**EAS 345: Introduction to Hydrology**

Spring 2018, Thursdays from 5:00-7:30 PM, MR-044

**Instructor:** Dr. Stephanie DeVries

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**Office Hours**: By appointment only

**Course Description**

This is an introductory hydrology course designed for engineers and earth and environmental scientists. Topics include hydrologic budgets, precipitation, evaporation, streamflow and groundwater (with an emphasis on runoff), flood forecasting and flood control. Emphasis will be placed on the acquisition and analysis of hydrological data.

**Course Materials**

* Textbook: Introduction to Hydrology, Viessman & Lewis, 5th Ed.
* Web: Supplementary course materials and other content will be posted on Blackboard.

**Major Course Learning Objectives**

1. Create a balanced hydrologic budget for a regional watershed and apply the budget to water management scenarios.
2. Use qualitative and quantitative tools to describe potential and observed precipitation, stream discharge, and evapotranspiration.
3. Create Intensity-Duration-Frequency Curves from historical rainfall data and apply these to water management and design scenarios.
4. Predict flood timing and volume using one or more stream hydrograph techniques.
5. Propagate flood volume through multiple stream reaches using hydrologic routing.
6. Identify and utilize available water resource data.

**Course Grading**

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| --- | --- | --- | --- |
| **Undergraduate Students** | | **Graduate Students** | |
| Midterm Exam I | 30% | Midterm Exam I | 30% |
| Midterm Exam II | 30% | Midterm Exam II | 30% |
| Homework | 40% | Homework | 20% |
|  |  | Term Project | 20% |
| **Total** | **100%** | **Total** | **100%** |

**Attendance Policies**

To insure successful learning, attendance in lecture is required. The lecture is intended, as much as possible, to be an interactive environment. Please feel free at any time during lecture to ask a question or make a comment.

**Midterm Exams**

* Midterm exams will be given during class time. The dates on the lecture schedule are tentative and are subject to change.
* Makeup exams will be given only under extreme circumstances. Students must contact the instructor and receive written or verbal permission to make up an exam ***prior*** to the examination. Students with permission to make up a test must do so within 1 week of the test date or a score of zero will be issued.

**Homework**

Homework will be assigned as shown in the course schedule. All assignments are due at the beginning of the next class period unless otherwise specified. Late assignments will not be accepted. Students are encouraged to work together on homework, but are reminded that they must turn in their own work. In some cases, assignments will require that students submit spreadsheets or other digital products. If it is suspected that a single product was distributed to one or more students in lieu of independent work, a warning will be issued for the first occurrence. If there is a second occurrence, the author and any students sharing the product will receive a 0 for the work.

**Tentative Lecture Schedule**

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| --- | --- | --- | --- | --- |
| **Week** | **Date** | **Topic** | **Reading** | **Assignment** |
| Week 1 | 2/1/2018 | Introduction to Hydrology | pp. 1-30 | HW 1 |
| Week 2 | 2/8/2018 | Precipitation, Contours, and River Discharge | pp. 95-113 | HW 2 |
| Week 3 | 2/15/2018 | Evaporation and Transpiration | pp. 143-171 | HW 3 |
| Week 4 | 2/22/2018 | Infiltration | pp. 175-204 | HW 4 |
| Week 5 | 3/1/2018 | Probability and Statistics for Hydrology | pp. 35-78 | HW 5 |
| Week 6 | 3/8/2018 | Stream Discharge & Rating Curves | pp. 204-234 | HW 6 |
| Week 7 | 3/15/2018 | **Midterm Exam I** |  | Project Proposal\* |
| Week 8 | 3/22/2018 | Snowmelt Hydrology | pp. 238-249 | HW 7 |
| Week 9 | 3/29/2018 | Intensity-Duration-Frequency Curves | pp. 114-126 | HW 8 |
|  | 4/5/2018 | Spring Recess – NO CLASS |  |  |
| Week 10 | 4/12/2018 | Stream Hydrographs | pp. 257 - 296 | HW 9 |
| Week 11 | 4/19/2018 | Hydrologic Routing | pp. 297-313 | Project Draft\* |
| Week 12 | 4/26/2018 | Hydrologic Routing | Handout | HW 10 |
| Week 13 | 5/3/2018 | Urban Hydrology | pp. 399-446 | HW 11 |
| Week 14 | 5/10/2018 | **Midterm Exam II** |  |  |