Course Change Request

Date Submitted: 03/01/18 11:09 am

Viewing: **BAEN 460: Principles of Environmental Hydrology**

Last approved: 02/27/18 3:28 am

Last edit: 03/05/18 9:14 am

Changes proposed by: ashleaschroeder

Catalog Pages referencing this course

- BAEN - Biological & Ag Engr (BAEN)
- Department of Biological and Agricultural Engineering

Faculty Senate Number: **F5-25-443**

Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashlea Schroeder</td>
<td><a href="mailto:aschroeder@tamu.edu">aschroeder@tamu.edu</a></td>
<td>9798450609</td>
</tr>
</tbody>
</table>

Rationale for Course

The proposed changes are part of a routine curriculum review.

Course prefix: BAEN  Course number: 460

Department: Biological & Agricultural Eng

College/School: Agriculture & Life Sciences

Academic Level: Undergraduate

Undergraduate course level justification (Select One)

Academic Level (alternate): Graduate

Effective term: 2018-2019

Complete Course Title: Principles of Environmental Hydrology

Abbreviated Course Title: PRIN OF ENVIRO HYDROLOGY

Catalog course description:

Hydrologic cycle; precipitation, evaporation, evapotranspiration, infiltration, percolation, runoff, streamflow; groundwater and surface water flow; transport of contaminants in surface water; measurement and analysis of hydrologic data for engineering design.

Prerequisites and Restrictions:

Grade of C or better in BAEN 340.

Concurrent Enrollment: No

Should catalog prerequisites / concurrent enrollment be enforced? Yes

In Workflow

1. BAEN Department Head
2. Curricular Services Review
3. AG Committee Preparer UG
4. AG Committee Chair UG
5. AG College Dean UG
6. UCC Preparer
7. UCC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 03/04/18 7:06 pm
   Stephen Searcy (ssearcy): Approved for BAEN Department Head
2. 03/05/18 9:14 am
   Sandra Williams (sandra-williams): Approved for Curricular Services Review
3. 03/05/18 9:38 am
   Dawn Kerstetter (dkerstetter): Approved for AG Committee Preparer UG
4. 03/05/18 12:50 pm
   Bob Knight (bob-knight): Approved for AG Committee Chair UG
5. 03/05/18 1:03 pm
   Kim Dooley (k-dooley): Approved for AG College Dean UG
6. 03/05/18 8:16 pm
   Sandra Williams (sandra-williams): Approved for UCC Preparer
7. 03/09/18 3:30 pm
   Sandra Williams (sandra-williams): Approved for UCC Chair

History

https://nextcatalog.tamu.edu/courseleaf/approve/
Enforced Prerequisites / Concurrent Enrollment

<table>
<thead>
<tr>
<th>And/Or</th>
<th>Course Prefix/Number</th>
<th>Min Grade/Score</th>
<th>Academic Level</th>
<th>)</th>
<th>Concurrency?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BAEN 340</td>
<td>C</td>
<td>UG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Crosslistings: No

Stacked: No

Semester: 3

Credit Hour(s): Contact Hour(s) (per week):

Lecture: 3

Lab: 0

Other: 0

Total: 3

Repeatable for credit: No

Three-peat: No

CIP/Fund Code: 1403010006

Default Grade Mode: Letter Grade(G)

Alternate Grade Modes: Satisfactory/ Unsatisfactory

Method of instruction: Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education): Yes

Learning Outcomes

- Meets traditional face-to-face learning outcomes.

Describe how learning outcomes are met or provide justification why they are not met.

- The learning outcomes for the on-campus course compared to the SAP course are comparable.

Hours

- Meets traditional face-to-face hours.

Describe how hours are met or provide justification why they are not met.

- The total hours in class for the SAP are 48 face-to-face, with 94 hours estimated to be completed outside of class.

Will this course be taught as a distance education course?

- No

Is 100% of this course going to be taught in Texas?

- No

Will classroom space be needed for this course?

