UF UNIVERSITY of FLORIDA

UCC2: Course Change Transmittal Form

Department Name and Number: Agricultural and Biological Engineering

Current SCNS Course Identification

Prefix: A B E Level: 3 Course Number: 2 1 2 Lab Code: (C) Combined

Course Title: Land and Water Resources Engineering

Effective Term and Year: Spring 2012

Terminate Current Course: ☐ Other Changes (specify below): ■

Change Course Identification to:

Prefix: ___ ___ ___ Level: ___ Course Number: ___ ___ ___ Lab Code

Course Title (please limit to 21 characters): _____

Credit Hours: From ___ To ___

Contact Hours: ☐ Base or ☐ Headcount From ___ To ___

Rotating Topic: From ☐ yes ☐ no To ☐ yes ☐ no

S/U Only: From ☐ yes ☐ no To ☐ yes ☐ no

Variable Credit: From ☐ yes ☐ no To ☐ yes ☐ no

If yes, ___ minimum and ___ maximum credits/semester

Repeatable Credit: From ☐ yes ☐ no To ☐ yes ☐ no

If yes, _____ total repeatable credit allowed

Prerequisites	Co-requisites
From ENV3040C and SWS3022 To ENV3040C and MAP2302	From To

Course Description (50 words or less; if requesting a change, please attach a syllabus)

From Introduction to hydrology, flow-through porous media, flood routing, grade control structures, erosion control, irrigation and drainage.	To Introduction to hydrology, flow through porous media, flood routing, grade control structures, and erosion control.

Rationale /Place in Curriculum/Impact on Program

Irrigation and drainage are covered in ABE 4231C, Irrigation and Drainage.

Department Contact: Name James D. Leary; Phone 352-392-1864 ext. 115; Email drleary@ufl.edu

College Contact: Name Angela Lindner; Phone 352-392-2177; Email ALIND@eng.ufl.edu

ABE 3212C
Land and Water Resources Engineering
Course Syllabus

1. Catalog Description

Credits: 4; Prereq: ENV3040C and MAP2302; Coreq: CWR3201 or EGN 3353C. Introduction to hydrology, flow through porous media, flood routing, grade control structures, and erosion control.

3. Course Objectives:

- Gain the fundamental knowledge of the various components of the hydrologic cycle.
- Use engineering principles to analyze and interpret rainfall-runoff data.
- Design vegetated and non-vegetated waterways.
- Utilize current computer and software to analyze runoff hydrographs and design appropriate outflow devices and retention ponds.
- Gain knowledge of the land and water resources field as it relates to societal issues both locally and globally.

4. Contribution of course to meeting the professional component for ABET:

This course contributes 4 credit hours toward meeting the minimum 48 credit hours of Engineering Topics in the basic level curriculum for the Bachelor of Science Degree in Agricultural and Biological Engineering.

5. Relationship of course to ABET program outcomes:

From the list of (a) through (k) program outcomes listed below, this course addresses outcomes (a), (c), (e), (h) and (j)

ABET Program Outcomes:
(a) Apply knowledge of mathematics, science, and engineering
(b) Design and conduct experiments, as well as analyze and interpret data
(c) Design a system, component, or process to meet desired needs
(d) Function on multi-disciplinary teams
(e) Identify, formulate, and solve engineering problems
(f) Understand professional and ethical responsibilities
(g) Communicate effectively
(h) Understand the impact of engineering solutions in a global and societal context
(i) Recognize the need for, and engage in life long learning
(j) Understand contemporary engineering issues
(k) Use the techniques, skills, and modern engineering tools necessary for engineering practice

6. Instructor(s):

1. Dr. Rafael Muñoz-Carpena (Main)
   a. Office location: 287 Frazier Rogers Hall
   b. Telephone: 352-392-1864 x287
   c. E-mail address: (Use Sakai email for class correspondence)
   d. Class web site (Sakai): http://lss.at.ufl.edu
   e. Office hours: immediately after class and by appointment.
2. Dr. David A. Kaplan (Lecturer)
   a. Office location: 318 Newins Ziegler Hall

b. Telephone: 352-846-0829
c. E-mail address: (Use Sakai email for class correspondence)
d. Class web site (Sakai): http://lss.at.ufl.edu
e. Office hours: TBD

7. Meeting Times: Lecture: T 8:30-10:25 am (periods 2-3)
R 9:35-10:25 am (period 3)
Lab: R 3:00-6:00 pm (periods 8-10)

8. Meeting Location: Lecture: 211 Frazier Rogers Hall
Lab: 151, 283, Computer Lab, Frazier Rogers Hall

Material and Supply Fees: $30.

