ESF Course Proposal Form
Committee on Instruction - ESF Faculty Governance
Office of Instruction & Graduate Studies

Date: May 11, 2012
Course Number: FOR340
Course Title: Watershed Hydrology

☐ New Course
☐ Changes in existing course (check all that apply):

- Prefix
- Number
- Credits
- Title
- Description
- Pre-requisite(s)
- Co-requisite(s)
- Shared Resources
- Course Format
- Content
- Semester Offered

For new courses only, indicate if you would like approval as a course meeting the General Education standards in the following knowledge and skills area (check all that apply):

- American History
- The Arts
- Basic Communication
- Humanities
- Mathematics
- Natural Sciences
- Other World Civilizations
- Social Sciences
- Western Civilization

If changing an existing course, describe the change(s):
1) Course description updated, 2) Move FOR345 (Fall) from being a co-requisite to being a pre-requisite; 3) Move FOR340 from Fall to Spring semester.

List any pre- or co-requisites here: FOR345 (Intro. to soils) is a pre-requisite.

Institutional Impact:

Anticipated Enrollment: 85 per semester

Technology and Classroom Resource Demands: A classroom with a large blackboard or dry-erase board, and projection equipment for displaying computer PowerPoint presentation, internet websites, etc.

Computing Resources: none

Library Resources: none

Transportation Requirements: none

Forest Properties or Field Practicum Facilities Required: none

Proposer Contact Information:

Name: Philippe Vidon
Department: FNRM
Email: pgvidon@esf.edu
Phone: x4765

Chair/Coordinator Signature: ________________________________
**Health and Safety Considerations:**

Conditions or situations present in association with the course?  

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<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tr>
<td>1. Will substances with any of the following properties be used during instruction: flammability, toxicity, corrosivity, reactivity, registered pesticide, legally controlled, or other characteristics with the potential to cause harm or injury?</td>
<td>No</td>
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<td>2. Will any physical hazards be present during instruction? (e.g., machines that need safety guards; razor blades or syringes; compressed gases, etc.)</td>
<td>No</td>
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<td>3. Will any biological hazards be present during instruction? (e.g., handling animals (rabies or hantavirus); cultures or stocks of infectious agents (fungal spores, viruses, bacteria, etc.).</td>
<td>No</td>
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<tr>
<td>4. Will any radiation hazards be present during instruction? (e.g., radioisotopes, X-rays, ultraviolet rays, lasers, etc.)</td>
<td>No</td>
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<td>5. Will any electrical equipment that, due to its design, location, or method of use, pose any threat to safety during instruction? (Give considerable thought to electrical use outdoors, or any potentially wet location.)</td>
<td>No</td>
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<td>6. Will there be any personal safety issues related to the class? (e.g., due to time of day or location, at the end of any organized class exercise, will students be in danger of physical assault, etc.)</td>
<td>No</td>
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<td>7. Will any students be driving official state or research sponsored land or water vehicles during any class or instructional exercise?</td>
<td>No</td>
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<td>8. Will any type of personal protective equipment be necessary during class exercises? (e.g., hard-hats, eye/face protection, hearing protection, hand/foot protection, lab coat, visibility clothing, etc.)</td>
<td>No</td>
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If the answer was “Yes” to any of the HEALTH AND SAFETY questions, please explain:
COURSE: FOR 340 – Watershed Hydrology
3 Credit Hours – Spring Semester
3 Hours Lecture per Week
Pre-requisite(s): FOR345 - Introduction to Soils

SCOPE:

1. Level of Instruction:
   a. FOR 340 is an advanced undergraduate course

2. Relation to curriculum or to other ESF or Syracuse University courses:
   a. Curriculum:
      i. FOR 340 is a required course in the Department of Forest and Natural Resources Management’s Natural Resources Management major.
      ii. The course satisfies a Division of Environmental Science “Physical Environment” requirement.
      iii. This course is open to undergraduate students in all other ESF and SU majors, as space allows.
   b. Courses:
      i. The course complements FOR 442: Watershed Ecology and Management
      ii. This is a shared resource course with FOR 540. FOR 340 and FOR 540 have slightly different learning outcomes (see below). In addition to being able to critically analyze the various components of the water cycle, FOR540 students are also expected to learn how to effectively communicate current research results to a wide audience. To this end, FOR540 students have to make a 10-minute presentation of their term paper/project in class.

STUDENT LEARNING OUTCOMES:

After completing this course, the student should be able to: (1) describe and delineate and define watersheds and their boundaries; (2) know the distribution and movement of water through hydrologic reservoirs on the global and watershed scale; (3) comprehend hydrologic data, including meteorological, stream flow and groundwater data; (4) quantify the components of the hydrologic cycle in watersheds, including precipitation, evapotranspiration, surface runoff and groundwater flow; (5) describe the physical processes governing fluid motion and (6) identify and quantify the pathways by which water moves through catchments.

MAJOR CONCEPTS OR METHODOLOGIES:

Major concepts or methodologies include: (1) introduction to the fundamental hydrologic unit - the watershed; (2) the hydrologic cycle at the global and watershed scales; (3) how water and energy budgets are used to quantify major components of the water cycle; (4) the formation of precipitation and patterns of spatial distribution across the land surface; (5) pathways by which runoff from a watershed moves to the stream channel; (6) fundamental fluid dynamics in groundwater flow, including hydraulic head and Darcy's Law; (7) methodologies used to collect or acquire hydrologic data, including downloading publicly-available data sets from the internet.
and interpretation of actual field observation to solve commonly hydrological problems; and (8) Microsoft Office Excel 2010 skill development.

CATALOG DESCRIPTION

FOR 340/540: Watershed Hydrology

Three hours of lecture per week. Principles of physical hydrology, including the movement of water through hydrologic reservoirs on global and watershed scales, measurement and quantification of hydrological data, runoff generation processes and water quality in the natural environment. Course content includes precipitation, evapotranspiration, streamflow generation, and fundamentals of groundwater flow. Spring.

COURSE HISTORY

Originally designated FOR341, this course was created from a short-course that was presented in March of 1990 to personnel of the State's Soil and Water Conservation Committee and the District Employees' Association. It was subsequently adopted as a requirement in one of the tracks in Environmental Studies. It has since been presented numerous times to various groups and in different formats, including the College's offering as a short course in basic resources to Forest Service personnel. A graduate version, FOR 641, was added as a cross-listed course in 1991, and enrolled in by a small number of students; it was deleted when SUNY policy prohibited cross-listing 300- and 600-level courses. The number was changed to FOR 340 on December 23, 1993. Revised and renumbered FOR 341 to FOR 340 by Faculty Action 4/20/95. Retitled by Faculty Action 12/10/98. Catalog description and content changed (2006, pending faculty action). Since then, this course has been taught as an undergraduate/graduate level course (FOR340/540) in the fall. This course modification aims to update the course description and to have this course listed in Spring, rather than Fall.