- Yes

This will be a required course or an elective course for the following programs:

- Required (select program)
- Elective (select program)
- Has/will this course be(e) submitted for

https://nextcatalog.tamu.edu/courseleaf/approve/
core curriculum consideration?

Has/will this course be (en) submitted for Writing or Communication consideration?

Has/will this course be (en) submitted for ICD consideration?

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus

BAEN 460 non-traditional course.docx
BAEN 460 traditional course.docx

Letters of support or other documentation

No

Yes

Additional information

Reviewer Comments

Sandra Williams (sandra-williams) (02/28/18 12:55 pm): Rollback: You must attach a traditional syllabus and a non-traditional syllabus (if applicable).

Stephen Searcy (ssearcy) (03/01/18 10:38 am): Rollback: xzxd

Sandra Williams (sandra-williams) (03/09/18 3:30 pm): UCC approved March 9 via e-vote.

Reported to state?

No
BAEN 460: Principles of Environmental Hydrology
Fall Semester 2017
Tuesdays and Thursdays
11:10 am to 12:25 pm
AG Engineering Power & Machinery (AEPM) Building Room 104

Instructor: Kritika Kothari
Office: 107 Hobgood Building
Phone: 739-3687
Office Hours: 2 - 4 pm Tuesday and Thursday (or by appointment)
Email: kritikakothari@tamu.edu

Course Description
Hydrologic cycle; precipitation, evaporation, evapotranspiration, infiltration, percolation, runoff, streamflow; groundwater and surface water flow; transport of contaminants in surface water; measurement and analysis of hydrologic data for engineering design. Prerequisites: BAEN 340

Learning Outcomes
After successfully completing this course, students should be able to:
- Define different components of hydrologic cycle.
- List the factors affecting, and quantify major rainfall-runoff processes such as evapotranspiration, infiltration, surface runoff, and soil erosion.
- Explain the definitions of vadose zone hydrology and groundwater hydrology.
- Compute hydrogeologic properties of aquifer systems such as specific yield and hydraulic conductivity.
- Model surface and subsurface water flow.
- Compute transport of contaminants in surface water.
- Describe impacts of climate change on hydrology.
- List applications of remote sensing and GIS in hydrology.

Course Resources
Text: A textbook is not required for this class. Necessary reading material will be provided.
ECampus will be used for distributing all the class material (homework assignments /presentations/announcement/suggested readings/etc.)

Course Evaluation
Homework 30%
Mid-term Exam (tentative 12th Oct, class time) 30%
Test of Definitions (tentative 30th Nov, class time) 10%
Final Exam (tentative 8th Dec, 3-5pm) 30%
100%
Letter grades will be based on the weighted average specified above and assigned as follows:

**Grading Scale**
90 - 100  A  
80 - 89   B  
70 - 79   C  
60 - 69   D  
Below 60   F

**Homework Policy**
All assignments must be presented in a neat, professional manner. All homework assignments are due at the end of the class period on the due date. A maximum of half credit will be given for late homework, unless it falls under the excused absences. Please see [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07) for absence information.
For receiving full credit, apart from neat presentation, the homework must:
- Include proper citation of the sources (webpage link, journal article, book, etc.) for any data used.
- Include proper and correct units of measurement.
- Not have computation errors.

**Test of Definitions** will be based on a set of theoretical questions provided to the students at least one week prior to the test. The questions will cover common definitions and concepts related to the field of hydrology.

**Tentative Course Schedule**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmosphere-Land Surface Interaction</td>
<td>1</td>
<td>Hydrologic cycle</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Watershed, precipitation</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Evapotranspiration</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Infiltration, surface runoff</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Streamflow, hydrograph</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Open channel hydraulics</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Soil erosion</td>
</tr>
<tr>
<td>Subsurface Hydrology</td>
<td>8</td>
<td>Soil physical properties</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Vadose zone hydrology</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Groundwater hydrology</td>
</tr>
<tr>
<td>Advanced Topics</td>
<td>11</td>
<td>Groundwater and surface water interaction</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Contaminant transport in surface water</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Remote sensing &amp; GIS applications in hydrology</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Climate change impacts, hydrologic modelling</td>
</tr>
</tbody>
</table>
Americans with Disabilities Act (ADA) Policy Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Additional Accommodations
If any student in this class requires accommodation related to a unique circumstance, please make an appointment to see the course instructors as soon as possible. Appropriate arrangements will be made.

