Department of Engineering Technology

Title and Course Number: ET 418, Applied Hydraulics

Credits and Contact Hours: 3 cr. 40 contact hours -- lecture

Course Description: Introduction to hydrology, hydraulic equations, collection and distribution of water using closed conduit and open channel flow.

Prerequisites: ET 308 and Math 236

Textbook: Glover, T.J., *Pocket Reference*, 3rd Ed., Sequoia Publishing, Littleton, Colorado, 2003 and *Computer Applications in Hydraulic Engineering*, Haestad Methods, Waterbury, Connecticut, 2007

Coordinator: : Kenny Stevens, P.E., ECIII Rm 383 and/or 183, 646-2491, Office hours: 3:00 - 4:30 M-T-W-Th.

Course Objectives and Related ABET Objectives:
To obtain a knowledge of basic ways in which water and its movement affects civil engineering projects. (ABET 3a, 9a&e).

To perform basic fluid flow analysis as related to rainfall/runoff, open and closed conduit flow and pumping as they apply to current engineering practices (ABET 3b&f, 9f).

To take fluid flow analysis and use the acquired information to design water collection and distribution systems including those involving pumps. (ABET 3d &9g).

To recognize that the field of water and its beneficial use is constantly changing and is at the forefront of a myriad of social and ethical issues on a local and global level (ABET 3g,h,i,j &k).

Course Topics:

1. Hydrostatics Review (2 hours)
2. Bernoulli's Eq. Review (2 hours)
3. Friction Considerations (2 hours)
4. Open Channel Flow (5 hours)
5. Pipe Networks (4 hours)
6. Pumps and Pumping Systems (6 hours)
7. Groundwater (4 hours)
8. Rainfall/Runoff Hydrology (5 hours)
9. Culverts (2 hours)
10. Field Trips (2 hours)
11. Projects (4 hours)
12. Exams (2 hours)

Computer Usage: Variety of industry-supplied programs (e.g. WaterCAD, StormCad, Flow Master, HEC-RAS), spreadsheets.

Oral and Written Communication Requirements: This is a technical specialty class where students are encouraged to discuss topics in the classroom. Projects require a written completion report.

Prepared By: Kenny Stevens, August 2009