TRIAL COURSE OR NEW COURSE PROPOSAL
(Attach copy of syllabus)

SUBMITTED BY:

<table>
<thead>
<tr>
<th>Department</th>
<th>College/School</th>
<th>College Engineering and Mines</th>
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<tbody>
<tr>
<td>Civil and Environmental Engineering</td>
<td>Phone</td>
<td>x2714</td>
</tr>
<tr>
<td>Prepared by</td>
<td>Sveta Stuefer</td>
<td>Faculty Contact</td>
</tr>
<tr>
<td>Email Contact</td>
<td><a href="mailto:sveta.stuefer@alaska.edu">sveta.stuefer@alaska.edu</a></td>
<td>Sveta Stuefer</td>
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</tbody>
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1. ACTION DESIRED (CHECK ONE):
   - [x] New Course
   - [ ] Trial Course

2. COURSE IDENTIFICATION:
   - Dept: CEE
   - Course #: 665
   - No. of Credits: 3
   - Justify upper/lower division status & number of credits:
     Most of the UAF graduate level hydrology courses are offered through the CEM engineering programs with the prerequisites of engineering fluid mechanics, water resources engineering or similar. This graduate hydrology course is designed for students with a background in sciences. Three hours of lecture.

3. PROPOSED COURSE TITLE:
   - Introduction to Watershed Hydrology

4. To be CROSS LISTED?
   - YES/NO
     - [ ] Yes
     - Dept: 
     - Course #:
     - NOTE: Cross-listing requires approval of both departments and deans involved. Add lines at end of form for additional required signatures.

5. To be STACKED?*
   - YES/NO
     - [ ] Yes
     - Dept.
     - Course #:
     - How will the two course levels differ from each other? How will each be taught at the appropriate level?:
     * Use only one Format 1 form for the stacked course (not one for each level of the course!) and attach syllabi. Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi (undergraduate and graduate versions) will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online - see URL at top of this page.

6. FREQUENCY OF OFFERING:
   - Fall (Even-numbered Years)
   - Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING
   - (Effective AY2015-16 if approved by 3/31/2015; otherwise AY2016-17)
     - Fall 2016

8. COURSE FORMAT:
   - NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the Core Review Committee.
   - COURSE FORMAT: (check all that apply)
     - [x] 6 weeks to full semester
   - OTHER FORMAT (specify)
     - Mode of delivery (specify lecture, field trips, labs,)
       - Lecture (3 hrs per week)
9. CONTACT HOURS PER WEEK:

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<tr>
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<tr>
<td>LECTURE</td>
<td></td>
<td>LAB</td>
<td>PRACTICUM</td>
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<tr>
<td>hours/weeks</td>
<td></td>
<td>hours/week</td>
<td>hours/week</td>
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Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/guidelines-for-computing/ for more information on number of credits.

OTHER HOURS (specify type)

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

Example of a complete description:

FISH F487 W, O  Fisheries Management
3 Credits Offered Spring
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor. Cross-listed with NRM F487. (3+0)

CE F665 Introduction to Watershed Hydrology
3 Credits Offered in Fall of Even Years
A broad view of the water cycle at the watershed scale and introduction to the quantitative relations between components of the water cycle. Emphasis is placed on precipitation, evapotranspiration, water in soils, and stream response to water-input events. Prerequisites: PHYS F211X; MATH F253X; or permission of instructor. (3+0)

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

| H = Humanities | S = Social Sciences |

Will this course be used to fulfill a requirement for the baccalaureate core? If YES, attach form.

YES: [ ]  NO: [x]

IF YES, check which core requirements it could be used to fulfill:

| O = Oral Intensive, Format 6 | W = Writing Intensive, Format 7 | X = Baccalaureate Core |

11.A Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.

YES [ ]  NO [ ]

12. COURSE REPEATABILITY:

Is this course repeatable for credit? [ ] YES  [x]  NO

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?

TIMES

If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?

CREDITS

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?

