SURVEYING HYDROLOGY  
SURV 2730

**Class Hours:** 3.0  
**Credit Hours:** 4.0  
**Laboratory Hours:** 3.0  
**Revised:** Spring 2011

**Catalog Course Description:**

Introduces students to the theory and practice of hydrologic analysis and design, to develop an analytical understanding of the basic phenomena of hydrology and to study a variety of practical quantitative methods and tools for solving hydrologic problems.

**Entry Level Standards:**

Students should have knowledge and experience working in the Windows operating system environment, including the use of the Microsoft Office software components. Students should also have the ability to use a standard keyboard and maintain a rate of 10 words per minute. Students should also have mathematics, writing, and verbal skills at the college level.

**Prerequisites:**

SURV 2210, SURV 2510 or consent of CET coordinator

**Textbook(s) and Other Course Materials:**


**I. Week/Unit/Topic Basis:**

1. **LEC:** Intro. water in our lives, stormwater management, significant figures.  
   **LAB:** Project assignment and discussion  
   **READING:** CH 1

2. **LEC:** Properties of water, Hydrologic cycle, calculation of specific weight and specific gravity of various liquids  
   **LAB:** Available data resources  
   **READING:** CH 2, 10

3. **LEC:** Fundamental Hydrostatics/ calculation of water pressure on different surfaces  
   **LAB:** Field Trip 1  
   **READING:** CH 3

4. **LEC:** delineate drainage basin, estimate storm frequency  
   **LAB:** Determine watershed data and a site  
   **READING:** CH 10

5. **LEC:** Types of water flow, computation of discharge and velocity of water  
   **LAB:** Field work to obtain critical data  
   **READING:** CH 4

6. **LEC:** Calculate flow from different devices (orifice, weir, gate and siphon) / Exam I  
   **LAB:** Complete field work  
   **READING:** CH 5

7. **LEC:** Cross-section area, hydraulic radius of a channel, normal depth in a channel
LAB: Map and data for the site
READING: CH 6

8 LEC: Fall Break / Uniform flow in channels (normal depth in a channel, pipe, and etc), channel/pipe design charts
LAB: Continue to map and data for the site
READING: CH 7

9 LEC: Computation of water surface profile, basic hydraulic jump / Exam II
LAB: ArcHydro Demo
READING: CH 8

10 LEC: types of flow pattern, inlet and outlet control, adequate culvert size
LAB: Site plan for proposed revisions
READING: CH 9

11 LEC: Computation of peak runoff by different methods
LAB: Site plan
READING: CH 11

12 LEC: Assess an existing culvert, new or replacement culvert design
LAB: Use of GIS and GPS for drainage inventory
READING: CH 13

13 LEC: Storm water detention
LAB: Field Trip 2
READING: CH 14

14 LEC: Basic detention design / Exam III
LAB: Submit final project
READING: CH 15

15 Final exam

II. Course Goals*:

The course will:

A. Expand the student’s understanding of the role that the hydrologic cycle. I, II, III, IV

B. Build the skills to perform hydrologic analysis of watersheds, storm runoffs, flows in both open and closed channels. I, II, III, IV

C. Develop the ability to determine time-of-concentrations, discharges, flow velocities, and flow depths for flows in open and closed channels. I, II, IV

D. Build the skills to compute peak discharges for overland flows as well as for flows in channels using a variety of methods. I, II, IV

E. Enhance the student’s knowledge of the methods used to design public storm drainage systems as well as designing drainage systems for private property. I, II, IV

*Roman numerals after course objectives reference goals of the Engineering Technology program.

III. Expected Student Learning Outcomes*:

The student will be able to:

1. Describe and explain the hydrologic cycle. A & B

2. Calculate direct storm runoff. A, B & C
3. Understand the function of each part of a storage and control structure. A, B & C
4. Understand the types of water flow. A, B, C & D
5. Understand the layout and design of an urban storm drainage system. A, B, C, D & E
6. Design a storm sewer system. A, B, C, D & E
7. Design an open channel to conduct storm water. A, B, C & E
8. Design a detention basin. A, B, C, D & E

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

A. Testing Procedures: 65-70% of grade

   Three tests will be administered. Exams are true-false, multiple choice, matching, short answer/essay. When a student misses an exam due to illness, he must contact the instructor immediately upon return and make-up the exam within one week.

B. Laboratory Expectations: 30-35% of grade

   Students will be assigned group and/or individual projects. The ability to work with others, the ability to make efficient use of equipment, and the level at which students perform will contribute to the grade.

C. Field Work:

   N/A

D. Other Evaluation Methods: 5-10% of grade

   Quizzes:
   Quizzes may be given by the instructor. Most quizzes will be un-scheduled and randomly given. They cover the previous session’s materials or the reading assignment for that day. There is no make-up or extra credit given for quizzes missed.

   Homework:
   Students may also be required to hand in answers to select questions at the end of each chapter or other appropriate homework at the instructor's discretion. All written assignments must be handed in on 8 ½” x 11” paper with smooth edges, or forms provided by your instructor. All written assignments will be assessed a 10% penalty for each school day it is late. All student work submitted for evaluation may be retained by the instructor.

E. Grading Scale:

   90 - 100    A
   85 - 89     B+
   80 - 84     B
   75 - 79     C+
   70 - 74     C
   60 - 69     D
   Below 60    F

V. Policies:

A. Attendance Policy:

   Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75
percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of the Learning Division, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of the Learning Division.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

C. Accommodations for disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at [www.pstcc.edu/departments/swd/](http://www.pstcc.edu/departments/swd/).

D. Use of Equipment:

Any act of misuse, vandalism, malicious or unwarranted damage or destruction, defacing, disfiguring, or unauthorized use of property/equipment belonging to Pellissippi State is subject to disciplinary sanction.