EFB 101	General Biology I: Organismal Biology and Ecology	G	3
EFB 102	General Biology I Laboratory	G	1
EFB 103	General Biology II: Cell Biology and Genetics	G	3
EFB 104	General Biology II Laboratory	G	1
EFB 120	The Global Environment and the Evolution of Human Society	G	3
EFB 132	Orientation Seminar: Environmental and Forest Biology		1
EFB 202	Ecological Monitoring and Biodiversity Assessment		3

EFB 210	Diversity of Life I		3
EFB 211	Diversity of Life II		3
EFB 307	Principles of Genetics		3
EFB 308	Principles of Genetics Laboratory		1
EFB 311	Principles of Evolution		3
EFB 320	General Ecology		4
EFB 325	Cell Biology		3
EFB 424	Limnology: Study of Inland Waters		3
EFB 486	Ichthyology		3
EFB 492	Senior Synthesis in Aquatic and Fisheries Science		1
EWP 190	Writing and the Environment	G	3
EWP 290	Research Writing and Humanities	G	3
FCH 150	General Chemistry I	G	3
FCH 151	General Chemistry Laboratory I	G	1
FCH 152	General Chemistry II	G	3
FCH 153	General Chemistry Laboratory II	G	1
FCH 210	Elements of Organic Chemistry		4
FOR 207	Introduction to Economics	G	3
~~PHY 101~~	~~Major Concepts of Physics I~~		~~4~~
FOR 110	Environmental Physics		3
PHY 102 **OR** FCH 223 **AND** FCH 224 **OR** APM 106	Major Concepts of Physics II Organic Chemistry II Organic Chemistry Laboratory II Survey of Calculus and Its Applications II		4 3 1 4

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Electives

Course	Codes*	Credits
General Education Course in one of the following categories: US History & Civic Engagement, The Arts, World History and Global Awareness, World Languages~~General Education Course in two of the following categories: American History, The Arts, Western Civilization, Other World Civilizations, Foreign Language~~	G	~~6~~3
Directed Electives		27
Open Electives		~~15~~16

Directed Electives

To ensure both strength and breadth of knowledge, 27 elective credit hours must be obtained through courses in the following subject areas (S=spring semester, F=fall semester).

A. Field Experience Elective

At least three elective credits must come from an approved field course in biology (this is in addition to the core field course, EFB 202). These credits may be obtained through an elective course at our Cranberry Lake Biological Station, an approved internship (EFB 420) or field trip course (EFB 500). Winter Mammalian Ecology (EFB 484) and Tropical Ecology (EFB 523) meet this requirement, as can approved field courses from other institutions.

B. Structure and Function

At least 3 credit hours must be in the subject area of organism-level physiology, anatomy, or development. The list of allowable courses below may vary slightly from year to year.

EFB 385—Comparative Vertebrate Anatomy (4 cr.) S

EFB 427—Plant Anatomy and Development (3 cr.) F

EFB 462—Animal Physiology: Environmental and Ecological (3~~4~~ cr.) S~~F~~

EFB 429~~530~~—Plant Physiology (3 cr.) S

~~EFB 570—Insect Physiology (3 cr.) S~~

BIO 447—Immunology (3 cr.) S

BIO 503—Developmental Biology (3 cr.) S

C. Organismal Diversity

To encourage breadth in organism-level biology, students must complete (in addition to

the core requirement of EFB 486 or EFB 388) at least 3 credit hours in each of the following two categories:

1. Plants and Microbes:

EFB 303—Introductory Environmental Microbiology (4 cr.) F

EFB 326—Plant Evolution, Diversification and Conservation (3 cr.) S

EFB 327 – Adirondack Flora (3 cr.) CLBS

EFB 336—Dendrology (3 cr.) F

~~EFB 337 - Field Ethnobotany (3 cr.) **CLBS**~~

EFB 340—Forest and Shade Tree Pathology (3 cr.) S

EFB 350 – Microbial Consortium (3 cr.) F even years

~~EFB 428—Mycorrhizal Ecology (3 cr) F even years~~

EFB 435—Flowering Plants: Diversity, Evolution, and Systematics (3 cr.) F

EFB 440—Mycology (3 cr.) F

EFB 446—Ecology of Mosses (3 cr.) S

EFB 496 - Wetland Plants & Communities of Adirondacks (3 cr.) **CLBS**
EFB 496 - Flora of Central NY (3 cr.) **Maymester**