CREDITS

13. GRADING SYSTEM: Specify only one. Note: Changing the grading system for a course later on constitutes a Major Course Change - Format 2 form.
RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES  
PHYS F211X; MATH F253X; or permission of instructor

These will be required before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS  
None

16. PROPOSED COURSE FEES  
n/a

Has a memo been submitted through your dean to the Provost for fee approval?  
n/a

17. PREVIOUS HISTORY  
Has the course been offered as special topics or trial course previously?  
No

If yes, give semester, year, course #, etc.:  

18. ESTIMATED IMPACT  
What impact, if any, will this have on budget, facilities/space, faculty, etc.  
Evaluate in the context of eliminating ENVE 648 (Solid Waste Treatment) from current program.

19. LIBRARY COLLECTIONS  
Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course?  
If so, give date of contact and resolution.  
If not, explain why not.  
Yes/No  

Karen Jensen (8/27/14) – materials are currently available or will be made available for this new course

20. IMPACTS ON PROGRAMS/DEPTS  
What programs/departments will be affected by this proposed action?  
Include information on the Programs/Departments contacted (e.g., email, memo)

This new course is intended to be a requirement for the curriculum of a newly proposed Hydrology track within the Water and Environmental Science (formerly EQS) MS program in Civil and Environmental Engineering. There will be no net impact on CEE resources since another class (ENVE 648) is dropped concurrently.

21. POSITIVE AND NEGATIVE IMPACTS  
Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

The goal is to attract graduate students to the Hydrology concentration within the Water and Environmental Science MS program in CEE. Additionally we expect that this course will attract graduate students from other programs including SFOS, IAB, Geology and Geophysics, Geography, and Natural Resources Management, as there currently is no other course offered addressing watershed hydrology science at the graduate level.

JUSTIFICATION FOR ACTION REQUESTED  
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

There is high demand for graduate studies in hydrology. This course will provide the foundation for the newly proposed concentration (Hydrology) within the MS degree program Water and Environmental Science. Introduction to Watershed Hydrology is designed to bring students from other disciplines (outside of water resources engineering) to the level of knowledge where they can proceed with the graduate level hydrology and hydraulics courses regularly offered by our department.
### APPROVALS: Add additional signature lines as needed.

<table>
<thead>
<tr>
<th>Signature, Chair, Program/Department of:</th>
<th>Date</th>
<th>10/09/2015</th>
<th>Civil &amp; Environmental Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature, Chair, College/School Curriculum Council for:</td>
<td>Date</td>
<td>10/12/15</td>
<td>CEM</td>
</tr>
<tr>
<td>Signature, Dean, College/School of:</td>
<td>Date</td>
<td>1/21/16</td>
<td>CEM</td>
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</table>

**Offerings above the level of approved programs must be approved in advance by the Provost.**

<table>
<thead>
<tr>
<th>Signature of Provost (if above level of approved programs)</th>
<th>Date</th>
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</table>

### ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

<table>
<thead>
<tr>
<th>Signature, Chair Faculty Senate Review Committee: Curriculum Review GAAC Core Review SADAC</th>
<th>Date</th>
</tr>
</thead>
</table>

### ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

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<tr>
<th>Signature, Chair, Program/Department of:</th>
<th>Date</th>
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<tbody>
<tr>
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<td>Date</td>
</tr>
<tr>
<td>Signature, Dean, College/School of:</td>
<td>Date</td>
</tr>
</tbody>
</table>
ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at: http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/uaf-syllabus-requirements/

The Faculty Senate curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:
   - Title, number, credits, prerequisites, location, meeting time (make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:
   - Name, office location, office hours, telephone, email address.

3. Course readings/materials:
   - Course textbook title, author, edition/publisher.
   - Supplementary readings (indicate whether required or recommended) and any supplies required.

4. Course description:
   - Content of the course and how it fits into the broader curriculum;
   - Expected proficiencies required to undertake the course, if applicable.
   - Inclusion of catalog description is strongly recommended, and Description in syllabus must be consistent with catalog course description.

