

## Civil Engineering Materials

CGN 3501C Sections 0861, 0862, 0863, 092F

**Lecture Class Periods:** M, W, F, Period 3, 9:35 – 10:25 am

**Lecture Location:** MAEB 0211

**Lab Class Periods:** M, T, W, Th Periods 8-10, 3:00 – 6:00 pm

**Lab Location:** Weil 100

**Academic Term:** Spring 2025

### **Instructor:**

Mang Tia

[tia@ce.ufl.edu](mailto:tia@ce.ufl.edu)

352-294-7768

Office Hours: M, W, F, 10:45 am – 12 noon, Rm 265M Weil Hall

### **Teaching Assistant:**

Monday lab: Ethan Geiger ([geigere@ufl.edu](mailto:geigere@ufl.edu))

Tuesday lab: Jackson Carcaba ([jcarcaba@ufl.edu](mailto:jcarcaba@ufl.edu))

Wednesday lab: Ashley Ricketts ([ashleyricketts@ufl.edu](mailto:ashleyricketts@ufl.edu))

Thursday lab: Jackson Carcaba ([jcarcaba@ufl.edu](mailto:jcarcaba@ufl.edu))

### **Course Description**

(4 credits) A study of the principal materials used for engineering purposes with special attention to mechanical properties and their importance to the engineer. Hands-on experience in testing of civil engineering materials.

### **Course Co-Requisite**

EGM 3520 Mechanics of Materials

### **Course Objectives**

- To understand the physical properties of major construction materials, and to be able to effectively evaluate, select and apply them in civil engineering practice.
- To have knowledge on testing of construction materials and analysis of test data.
- To develop effective lab report writing skills.

### **Materials and Supply Fees**

\$25

### **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	Medium
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	Medium
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the	Medium

impact of engineering solutions in global, economic, environmental, and societal contexts	
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	Low
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Low

### **Required Textbooks and Software**

1. Course notes for CGN 3501C (to be downloaded from class web site)
2. Lab notes for CGN 3501C (to be downloaded from class web site)
3. Bituminous Materials by Mang Tia (to be downloaded from class web site)

### **Recommended Materials**

Title: Design and Control of Concrete Mixtures  
 Author: S. H. Kosmatka & M. L. Wilson  
 Publication date and edition: 2011, 15th Edition  
 ISBN number: 0-89312-272-6

### **Course Schedule**

Date	Lecture Topic
Jan 13	Introduction
Jan 15	Aggregates
Jan 17	Aggregates (continued)
Jan 20	Martin Luther King Jr. DAY (NO CLASS)
Jan 22	Aggregates (continued)
Jan 24	Portland cement
Jan 27	Portland cement
Jan 29	Fresh concrete
Jan 31	Hardened Concrete
Feb 3	Batching, Mixing & Transporting of Concrete
Feb 5	Placing, Finishing, Curing Concrete
Feb 7	Concreting under Special Conditions
Feb 10	Review for Test No.1
Feb 12	TEST NO. 1
Feb 14	Concrete Mix Design (Assig. #1)
Feb 17	Concrete Mix Design (continued)
Feb 19	Air-Entrained Concrete
Feb 21	Admixtures for Concrete
Feb 24	Special Concretes
Feb 26	Wood
Feb 28	Wood (continued)

Mar 3            Review for Test 2  
Mar 5            TEST NO. 2  
Mar 7            Stress-Strain Diagram

Mar 10          Fatigue Behavior  
Mar 12          Thermal Stress Analysis  
Mar 14          Introduction to Metals

SPRING BREAK March 17 – 21

Mar 24          Carbon Steel and Steel Alloys  
Mar 26          Non-Ferrous Metals & Corrosion of Metals  
Mar 28          Plastics

Mar 31          Review for Test 3  
Apr 2            TEST NO. 3  
Apr 4            Introduction to Asphalts

Apr 7            Tests on Asphalts  
Apr 9            Conventional Asphalt Specifications  
Apr 11          Liquid Asphalts

Apr 14          Asphalt Mixing Plant & Paving  
Apr 16          Superpave Asphalt Specification  
Apr 18          Asphalt Pavement Recycling

Apr 21          Review for Test 4  
Apr 23          TEST NO. 4

***Attendance Policy, Class Expectations, and Make-Up Policy***

**Students may attend class in person or through Zoom. Tests must be taken in person.** Class attendance will be taken. Students with a perfect attendance record will earn 5 bonus points (out of a total of 500). One bonus point will be deducted for each unexcused absence. For example, those with 2 unexcused absences will earn only 3 bonus points, and those with 10 unexcused absences will have 0 bonus point.

No make-up tests will be given except for medical reasons or unless arrangements have been made prior to tests.

Lab reports and assignments are usually due one week after they are assigned or as specified by the instructor. A penalty of 10% per school day shall be assessed on materials turned in late.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:  
<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

### ***Evaluation of Grades***

<b>Assignment</b>	<b>Total Points</b>	<b>Percentage of Final Grade</b>
Homework & lab reports	100	20%
Tests (4)	100	20%
Test 2	100	20%
Test 3	100	20%
Test 4	100	20%
<b>Total</b>	<b>500</b>	<b>100%</b>

### ***Grading Policy***

<b>Percent</b>	<b>Grade</b>	<b>Grade Points</b>
90.0 - 100	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
80.0 - 83.9	B	3.00
77.0 - 79.9	B-	2.67
74.0 - 76.9	C+	2.33
70.0 - 73.9	C	2.00
67.0 - 69.9	C-	1.67
64.0 - 66.9	D+	1.33
60.0 - 63.9	D	1.00
57.0 - 59.9	D-	0.67
0 - 56.9	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 Conduct 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. 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
- Jennifer Nappo, Director of Human Resources, 352-392-0904, [jpennacc@ufl.edu](mailto:jpennacc@ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@eng.ufl.edu](mailto: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](mailto: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](mailto: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/>.

#### **COVID-19**

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email [covid@shcc.ufl.edu](mailto:covid@shcc.ufl.edu)) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

### Academic Resources

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

**Career Resource 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>.

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