### CE 374K HYDROLOGY

### Spring 2011

### SYLLABUS

**UNIQUE NUMBER**: 15630

**INSTRUCTOR**: David R. Maidment

 Office: ECJ 8.610

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Web: <http://www.caee.utexas.edu/prof/maidment/CE374KSpring2011/CE374K.htm>

**OFFICE HOURS**:  Tuesday and Thursday 1-2:30PM, ECJ 8.610

**LECTURES**: Tuesday and Thursday, 11:00-12:30PM, ECJ 6.406

**OBJECTIVES**: This course is designed to present these Academic/Learning Goals

1. The movement of water through the phases of the hydrologic cycle
2. Modeling of hydrologic systems
3. An introduction to hydrologic design

**PREREQUISITES**: CE 311S and CE 356

**COMPUTER**: Proficiency with computers and familiarity with a spreadsheet program like Excel is expected. There will be some computer assignments using HEC computer programs to be completed in the LRC. The CUAHSI HydroDesktop Hydrologic Information System will be used.

**TEXT**: The required text is “Applied Hydrology” by Chow, Maidment and Mays, McGraw-Hill, 1988. This will be available in pdf form through the Blackboard web site for this class.

**CLASS FORMAT**: Lectures supplemented with outside reading, homework, and exams.

**CLASS OUTLINE**: See attached.

**GRADING**: Quizzes, 2 @ 25% = 50%

 Homework  = 15%

 Final Exam = 35%

 I will assign grades using the scale: A = 95 – 100%; A- = 90 – 95%; B+ = 87 – 90%; B = 83 – 87%;

B- = 80 – 83%; C+ = 77 – 80%; C = 73 – 77%; C- = 70 – 73%; D = 60 – 70%; F < 60%

Any problems, personal or otherwise, affecting grades should be brought to the instructor's attention.

**HOMEWORK POLICY**: Homework assignments are due in by 5PM on the day assigned. There is a box outside my door in ECJ 8.6 for turning in assignments after the class hour, if necessary. Homework must be done on clean paper, stapled in the top left corner, have your name in the top right corner, and your name, class and assignment number written on the outside when the homework is folded in half.

**EXAMINATIONS**: There will be two 75 minute inclass examinations and the final examination. Each examination will be closed book, although you will be allowed a 1-page review sheet, and will be given on the date and time indicated. Missed examinations may be made up only if the reason for missing was illness or some other emergency. **Final Exam is scheduled to be given on Thursday May 12, 2-5 PM.**

**EVALUATION**: An evaluation of the course and instructor will be conducted at the end of the semester using the approved UT Course/Instructor evaluation forms.

**DROP POLICY:** From the 1st through the 12th class day, an undergraduate student can drop a course via the web and receive a refund, if eligible.   From the 13th through the university’s academic drop deadline, a student may Q drop a course with approval from the Dean, and departmental advisor.  After the academic drop deadline has passed, a student may drop a course only with Dean’s approval, and only for urgent, substantiated, non-academic reasons.

**DISHONESTY**: University procedures will be followed in dealing with cases of suspected scholastic dishonesty.

**ATTENDANCE**: Regular class attendance is expected in accordance with The University's General Information catalog and the School of Engineering policy (see the section on Attendance in the Undergraduate Catalog).

**IMPORTANT NOTE:** The University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities. For more information, see the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259, 471-6259 (voice) or 232-2937 (video phone) or <http://www.utexas.edu/diversity/ddce/ssd/>

### SCHEDULE

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| **Date** | Topic | Text  |
| Tues Jan 18 | Introduction to surface water hydrology | Chap. 1 |
| Thurs Jan 20 | Continuity equation | 2 |
| Tues Jan 25 | Momentum and energy equations | 2 |
| Thurs Jan 27 | Atmospheric water and precipitation | 3 |
| Tues Feb 1 | Evaporation | 3 |
| Thurs Feb 3 | Infiltration and soil water movement | 4 |
| Tues Feb 8 | Green-Ampt infiltration equation | 4 |
| Thurs Feb 10 | Hydrologic Analysis using HydroDesktop |  |
| Tues Feb 15 | Review |  |
| *Thurs Feb 17* | QUIZ |   |
| Tues Feb 22 | CUAHSI Hydrologic Information System |   |
| Thurs Feb 24 | Runoff Processes | 5 |
| Tues Mar 1 | Runoff processes | 5 |
| Thurs Mar 3 | Hydrologic measurement | 6 |
| Tues Mar 8 | Unit Hydrograph | 7 |
| Thurs Mar 10 | Runoff Hydrograph computation | 7 |
| Spring Break! |   |   |
| Tues Mar 22 | Reservoir and river routing | 8 |
| Thurs Mar 24 | Introduction to HEC-HMS |  |
| Tues Mar 29 | Introduction to Hydraulic Routing | 9 |
| Thurs Mar 31 | Introduction to HEC-RAS |  |
| Tues Apr 5 | Floodplain mapping | 10 |
| Thurs Apr 7 | Flood frequency analysis | 12 |
| Tues Apr 12 | Flood frequency analysis | 12 |
| Thurs Apr 14 | Review |   |
| *Tues Apr 19* | *QUIZ* |  |
| Thurs Apr 21 | Flood peaks and hydrologic design | 13 |
| Tues Apr 26 | Design storm rainfall | 14 |
| Thurs Apr 28 | Hydrologic design for flood control | 15 |
| Tues May 3 | Geographic Information Systems in Hydrology | 15 |
| Thurs May 5 | Course evaluation and review for the final exam |   |
| *Thurs, May 12, 2-5PM* | *Final examination* |   |