5. Course Goals (general), and (see #6)

6. Student Learning Outcomes (more specific)

7. Instructional methods:
   - Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

8. Course calendar:
   - A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say “lab”. Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:
   - Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. Evaluation:
    - Specify how students will be evaluated, what factors will be included, their relative value, and how they will be tabulated into grades (on a curve, absolute scores, etc.) Publicize UAF regulations with regard to the grades of “C” and below as applicable to this course. (Not required in the syllabus, but is a convenient way to publicize this.) Link to PDF summary of grading policy for “C”: http://www.uaf.edu/files/uafgov/Info-to-Publicize-C_Grading-Policy-UPDATED-May-2013.pdf

11. Support Services:
    - Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. Disabilities Services: Note that the phone# and location have been updated. http://www.uaf.edu/disability/ The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials.
   - State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655) to provide reasonable accommodation to students with disabilities.

5/21/2013
Lecture meetings: Tuesday and Thursday, 2:30 – 3:00 pm, Duckering Building (TBA)

Potential Instructors:
Dr. Chris Arp, E-mail cdarp@alaska.edu, Office: 467 Duckering Bldg
Dr. Sveta Stuefer, E-mail sveta.stuefer@alaska.edu, Office: 463 Duckering Bldg
Dr. Horacio Toniolo, E-mail hatoniolo@alaska.edu, Office: 259 Duckering Bldg
Office hours: Tuesday and Thursday 11:15 am – 1:15 pm, Friday 12:00 – 1:00 pm

Course reading (required textbook):

Supplementary reading:

Catalog course description:
A broad view of the water cycle at the watershed scale and introduction to the quantitative relations between components of the water cycle. Emphasis is placed on precipitation, evapotranspiration, water in soils, and stream response to water-input events. (3+0).

Prerequisites: PHYS F211X; MATH F253X; or permission of instructor

Course goals:
1) Gain comprehensive and integrated understanding of the water cycle and its corresponding components and processes at the watershed scale;
2) Apply basic principles to estimating components of the water balance and fluxes at multiple scales and with varied data availability;
3) Learn basic techniques for analysis and integration of hydrologic data, and prediction of hydrologic phenomena using models;
4) Realize the role hydrology plays in other scientific disciplines, engineering, policy and management.

Student Learning Outcomes:
1) Ability to identify, formulate, and solve hydrologic problems;
2) Ability to analyze and interpret hydrologic data;
3) Ability to interpret the relative role of the hydrologic cycle in other science and engineering disciplines.

Instructional methods:
Lectures will be active in terms of promoting student participation and we will use case studies and examples from the local environment often. Students will be encouraged to track immediate hydrologic conditions from near-real time data at the beginning of each lecture and will be encouraged to discuss emerging topics related to hydrology from the general media. Involvement in these activities as well as the daily lecture topics will be considered a normal part of class participation grade. Additionally, because the topic of Watershed Hydrology encompassed a very large body of science, the material for class in a given semester will be tailored to student’s interests (thesis research or otherwise) based on initial discussions with students at the start of each semester. Certain topics outlined in the syllabus will be emphasized over others in this manner. Students may be asked present some lectures depending on their experience and interests.
**Tentative Course Schedule:**

