### CE 374K HYDROLOGY

### Spring 2013

### SYLLABUS

**UNIQUE NUMBER**: 15610

**INSTRUCTOR**: David R. Maidment

 Office: ECJ 8.610

 Phone: Campus 471-4620, CRWR 471-0065

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Web: <http://www.caee.utexas.edu/prof/maidment/CE374KSpr13/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 ArcGIS Geographic Information System and the CUAHSI HydroDesktop Hydrologic Information System may 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  = 25%

 Final Exam = 25%

 I will assign grades using the scale: A = 95 – 100%; A- = 90 – 94%; B+ = 87 – 89%; B = 83 – 86%;

B- = 80 – 82%; C+ = 77 – 79%; C = 73 – 76%; C- = 70 – 72%; D = 60 – 69%; 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 8.610 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.

**EXAMINATIONS**: There will be two 75 minute in-class 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 Friday May 10, 9AM-12 noon.**

**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 email ssd@austin.utexas.edu or the web site: <http://www.utexas.edu/diversity/ddce/ssd/>

### SCHEDULE

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| **Date** | Topic | Text  |
| Tues Jan 15 | Introduction to surface water hydrology | Chap. 1 |
| Thurs Jan 17 | Hydrologic systems and continuity | 2 |
| Tues Jan 22 | Momentum and energy | 2 |
| Thurs Jan 24 | Atmospheric water  | 3 |
| Tues Jan 29 | Precipitation | 3 |
| Thurs Jan 31 | Evaporation | 3 |
| Tues Feb 5 | Infiltration and soil water movement | 4 |
| Thurs Feb 7 | Green-Ampt infiltration equation | 4 |
| Tues Feb 12 | Runoff processes | 5 |
| Thurs Feb 14 | Hydrologic measurement | 6 |
| Tues Feb 19 | Review  |   |
| *Thurs Feb 21* | QUIZ |  |
| Tues Feb 26 | Field Trip to Brushy Creek watershed |  |
| Thurs Feb 28 | Unit Hydrograph | 7 |
| Tues Mar 5 | Reservoir and river routing | 8 |
| Thurs Mar 7 | Introduction to HEC-HMS |  |
| Spring Break! |   |   |
| Tues Mar 19 | HEC-HMS for Brushy Creek |  |
| Thurs Mar 21 | Field Trip to Brushy Creek, 2-5PM |  |
| Tues Mar 26 | HEC-GeoHMS and HEC-GeoRAS  |  |
| Thurs Mar 28 | HEC-RAS for Brushy Creek |  |
| Tues Apr 2 | Hydrologic statistics | 11 |
| Thurs Apr 4 | Flood frequency analysis | 12 |
| Tues Apr 9 | Hydrologic design and risk analysis | 13 |
| Thurs Apr 11 | Design storm rainfall | 14 |
| Tues Apr 16 | Review |   |
| *Thurs Apr 18* | *QUIZ* |  |
| Tues Apr 23 | RainMap to FloodMap | 14 |
| Thurs Apr 25 | Hydrologic design for flood control | 15 |
| Tues Apr 30 | Hydrologic design for water use | 15 |
| Thurs May 2 | Course evaluation and review for the final exam |   |
| *Fri, May 10, 9AM-12noon* | *Final examination* |   |