

Wastewater System Design {ENV4532, 1301CAMP(12555); ENV6437, CAMP(12604)}

CANVAS site: [https:// https://ufl.instructure.com/courses/450307](https://ufl.instructure.com/courses/450307)

Class Periods: Tuesday and Thursday 10:40 to 12:00 (a lecture will be uploaded after the end of a class period)

Location: Tuesday/Thursday lectures in 1084 Weimer; other lectures are on-line; and uploaded to CANVAS

Academic Term: Spring 2022

Instructor:

John J. Sansalone, PhD, PE, Professor

jsansal@ufl.edu

352.846.0176

Office Hours: Tuesday/Thursday from 1445 to 1615 through on-line meetings or TBA, email communication

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

- There is no Teaching Assistant/Peer Mentor/Supervised Teaching Student for this class

Course description:

(3cr.) Detailed design and layout of gravity wastewater collection systems, pumping facilities, force mains, and wastewater treatment plants. Emphasis is placed on the preparation of design drawings and estimating costs. (*Current but outdated catalog description, see Objectives below for the actual course description*)

Pre-requisites: ENV 4514C and 4501 or equivalents; **Co-requisites:** ENV 4561, CWR 4202

Suggested Textbook: **Wastewater Engineering - Treatment, Disposal, Reuse**, Fourth Edition, Metcalf & Eddy, Inc., Irwin-McGraw Hill, 2003 as revised by Tchobanoglous and Burton (ISBN 0-07-041878-0), pp.1819 (Not required)

Instructor: Dr. John J. Sansalone, P.E., Professor; 110 Black Hall, Telephone: 352.846.0176, Email: jsansal@ufl.edu

Electronic Communication: Email and CANVAS. You will be using the CANVAS site for team communications and posting; as well as file organization. Once I have a final list of students after drop/add I can facilitate your upgraded status on CANVAS.

Objectives: To provide students with a stormwater/wastewater/combined sewer overflow treatment, reuse, and conveyance design experience for urban water. This design experience provides a comprehensive and quantitative capstone design experience for the students working in design teams. The capstone design project focuses on unit operation and process design, civil infrastructure design, hydraulic design, material balance management, human health and environment interactions to achieve project objectives. This design experience will be an actual design project (in or outside Florida). This design experience will culminate in a statewide design team competition between teams from Florida universities at the Florida Water Resources Conference. This course is not a traditional technical elective; the class is a capstone design where each student brings the technical elements of their previous civil and environmental coursework and synthesizes these elements through teamwork into a technical presentation and report. Students are expected to bring their academic skills with them and apply their known skills (and develop new skills) in a culminating synthesis design as part of a public, technical and written competition. Since this course is a synthesis of your academic background, there will not be topic-by-topic how-to lectures. You have the technical tools which will not be taught herein and this class is about you creating, synthesizes, developing, preparing, defending and presenting your design as a very rigorous engineering sales presentation in front of your peers and as a rigorous technical design report. The course mimics the engineering competitiveness of industry, requires significant effort, and is very rewarding. Only if design team(s) is/are deemed to be competitive based on previous design team presentations/reports as assessed by your professor; AND there is a careful, methodical preparation so that there is a complete presentation (team presentation and presentation materials) and complete critically written report draft (both of which are defensible and compelling) two weeks before competition due date, a team will be able to compete. There are no tests/homework, except when assignments are made related to capstone design project. These assignments, team participation/contributions and from team members individually will be assessed as will deliverables assigned. There will be significant team work outside of class and skills that will have to be independently learned. FWEA allows me to review and evaluate the design (independent from my class grading and educational requirements), but only provide guidance. Independent skills include Autocad, SigmaPlot, GIS, Excel, Powerpoint, professional animation software...

Contribution of course to meeting the professional component of the curriculum:

3 credits of engineering design

Relationship of course to program outcomes: Students should have:

1. an ability to apply knowledge of mathematics, science, and engineering
2. an ability to design a system, component or process to meet desired needs
3. an ability to identify, formulate and solve engineering problems
4. an ability to communicate effectively, especially in a clear, technical and defensible oral/visual technical presentation, a professionally-written design report, and ability to support your arguments in a competitive Q/A session
5. an understanding of **professional**, collegial and ethical responsibility
6. a knowledge of contemporary issues
7. an understanding of the roles and responsibilities of public institutions and private organizations pertaining to environmental engineering.
8. a proficiency in principles and practice in water pollution control, reuse, hydraulics, civil infrastructure, unit operations, material balances and residuals management.