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Lectures</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>1</td>
<td>1-Sep</td>
<td>Introduction</td>
<td>Ch. 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6-Sep</td>
<td>8-Sep</td>
<td>Hydrologic concepts</td>
<td>Ch. 2; Problems 2.1, 2.4 - 2.6</td>
</tr>
<tr>
<td>3</td>
<td>13-Sep</td>
<td>15-Sep</td>
<td>Global Climate</td>
<td>Ch. 3; Problems 3.1, 3.9-3.11</td>
</tr>
<tr>
<td>4</td>
<td>20-Sep</td>
<td>22-Sep</td>
<td>Precipitation</td>
<td>Ch. 4; Problems 4.2-4.7</td>
</tr>
<tr>
<td>5</td>
<td>27-Sep</td>
<td>29-Sep</td>
<td>Snow and snowmelt</td>
<td>Ch. 5; Problems 5.1-5.3</td>
</tr>
<tr>
<td>6</td>
<td>4-Oct</td>
<td>6-Oct</td>
<td>Exam 1</td>
<td></td>
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<tr>
<td>7</td>
<td>11-Oct</td>
<td>13-Oct</td>
<td>Water in Soils</td>
<td>Ch. 6; Problems 6.2, 6.3, 6.6</td>
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<tr>
<td>8</td>
<td>18-Oct</td>
<td>20-Oct</td>
<td>Water in Soils</td>
<td>Ch. 6; Problems 6.7, 6.11, 6.12</td>
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<tr>
<td>9</td>
<td>25-Oct</td>
<td>27-Oct</td>
<td>Groundwater</td>
<td>Ch. 8; Problems 8-3-8.5</td>
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<tr>
<td>10</td>
<td>1-Nov</td>
<td>3-Nov</td>
<td>Evapotranspiration</td>
<td>Ch. 7; Problem 7.3</td>
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<tr>
<td>11</td>
<td>8-Nov</td>
<td>10-Nov</td>
<td>Project presentations</td>
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<tr>
<td>12</td>
<td>15-Nov</td>
<td>17-Nov</td>
<td>Open channels</td>
<td>Ch. 9; Problems 9.1,9.2</td>
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<tr>
<td>13</td>
<td>22-Nov</td>
<td>Holiday</td>
<td>Open channels</td>
<td>Ch. 9.3; Problems</td>
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<tr>
<td>14</td>
<td>29-Nov</td>
<td>1-Dec</td>
<td>Rainfall-runoff models</td>
<td>Ch. 9; Problems 9.4-9.6</td>
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<tr>
<td>15</td>
<td>6-Dec</td>
<td>8-Dec</td>
<td>Rainfall-runoff models</td>
<td>Ch. 9; Problems 9.7-9.9</td>
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<td></td>
<td>TBD</td>
<td></td>
<td>Final Exam</td>
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**Course policies:**
The final exam will be given on the day and time scheduled by the university, so make travel and work plans accordingly. Make-up examinations will be given only under extenuating circumstances. Homework is due at the beginning of the class on Tuesday. Late assignments receive no credit. Because of the practical scope of this class, it is expected that you attend every class meeting. The only excused absences are for pre-arranged, University-sanctioned athletic trips, hospitalization, family emergencies, and doctor-excused illness. If you miss class, it is your responsibility to collect copies of all the handouts, or to get information on any assignments, activities, lecture materials, or dates changed. Please be on time. Please turn off your cell phones and put them away. Exams will be challenging and used primarily as a learning tool, whereas the bulk of the grading evaluation will be based on homework, labs, a project, and attendance. Project will be held in the fluid mechanics laboratory. Students will be asked to perform a laboratory experiment and provide project report based on the collected data. Project evaluation will be based on the following items: introduction and description of the experiment (20 pts); experimental set-up and methods (20 pts); results and calculations (20 pts); evaluation (20 pts) and references (10 pts). Additional 10 pts are reserved for clarity of project presentation, graphs and tables.

**Grading / Evaluation:**
- Exam 1: 20%
- Final Exam: 25%
- Homework: 20%
- Project: 25%
- Attendance: 10%

**UAF Grading Scale**
- **A (90 – 100%)** An honor grade, indicates originality and independent work, a thorough mastery of the subject and the satisfactory completion of more work than is regularly required.
- **B (80 – 89.9%)** Indicates outstanding ability above the average level of performance.
- **C (70 – 79.9%)** Indicates a satisfactory or average level of performance.
D (60 – 69.9%) The lowest passing grade, indicates work of below average quality and performance.

F (<60 %) Indicates failure.

According to UAF’s grading policy, “The letter grades A, B, C and D may include a “+” or “-” to indicate that a student’s level of performance is slightly higher or lower than that of the letter grade alone”. This class will assign plus and minus grades.

Disabilities Services: The UAF Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. The course instructors will work with the Office of Disabilities Services to provide reasonable accommodation to students with disabilities. Please notify the instructor of any special needs.

Academic Integrity: Plagiarism and cheating are serious matters. The UAF Honor Code defines academic standards that are expected of each student. (http://www.uaf.edu/catalog/current/academics/regs3.html#Student_Conduct)