### CE 374K HYDROLOGY

### Spring 2012

### SYLLABUS

**UNIQUE NUMBER**: 15625

**INSTRUCTOR**: David R. Maidment

 Office: ECJ 8.610

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**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, 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 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 Monday May 14, 9-12 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 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 17 | Introduction to surface water hydrology | Chap. 1 |
| Thurs Jan 19 | Continuity equation | 2 |
| Tues Jan 24 | Momentum and energy equations | 2 |
| Thurs Jan 26 | Atmospheric water and precipitation | 3 |
| Tues Jan 31 | Field Trip to Brushy Creek Watershed | 2 |
| Thurs Feb 2 | Evaporation | 3 |
| Tues Feb 7 | Infiltration and soil water movement | 4 |
| Thurs Feb 9 | Green-Ampt infiltration equation | 4 |
| Tues Feb 14 | Runoff processes | 5 |
| Thurs Feb 16 | Hydrologic measurement | 6 |
| Tues Feb 21 | Review  |   |
| *Thurs Feb 23* | QUIZ |  |
| Tues Feb 28 | Unit Hydrograph | 7 |
| Thurs Mar 1 | Reservoir and river routing | 8 |
| Tues Mar 6 | HEC-HMS for Brushy Creek |  |
| Thurs Mar 8 | Introduction to Hydraulic routing | 9 |
| Spring Break! |   |   |
| Tues Mar 20 | HEC-RAS for Brushy Creek |  |
| Thurs Mar 22 | HEC-GeoHMS and HEC-GeoRAS (Dr Dean Djokic) |  |
| Tues Mar 27 | Texas Megadrought (Dr Robert Mace) |  |
| Thurs Mar 29 | Flood frequency analysis | 12 |
| Tues Apr 3 | HMS and RAS in Austin – Karl McArthur |  |
| Thurs Apr 5 | LIDAR – Dr Paola Passalacqua  |  |
| Tues Apr 10 | Hydrologic design and risk analysis | 13 |
| Thurs Apr 12 | Design storm rainfall | 14 |
| Tues Apr 17 | Review |   |
| *Thurs Apr 19* | *QUIZ* |  |
| Tues Apr 24 | RainMap to FloodMap | 14 |
| Thurs Apr 26 | Hydrologic design for flood control | 15 |
| Tues May 1 | Hydrologic design for water use | 15 |
| Thurs May 3 | Course evaluation and review for the final exam |   |
| *Mon, May 14, 9AM-12noon* | *Final examination* |   |