Assessment Methods: Your grade for this course will be determined based on your performance on a team's design project presentation updates, assignments, design submissions, and final design report and presentation as well as class/team meeting attendance (two unexcused absences allowed, excused absences reqr. documented emergency or doctor's note) with active participation and your efforts towards team contributions, cooperation and initiatives. Each student will prepare a written report for evaluation of their own contributions to the team. Attendance, teamwork contribution by each student and the demonstrable contribution by each student will be used in performance guidance: attendance is required for the success of each individual and for the team. I will track attendance, whether in-class or on-line for final grade.

INDIVIDUAL PERFORMANCE GUIDANCE (50%)
Team Evaluations and Involvement Review for each Individual Team Member
Individual Responsibilities, Goals, Timely, Quality Deliverables/Reports
Individual Participation and Teamwork

DESIGN TEAM PERFORMANCE GUIDANCE (50%)
Team Responsibilities and Organization
Proposals and Initiatives
Report Outlines and Scheduling
Regulatory and Problem Background Review
30% Presentation
60% Presentation
Professional Organized Design Calculations
Drawings
Economics and Budget
Draft Report
Final Report
Final Presentation

This is a great opportunity to compete with colleagues around Florida and, potentially, the nation on a professional design, with the potential for state-wide or national recognition, with little liability other than your grade. This class has won **seven** FWEA and **five** National Championships. Each team will track individual participation, depth, breadth and quality of individual contributions as will your professor and these and writing will be considered in assigning final grades. Whether you win or lose does not impact your grade in any way; how you contribute and your contribution will definitively impact your grade – a team needs everyone to contribute 100%. The teams will spend many classes presenting and I will review; providing guidance. The major unknown as of 2 Jan. is the impact of the covid variants on class (F2F) and the competition.

Course Topics:

A stormwater or wastewater treatment/infrastructure/reuse design or human health and the environment project. Project(s) require data, possibly data collection, data analysis, modeling and superb illustration/presentation and compelling writing. The topic this year (and previous years) is a less traditional wastewater topic that is interesting and is broad in scope. Within this context the project will include:

- Design and professional concepts
- Design problem statement
- Scope of design
- Regulatory requirements, terminology
- Legal, ethical, and social issues
- Water cycle conditions
- Unit operation and process design
- Hydraulics, chemistry, economics
- Team design concepts
- Team formation and teamwork
- Design presentation development
- Design report development
- Site visit for data collection, if possible
- Human health-environment interactions
- Design review and practice sessions

Materials and Supply Fees

This class has no materials or supply fees other than submission of a digital AND spiral-bound final design report and a digital Powerpoint presentation by the students.

Required Textbooks and Software

- There is no required textbook
- Course notes are developed by the instructor and provided on CANVAS
- In lieu of a textbook, publications, generally as peer-reviewed manuscripts are provided on CANVAS
- The class is designed to utilize software available to students through the University of Florida

Recommended Materials

No one book covers this topic adequately; the physical, chemical and UOP topics are still young and knowledge is changing too rapidly; although hydrologic understanding is a good foundation. I will provide selected documents and papers electronically. We will place files on the class CANVAS website and try to organize these as pdf documents to maximize portability and minimize file size. We will review and utilize many journal and reference papers; provided on the course CANVAS site; <https://ufl.instructure.com/courses/421848>.

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Attendance Policy, Class Expectations, and Make-Up Policy

This is a dual in-class and on-line class, so attendance is required. The COMPLETE final design report and appendices are due to the instructor 14 days before submission to FWEA, there is a bit more flexibility on the Powerpoint presentation. Excused absences must be in compliance with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation.

Grading Policy

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 – 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 – 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will

treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students 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.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources: (see next page)

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://care.dso.ufl.edu>.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.