

Department of Civil Engineering, University of Florida
New Infrastructure Planning/Best Practices
CGN 5605/CGN 4600, Section: 1FE2, 2FED, OVER /CAMP
Class Periods: Tuesday 7-9 (1:55- 4:55 pm)
Location: New Engineering Building (NEB)- 102
Academic Term: Spring 2025

Instructor:

Name: Dr. Fazil T. Najafi, Professor

Email Address: fnaja@ce.ufl.edu

Phone Number: (352) 870-2477

Office Hours: Wednesday, 6:00 – 9:00 pm

Please call or email. I will respond by phone, email, or Zoom within 24 hours.

Teaching Assistant:

Please get in touch with us through the Canvas website

Name: Sai Sree Sadhan Polimera

Email Address: polimerasaisrees@ufl.edu

Office hours: Thursday 6:00 to 9:00 pm

Please email me. I will respond by email or Zoom within 24 hours.

Course Description

New Infrastructure Planning/Best Practices is a three-credit hours course. The course covers the functional approach to planning and implementing infrastructure needs, emphasizing the engineer's role.

It covers Best Land Use Practices, Best Environmental Practices, Best Transportation Practices, Best Water Resources Practices, Best Housing Practices, and Model Cities.

Course Pre-Requisites / Co-Requisites

No prerequisites are required.

Course Objectives

The objectives of this course are:

1. Learn about best land-use practices and understand the best model cities. Understand how municipalities and developers work closely to implement comprehensive planning to sustain the best land-use practices. Government agencies make sure that developers keep the habitat natural with no impact. Implementing sustainable and best land-use practices brings government agencies and developers closer with less paperwork, saving time for building a sustainable infrastructure. Such best land-use practices can occur at the city and regional levels.
2. Learn about the best environmental practices. The course creates a better understanding of the impact of climate change and renewable and sustainable energy delivery systems. Learn about land conservation, landscapes, a network of green spaces, parks, recreation, and other infrastructure systems.
3. Learn the best transportation practices.
4. Learn the best water resource practices.
5. Learn the best housing practices.
6. Apply knowledge from previous civil engineering courses to solve engineering problems relevant to the above items.
7. Generate electricity using solar energy.
8. I developed six chapters in this course linked toward the main objective of planning and designing a Smart city.

Course Outcomes

1. The course achieves the objectives mentioned above.

The course meets the ABET Criterion 3. Student Outcomes: "an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors."

Relation to Program Outcomes (ABET):

| Outcome | Coverage* |
|---|-----------|
| 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics | High |
| 2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors | High |
| 3. An ability to communicate effectively with a range of audiences | High |
| 4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts | High |
| 5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives | High |
| 6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions | Medium |
| 7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies | High |

*Coverage is given as high, medium, or low

Materials and Supply Fees

Not applicable

Required Textbooks and Software

No textbooks are required, and all materials are in the files folder in Canvas.
I have written six chapters on the *New Infrastructure Planning /Best Practices*.

Recommended Materials

- No textbooks are required, and all materials are in the files folder in CANVAS.

Required Computer

- UF student computing requirement: <https://news.it.ufl.edu/education/student-computing-requirements-for-uf/>
The above requires a student to have a computer but allows for a Windows or a Mac.

Course Schedule

Please see the Weekly Schedule Excel sheet in CANVAS's files folder for [Topic / Najafi's Lecturer, Guest speakers' lecture / Corresponding Book Chapters / Homeowrk Assignments](#).
The schedule is tentative; I reserve the right to make changes at any point in time with prior consent or notification. If there is any change in the weekly schedule, an announcement will be made by email, an announcement on Canvas, or during my lectures.

Important Dates

- <Dates 1> *See Weekly Schedule for Homework and Final Exam (Time, Location)*
<Date 2> *Research Paper Due (See Weekly Schedule)*
<Date 3> *Final Exam (See Weekly Schedule)*

Attendance Policy, Class Expectations , and Make-Up Policy

The face-to-face class lecture session is every Tuesday, from 7-9 (1:55 pm - 4:55 pm) in New Engineering building NEB-102. Off-campus students can watch the recorded video lecture on Canvas under the Modules weekly TODO section.

In addition to the weekly Homework (HW) assignment, **each student will prepare** a one- or two-page, bulleted lecture summary of:

1. Dr. Najafi's video lecture portion
2. guest speakers' presentations
3. In Canvas, see under the supplementary resources to watch links and include each link summary.