Academic Integrity
An Aggie does not lie, cheat, or steal, or tolerate those who do.
For many years, Aggies have followed a Code of Honor in an effort to unify the aims of all Aggies toward a high code of ethics and dignity. It functions as a symbol to all Aggies, promoting understanding and loyalty to truth and confidence in each other. Students should refer to the University policy on academic integrity found in the Honor Council website: http://aggiehonor.tamu.edu/. All violations will be handled as specified by University Guidelines.

Class Attendance
Class attendance is required. Please contact me as soon as possible if an emergency requires a class absence. See student rules at the following link: http://student-rules.tamu.edu/rule07
Texas A&M University
BAEN 460 Principles of Environmental Hydrology
Course Syllabus
Belgium Study Abroad

Professor: Dr. Clyde Munster
E-mail: c-munster@tamu.edu
eCampus: http://ecampus.tamu.edu/

Course Description
Hydrologic cycle; precipitation, evaporation, evapotranspiration, infiltration, percolation, runoff, streamflow; groundwater and surface water flow; transport of contaminants in surface water; measurement and analysis of hydrologic data for engineering design. **Prerequisites:** BAEN 340

Course Objectives
The objectives of this course are to introduce the students to topics related to engineering solutions to water quantity and quality issues in Belgium and Texas. Topics include: the hydrologic cycle, precipitation, evaporation/transpiration, runoff, erosion, open channel flow, hydrogeology and water quality.

Learning Objectives (Equivalent to the traditional course)
At the end of the course, students should be able to:
1. Apply knowledge of math and engineering principles to solve hydrology problems in watersheds.
2. Learn how to quantify water fluxes in all of the components of the hydrologic cycle.
3. Learn how to quantify the transport of sediment and agricultural chemicals in runoff, channel flow, and groundwater.
4. Apply engineering tools necessary to solve complex water quantity and quality in watersheds.
5. Effectively communicate the similarities and differences in U.S. and Belgian soil and water resources issues.

Recommended Textbook

Extensive notes will be available on the class webpage.

Testing
Questions on the tests will be on lecture material, reading assignments, seminars, field trip investigations and homework problems. The grading scale and weighting factors are specified below:
Grading Scale

<table>
<thead>
<tr>
<th>Homework</th>
<th>20%</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>20%</td>
<td>90 – 100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
<td>80 – 89</td>
</tr>
<tr>
<td>Field Trip Reports</td>
<td>30%</td>
<td>70 – 79</td>
</tr>
<tr>
<td>Seminar Reports</td>
<td>10%</td>
<td>60 – 69</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>Below 60</td>
</tr>
</tbody>
</table>

**Homework**

All assignments must be presented in a neat, professional manner. A word processor will be required for all written assignments. Some assignments may require the use of spreadsheets and graphics. Sample calculations will be required for all spreadsheet solutions. All homework assignments are due at the beginning of the class period on the due date. *A maximum of half credit will be given for late homework, unless it falls under the excused absences.* Please see [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07) for absence information.

**Field Trip Reports**

Four field trips to tour European hydrologic sites and the technology used to conserve water resources and to implement waste management in Belgium and the Netherlands will be conducted. A comprehensive field trip report will be required for each field trip. The report must include, 1) a discussion of the water resources, and 2) a discussion of the waste treatment technology involved. Each report must include discussion of how the field trip related to the topics covered in this course. Reporting requirements will be provided in a separate handout. *Late field trip reports will receive a maximum of half credit, unless it falls under the excused absences.* Please see [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07) for absence information.

**Seminar Reports**

Two seminars will be presented by EU or Belgian environmental officials relating to this course. A brief report summarizing each seminar, its relationship to the course, and a comparison of practices in Europe with those in the U.S. will be required. Reporting requirements will be provided in a separate handout. *Late seminar reports will receive a maximum of half credit, unless it falls under the excused absences.* Please see [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07) for absence information.