2. Invertebrate and Vertebrate Animals:

EFB 351—Forest Entomology (3 cr.) F, ~~even~~ odd years

EFB 352—Entomology (3 cr.) F, even~~odd~~ years

EFB 355—Invertebrate Zoology (4 cr.) S

EFB 388—Ecology of Adirondack Fishes (3 cr.) **CLBS**

EFB 453—Parasitology (3 cr.) F

EFB 482—Ornithology (4 cr.) S

EFB 483—Mammal Diversity (4 cr.) F

EFB 485—Herpetology (3 cr.) F

EFB 554—Aquatic Entomology (3 cr.) F

EFB 566 - Systematic Entomology (3 cr.) S, even years

D. Physical/Chemical Environment

To encourage understanding and familiarity with the aquatic habitat, students must complete at least 3 credit hours from one of the following courses:

~~EFB 415—Ecological Biogeochemistry (3 cr.) F~~

EST 231—Environmental Geology (3 cr.) S

FCH 510—Environmental Chemistry I (3 cr.) S

FCH 515—Methods of Environmental Chemical Analysis (3 cr.) F

FOR 338—Meteorology (3 cr.) S

FOR 340—Watershed Hydrology (3 cr.) S

FOR 345—Introduction to Soils (3 cr.) F

EAR 101—Dynamic Earth (3 cr.) F

EAR 105—Earth Science (3 cr.) S

E. Environmental Systems Science

To further promote understanding of the systems approach to aquatic ecosystems and an integration of environmental and biological factors, students must complete at least 3 credit hours from one of the following courses.

EFB 423—Marine Ecology (4 cr.) S, even years

~~EFB 516—Ecosystems (3 cr.) S~~

~~EFB 518—Systems Ecology (4 cr.) F~~

EFB 523—Tropical Ecology (3 cr.) S (with 1-week field trip)

EFB 542—Freshwater Wetland Ecosystems (3 cr.) S

ERE 275—Ecological Engineering I (3 cr.) S

F. Management

At least 3 credit hours in resource or ecosystem management must be obtained through a course in the following list.

EFB 370 – Population Biology & Management (3 cr.) S

EFB 390—Wildlife Ecology and Management (4 cr.) F

EFB 438 – Ecology & Management of Waterfowl (3 cr.) F

EFB 487—Fisheries Science and Management (3 cr.) F

FOR 360—Principles of Management (3 cr.) F

FOR 372—Fundamentals of Outdoor Rec. (3 cr.) F,S

FOR 442—Watershed Ecology & Management (3 cr.) F

~~EFB 487—Fisheries Science and Management (3 cr.) F~~

G. Analytical Tools

To increase the breadth of practical skills and knowledge students must complete at least 3 credit hours, obtained through one of the following courses:

BTC 401—Molecular Biology Techniques (3 cr.) F

EFB 488—Fisheries Science Practicum (1 cr.) F

EFB 519—Geographic Modeling (3 cr.) S

EFB 525—Limnology Practicum (2 cr.) F

ERE 445—Hydrological Modeling (3 cr.) F

ESF 300—Introduction to Geospatial Information Technologies (3 cr.) F,S

H. Communications

Students must complete at least 3 credit hours from one of the following communication or interpretation courses.

~~EFB~~ EST 370~~312~~—Introduction to Personal Environmental Interpretation Methods (3 cr.) F

EST 471 – Non-Personal Environmental Interpretation Methods (3 cr.) S

EWP 220—Public Presentation Skills for Environmental Professionals (3 cr.) F,S

EWP 407—Writing for Environmental and Science Professionals (3 cr.) F

2. Institutional Impact:

Changes from existing condition:

Anticipated Enrollment or Enrollment Change: none

Faculty or Staffing Requirements: none

Technology, Computing Resources, and Classroom Resource Demands: none

Change in Accreditation Requirements: none

Changes to Assessment Plan: none

Library Resource Requirements: none

3. Catalog Narrative:

Please attach to this proposal form a copy of the current catalog description in MS Word format, with revisions shown in "track changes".