Each student's summary should include the following:

- The subject title,
- The goal and objective of the lectures,
- What you learned
- In conclusion, include your opinions and thoughts concerning the lectures, guest speakers' presentations, and the subject of the link you watched.
- Keep the summaries in bullet format.

Dr. Najafi and the TA will grade the summaries as class attendance within a week of submission.

The **page summary grade is part of class attendance**. Refer to the weekly schedule for assigned Homework, which will be due by the deadlines, with **no late submissions or exceptions**. Contact the TA or the Professor if you have questions about the weekly schedule. During class lectures, make sure to:

1. Participate, evaluate, and listen to other classmates' points of view.
2. Participate in the discussion, offer your thoughts, raise new issues, ask for clarification, and express your ideas.

Enrich the class discussions with example cases and personal experiences, etc.

Excused absences must be consistent with university policies in the Graduate Catalog (<https://catalog.ufl.edu/graduate/regulations>) and require appropriate documentation. Additional information can be found here: <https://gradcatalog.ufl.edu/graduate/regulations/>

Groups

I grouped students on CANVAS from a combination of in-class and online students. Each group should have a group leader. Groups must give each other member names, phone numbers, email addresses, and Zoom links. Group leaders work closely with their group members on the research outlined in the weekly schedule. Group work requires equal participation and contribution from each group member in writing the paper and creating the audio PowerPoint video presentation. Only group leaders submit group assignments on Canvas.

Research Paper and PPT Video Presentation Guidelines

- Topic Selection: Collaborate with group members to develop a research paper title that aligns with everyone's interests.
- Research: Use the UF library and databases to find relevant journal articles and information.
- References: Use Endnote Online to cite articles or papers.

- Paper Requirements:
 - The Research Paper must have at least 8000 words (excluding figures, tables, and references).
 - Format: English, Times New Roman, 12-point font, 1-inch margins on the top, bottom, left and right, 1.0 line spacing.
 - Sections to include:
 - Title, Abstract, Keywords
 - Introduction/Literature Review
 - Objectives
 - Methods
 - Results and Discussion
 - Conclusions
 - Recommendations & References
 - Acknowledgments & Bios
- PPT Presentation: Create a 15-minute audio-visual PowerPoint to present your research findings.
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| Grading Criteria for Research Paper | Total Points |
|---|---------------------|
| Title, Abstract, and Keywords | 10 |
| Introduction, Literature Review, Objectives | 15 |
| Methodology and Techniques | 40 |
| Results and Discussion | 20 |
| Conclusion, Recommendations and References | 15 |
| Total | 100 |

Evaluation of Grades

| Assignment | Total Points | Percentage of Final Grade (%) |
|--|---------------------|--------------------------------------|
| Group Assignments (6) (1 submission per group by group leader) | 100 each | 14% |
| Questions with Answers (6) (1 submission per group by group leader) | 100 e | 10% |
| Class Attendance: Summary of Dr. Najafi's and guest speakers' lectures (Individual submission) | 100 e | 8% |
| PPT of the Final Research Paper: Recorded video (1 submission per group by group leader) | 100 | 8% |
| Final Research Paper (1 submission per group by group leader) | 100 | 30% |
| Final Exam (Individual) | 100 | 30% |
| Total | | 100% |

Grading Policy

The following is given as an example only.

| Percent | Grade | Grade Points |
|----------------|--------------|---------------------|
| 93.4 - 100 | A | 4.00 |
| 90.0 - 93.3 | A- | 3.67 |
| 86.7 - 89.9 | B+ | 3.33 |
| 83.4 - 86.6 | B | 3.00 |
| 80.0 - 83.3 | B- | 2.67 |
| 76.7 - 79.9 | C+ | 2.33 |
| 73.4 - 76.6 | C | 2.00 |
| 70.0 - 73.3 | C- | 1.67 |
| 66.7 - 69.9 | D+ | 1.33 |
| 63.4 - 66.6 | D | 1.00 |
| 60.0 - 63.3 | D- | 0.67 |
| 0 - 59.9 | E | 0.00 |

More information on UF grading policy may be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

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/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by

a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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/process/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 varied perspectives and lived experiences within our community and is committed to supporting the University's core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

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 Undergraduate Coordinator
- HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@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:

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: <https://counseling.ufl.edu>, 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 email to Learning-support@ufl.edu.
<https://elearning.ufl.edu/>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

Online Students Complaints: <https://distance.ufl.edu/getting-help/>; <https://distance.ufl.edu/state-authorization-status/#student-complaint>.