**Tentative Schedule**

<table>
<thead>
<tr>
<th>CLASS</th>
<th>SUBJECT</th>
<th>READING</th>
<th>Estimated Time In Class/ Out of Class (Hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Hydrologic Cycle, Precipitation</td>
<td>Chapter 1</td>
<td>3 / 6</td>
</tr>
<tr>
<td>2</td>
<td>Rainfall Measurement, Thiessen Method, Probability</td>
<td>Chapter 2</td>
<td>3 / 6</td>
</tr>
<tr>
<td>3</td>
<td>Evapotranspiration, Pan Evaporation / Seminar 1</td>
<td>Chapter 4</td>
<td>3 / 6</td>
</tr>
<tr>
<td>4</td>
<td>Field Trip 1</td>
<td></td>
<td>4 / 6</td>
</tr>
<tr>
<td>5</td>
<td>Hydrographs, SCS Curve Number Method</td>
<td>Chapter 5</td>
<td>3 / 6</td>
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<tr>
<td></td>
<td></td>
<td>Chapter</td>
<td>Hours</td>
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<tr>
<td>6</td>
<td>Rational Method / Seminar 2</td>
<td>Chapter 5</td>
<td>3 / 6</td>
</tr>
<tr>
<td>7</td>
<td>Field Trip 2</td>
<td></td>
<td>4 / 6</td>
</tr>
<tr>
<td>8</td>
<td>Unit Hydrographs, Triangular Hydrographs / Seminar 3</td>
<td>Chapter 5</td>
<td>3 / 6</td>
</tr>
<tr>
<td>9</td>
<td>Open Channel Flow, Exam 1</td>
<td>Chapter 6</td>
<td>3 / 11</td>
</tr>
<tr>
<td>10</td>
<td>Field Trip 3</td>
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<td>4 / 6</td>
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<td>11</td>
<td>Erosion, USLE Equation, Sediment Yield</td>
<td>Chapter 9</td>
<td>3 / 6</td>
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<tr>
<td>12</td>
<td>Hydrogeology, Aquifers, Water Quality / Seminar 4</td>
<td>Chapter 11</td>
<td>3 / 6</td>
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<tr>
<td>13</td>
<td>Field Trip 4</td>
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<td>4 / 6</td>
</tr>
<tr>
<td>14</td>
<td>Water Quality Measurements, Nitrogen</td>
<td>Chapter 12</td>
<td>3 / 6</td>
</tr>
<tr>
<td>15</td>
<td>Final Exam</td>
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<td>2 / 5</td>
</tr>
</tbody>
</table>

**Total (Hrs) = 48 / 94**

**Note:** This course has been assigned three credit hours based upon the work represented by verifiable student achievement of institutionally established learning outcomes, direct faculty instruction, and academically engaged time. (Federal Rule GEN 11-06)

**Scholastic Honesty**

Aggies do not lie, cheat or steal nor do they tolerate those who do.

The Aggie Code of Honor states that the students at Texas A&M University should value honesty and personal integrity. Therefore, it is the responsibility of students and faculty members to help maintain scholastic integrity at the University by refusing to participate in or tolerate scholastic dishonesty.

In this course, it is permissible to discuss homework assignments and solutions. It is NOT permissible to copy homework (including computer programs or computer produced output) from another student or solutions manual. It is NOT permissible to discuss any aspect of any test or examination until ALL students have completed the exam. The penalties for violating this policy will range from a ZERO on the assignment or test to an F in the course. In addition, a report will be made to the TAMU Honor Council Office. If you have any questions about the Aggie Honor Code, please consult the website at: http://aggiehonor.tamu.edu/

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The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services at the White Creek complex on west campus or call 845-1637. For additional information visit http://disability.tamu.edu. If any student in this class requires accommodation related to a unique circumstance, please make an appointment to see me as soon as possible. Appropriate arrangements will be made.