9. Textbooks and Software Required:
D.D. Fangmeier, W.J. Elliot, S.R. Workman, R.L. Huffman, and G.O. Schwab. 2006. *Soil and Water Conservation Engineering*, Fifth Edition. Thomson Delmar Learning. Clifton Park, NY. 552 pages.

10. Recommended Reading:
Class notes and material on Sakai

11. Course Outline:

1. Introduction (Ch. 1)
- Water resources & the environment
- Flood control
- Drainage and Irrigation
- Soil erosion
- Future challenges

2. Hydrologic Principles (Ch. 1)

3. Atmospheric Hydrology (Ch. 3)
- Precipitation measurement
- Rainfall intensity duration and frequency
- Hydrologic frequency analysis
- Storm classification
- Evaporation from water surfaces
- Evapotranspiration

4. Soil Water Hydrology (Ch. 4-5)
- Soils and Infiltration
- Soil water – hydrostatics
- Soil water – hydrodynamics
- Infiltration

5. Surface Water Hydrology (Ch. 5)
- Runoff
- Rational method
- NRSC method
- Hydrographs

6. Water erosion/erosion control (Ch. 7)
- Factors influencing water erosion
- Types of water erosion
- Predicting water erosion
- Water erosion control

EXAM 1

7. Open channels and control structures (Ch. 6)
- Channel capacity and cross section
- Velocity and water surface profiles
- Function of water control structures

8. Conservation structures (Ch. 9)
- Types of water control structures
- Temporary and permanent structures
- Functional requirements
- Design features

9. Vegetation practices (Ch. 8)
- Vegetated waterways
- Vegetative filter strips

10. Headwater flood control (9.27-9.34)
- Flood routing

11. Water quality and wetlands (Ch. 2 & 12)

FINAL PROJECT

12. Attendance and Expectations:

Attending class will be necessary to satisfactorily complete this course. It is very important to attend class and take good notes. Quizzes will be given randomly. Students must be in class promptly when it starts to take a quiz. A missed quiz will not be made up.

13. Grading (ALL WORK TO BE SUBMITTED THROUGH SAKAI):

Quizzes, Student Topics, and Career Fair	10%
HW Problem sets and Labs	42%
Exams (2, each 14%)	28%
Final project	14%
Portfolio	6%
Total	100%

Quizzes: Quizzes—both announced and unannounced—will be given periodically to test concepts presented in class.

Student Topics: The goal of this assignment is to allow students to explore a specific topic of interest and share their findings with their peers. Each student will chose one topic related to land and water resources engineering to present to the class. Students may present on any topic they wish, however the presentation must reference a recent (less than 1-year old) source (e.g., a scientific journal article, newspaper article, website, or other media source).

Each week, one student will present his or her topic to the class. Students will have a maximum of 15 minutes (5 min presentation +10 minutes group discussion) to present their topics using any resources they wish (handouts, PowerPoint slides, movie, etc.). Students will summarize the topic, explain how it relates to land and water resources engineering, and describe how the concepts learned land and water resources engineering concepts can be applied to the topic. The assignment will be graded assigned based on the choice of an appropriate topic and presentation.

Career Fair: Students will attend the UF Career Resource Center's Career Showcase on January 25th from 9:00 am – 3:00 pm and talk to at least two employers. After attending, students will write a summary of their experience, including listing which companies they spoke with, describing how they were received, and providing a list of steps to follow to prepare themselves for the job market. Maximum length of this assignment is one page and the grade will depend on how well the instructions are followed, grammar, and spelling.

Problem Sets and Lab Reports: These assignments will consist of problem sets from the text and other sources as well as lab reports on experiments performed. Problem sets will be assigned every one to two weeks. Think of these as mini-design projects. THEY COUNT FOR NEARLY HALF YOUR GRADE. Assignments will be penalized 10% for each business day late beyond the due date. Assignments

turned in after the answers have been returned will NOT receive credit. You must turn in all assignments to achieve a passing grade in this course.

