Urban Stormwater Systems Design
CWR 4306/CGN6905

Meeting Times: Mon and Wed Period 4 (10:40 AM – 11:30 AM) and 100% Online
(No Class on Friday)

Location: Psychology, Room 130 (PSY 130)

Academic Term: Fall 2025

Instructor: Dr. Mark A. Newman
Office location: 370C Weil Hall
E-mail: mark.newman@essie.ufl.edu

Office Hours: To schedule an appointment please use Dr. Newman's Bookings Page
(Note: This link takes you to our Civil Engineering academic advising scheduling site—you are in the right place—this is where I schedule all of my appointments. You can choose either in-person or Zoom meetings).

Email communication is highly encouraged as it allows information to be shared more readily with the entire class. Communication using Canvas messaging is ok, but it is not as efficient (email attachments often get removed or corrupted).

Course Description
(3 credits) Stormwater system design including: time of concentration, peak runoff rate, open-channel flow, gravity storm sewer, culvert, stormwater pumping, filtration systems, hydrograph generation, flood routing, site layout, site grading and permitting.

Course Pre-Requisites / Co-Requisites
CWR 4202 Hydraulics (Hydraulics can be a co-requisite with this class).

Course Objectives
Students will gain an in-depth understanding of the design, modeling, and permitting of urban stormwater systems.

Course Material and Assignments
All course material including lectures packets, reading, assignments, and supplemental information are provided on the UF e-Learning site http://elearning.ufl.edu/.

Referenced Textbooks: No textbooks are required—all reading assignments will be posted on the course site.

- Durrans. 2003. *Stormwater Conveyance Modeling and Design*. 1st Edition. Bentley Institute Press. Exton, PA. http://www.bentley.com/en-US/Training/Products/Resources/Books/SCMD.htm (Also available on Amazon)
- Walski, Barnard, Durrans, Meadows, Lowry, and Whitman. 2007. *Computer Applications inHydraulic Engineering*. 7th Edition. Bentley Institute Press. Exton, PA. https://store.bentley.com/en/products/9781934493168--Computer-Applications-in-Hydraulic-Engineering (Also available on Amazon)

Required permitting documents and technical publications (available online)

Environmental Resource Permit Applicant's Handbook, Volume I (General and Environmental) from St. Johns River Water Management District (SJRWMD)
https://www.sjrwmd.com/documents/permitting/#erp

Permit Information Manual (includes ERP Volume II) from St. Johns River Water Management District (SJRWMD)
https://www.sjrwmd.com/documents/permitting/#erp

Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55): Available from United States Department of Agriculture, Natural Resources Conservation Service (NRCS)
http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf

Additional textbooks referenced in course notes include the following:

- Gribbin. 2002. Introduction to hydraulics and hydrology with applications for stormwater management. Delmar. New York.
- Wanielista and Yousef. 1993. Stormwater Management. Wiley. New York.
- Wanielista, Kersten, and Eaglin. 1997. Hydrology Water Quantity and Quality Control. Wiley. New York.

Attendance and Expectations

- All course content is provided online in Canvas (Everything you need to do well in the course is provided in Canvas).
- The scheduled in-class meeting times on Monday and Wednesday are optional interactive problem sessions that allow you the chance to ask questions while working on the weekly assignments.
- It does not matter what section you are registered for—everyone is welcome to attend the in-class problem sessions whenever you would like as they are essentially guaranteed office hours.

Course Outline

Week 1	Course introduction / Precipitation
Week 2	Rainfall Analysis
Week 3	Precipitation and Design Storms (IDF Curves)
Week 4	NRCS Design Storms
Week 5	Site and basin delineation
Week 6	Rainfall and runoff—Estimating peak runoff—Unit hydrographs
Week 7	Stormwater conveyance and detention/retention
Week 8	Storage routing
Week 9	Regulations and Environmental Resource Permits (ERPs)
Week 10	Design project I
Week 11	**Design project I Due**
Week 12	Design project II
Week 13	Design project II
Week 14	Design project II
Week 15	Design project II
Week 16	**Design Project II Due**

Assignments: Assignments (including Design Projects I and II) will be submitted using the UF e- Learning Canvas site http://elearning.ufl.edu/.

Late Assignments: You will have one week after an assignment deadline passes to contact me and request that an assignment be re-opened for late submission or re-submission. **After one week has passed from the assignment deadline no submissions will be allowed.**

Grade Distribution

Assignments	Percentage of Final Grade
Assignments	30%
Design Project I	30%
Design Project II	40%

Co-Listed Course Details: This course is co-listed as both a graduate and undergraduate course. Both the graduate and undergraduate courses have 100% online sections and in-person sections. All course content for all sections is provided online using the course Canvas site. The in-person meeting times for both classes are optional interactive problem sessions that allow students to work collaboratively with one another on the weekly assignments and design projects. These problem sessions also provide students the opportunity to ask questions and discuss their progress with the instructor while actively working on their assignments. The primary difference between the graduate and undergraduate courses are the structure of the culminating design project (Design Project II).

Design Project II:

Undergraduate Students (CWR 4306) will work in teams on an assigned topic.

Graduate students (CGN 6905) will choose their own topic and work individually.

Grading Scale

Percent	Grade	Grade Points
94 - 100	A	4.00
90 - 93	A-	3.67
87 - 89	B+	3.33
84 - 86	B	3.00
80 - 83	B-	2.67
77 - 79	C+	2.33
74 - 76	C	2.00
70 - 73	C-	1.67
67 - 69	D+	1.33
64 - 66	D	1.00
60 - 63	D-	0.67
0 - 59	E	0.00

Academic Policies and University Resources: https://go.ufl.edu/syllabuspolicies