Aquatic and fisheries science is the study of aquatic ecosystems to increase scientific understanding and to apply this knowledge to their management and conservation, thereby sustaining them for multiple uses.

Aquatic ecosystems are complex and found within myriad wetlands, streams, lakes, estuaries, and oceans that support life on earth. Professional aquatic scientists and managers work to conserve and restore biodiversity, habitats, and ecological function while supporting services including fisheries, water resources, transportation, energy, recreation and human connections to nature. Career opportunities for students with a B.S. in aquatic and fisheries science include fisheries science, wetland science, limnology, marine biology and oceanography, and numerous conservation-related fields. Typical employment is with federal and state agencies, universities, research institutions, ~~and~~ management authorities, and private consulting firms, as well as

local, regional, and international ~~and~~ non- governmental organizations~~, both local, regional, and international~~.

4. Curriculum Transition Plan:

Please provide a narrative description of your plan for transitioning from your existing curriculum to the proposed new curriculum. Please provide specific dates for implementing curriculum changes, overlap periods where old and new curricula may exist simultaneously, and final phase out of old curricula. Please also include impacts and mitigating considerations for transfer students and students in mid-program during implementation, impacts of changes in semester delivery of existing courses, addition of new courses within a particular semester, etc.
Students enrolling in the A&FS major beginning Fall 2023 will complete the new General Education requirements. Most A&FS students have already been enrolling in FOR296 to fulfill Physics requirements. The option will remain for students to enroll in PHY101 to complete the minimum physics requirement, or to fulfill pre-requisite requirement in preparation for a second semester of physics. Students interested in pursuing careers in limnology or marine science, or continuing to graduate studies, will be advised to take PHY101.

5. Approval Signatures:

Signatures below, or attached letters, indicate that the affected departments, programs or units have been notified of this proposal and have had an opportunity to assess the impact of the proposal on their respective units. If departments did not respond to your notification, you may wish to document your effort to contact them.

Affected Academic Department(s) or Program(s):

Department/Program 1	Name of Chair/Program Director
Chair Signature	Date Or letter attached ☐
Department/Program 2	Name of Chair/Program Director
Chair Signature	Date Or letter attached ☐
Department/Program 3	Name of Chair/Program Director
Chair Signature	Date Or letter attached ☐

[if more/less than three Departments/Programs, please add/delete lines as appropriate.

Other Units

_____ _____ Or letter attached ☐
Library Director Date

_____ _____ Or letter attached ☐
Computing and Network Services Date

_____ _____ Or letter attached ☐
Physical Plant Date

_____ _____ Or letter attached ☐
Forest Properties Date

_____ _____ Or letter attached ☐
Environmental Health and Safety Date

_____ _____ Or letter attached ☐
Admissions Date

_____ _____ Or letter attached ☐
Other_____ Date

_____ _____ Or letter attached ☐
Otjer_____ Date

Office of the Provost

Signature below, or attached letter, indicates that the Provost either a) agrees that that there is no need for additional resources from the College; or b) indicates willingness to provide the extra support to the department.

_____ _____ Or letter attached ☐
Provost Signature Date

6. Proposer Information and Department Chair Affirmation:

Contact Person:

Name:John Farrell Department:Environmental Biology

Email:jmfarrell@esf.edu Phone:

This proposal has been reviewed and approved by the sponsoring Department. Affected departments have been notified and given the opportunity to provide feedback. Department resources are or will be made available to support this curriculum revision, or a plan is in place to meet the resource needs as identified in the Institutional Impacts section of this proposal (see Section 2, above) .

Name: Date:
Department Chair (or designated curriculum representative)

Signature: Or letter attached ☐
Department Chair (or designated curriculum representative)

7. Final Approvals:

Curriculum Committee	**Date**
Faculty Governance	**Date**
Provost	**Date**