Lab Sessions and Field Trips: The class will meet for every lab session unless otherwise directed by the instructor. Lab times will consist of demonstrations, experiments, lectures, exams, and field trips. One to two field trips are being planned to demonstrate some of the concepts discussed in this class. The actual date(s) of the field trip(s) will be announced in class a week or two in advance.

Exams: Exams will be in class. Exam format (i.e. open book, closed book, etc) will be announced prior to the exam date. A missed exam may not be made up unless arrangements are made PRIOR to the exam. One exam may consist of a project assignment instead of the in class exam format.

Final Project: The final project is intended to bring together several major concepts presented in the course such that an engineering design problem can be solved. The project will be graded on thoroughness, neatness, as well as applicability of the engineering calculations.

Portfolio: Each student will be required to maintain an electronic portfolio of all work completed. It would be beneficial but not necessary to include electronic notes. At the end of the semester, the portfolio will be submitted and graded on completeness and organization. The portfolio may be submitted in any electronic format such as CD, zip disk, or personal website.

FOR ALL ASSIGNMENTS: Presentation of assignments is extremely important! All homework and lab reports should be written in a professional manner with proper grammar, spelling, and punctuation. Lab reports should be written according to the "Lab Report Rules" discussed at the first lab and posted on Sakai. Failure to do so will result in significant grade reduction.

All deliverables should be submitted both electronically and in paper. Electronic documents must be a SINGLE text document (i.e., Word or PDF file) that clearly answers each question and shows the work done to arrive at the answer. Any relevant graphs, tables, and equations that support your answer must be included (i.e., pasted) in this document and must be numbered, labeled, and captioned appropriately. If you do not sufficiently explain your work, you will only get partial credit—and no credit for a wrong answer. You may, and probably should, attach additional material (i.e., well-organized and labeled spreadsheets or other calculations) IN ADDITION to the required text report.

*****All assignments must be formatted so that they can be printed on standard 8.5" by 11" paper*****

14. **Grading Scale:** A (100-95), A- (90-94), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (74-77), C- (70 -73), D+ (67-70), D (64-67), D- (60-63), E (<60)

15. **Make-up Exam Policy:** No make-up exams will be given except for valid medical reasons or unless prior arrangements have been made.
16. **Honesty Policy:** All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

17. **Accommodation for Students with Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

18. **UF Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
    - University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
    - SHCC mental Health, Student Health Care Center, 392-1171, Personal Counseling
    - Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
    - Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

19. **Software Use**: All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

20. Tentative Course Timeline: This timeline is an intended guide for both the students and the instructor; however, it is **ONLY** a tentative guide and is subject to modification.

	Date	Lecture Topic*	HW	Lab Session
Week 1	Jan 9-13	1-3	1	Lab 1. Excel training, websites, etc.
Week 2	Jan 16-20	3	2	Lab 2. GIS lab
Week 3	Jan 23-27	3-4	3	UF Career Showcase
Week 4	Jan 30-Feb 3	4	--	Lab 3. Infiltration lab
Week 5	Feb 6-10	4-5	4	Lab 4. Infiltration modeling (CHEMFLO)
Week 6	Feb 13-17	5	--	Lab 5. Runoff hydrograph
Week 7	Feb 20-24	6	5	Lab 6. Infiltration and runoff modeling (WinGampt)
Week 8	Feb 27-Mar 2	6, **EXAM**	--	No Lab
Week 9	Mar 5-9	**Spring Break**	--	
Week 10	Mar 12-16	7-9	6	No Lab
Week 11	Mar 19-23	10	7	Field trip date
Week 12	Mar 26-30	11	8	Lab 7. Vegetative filter strips modeling design (VFSmod)
Week 13	Apr 2-6	11	--	No Lab
Week 14	Apr 9-13	Final Project	--	No Lab—work on final project
Week 15	Apr 16-20	Final Project	--	No Lab—work on final project
Week 16	Apr 23-27	**Project DUE**	--	No Lab
Week 17	May 3@10-noon	**Project Presentations** (final exam day		

* See course outline on page 2