CIVL 327: CONCRETE & ASPHALT LABORATORY
Spring/2021
Credit Hours 1

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Office Hours: M-F 10:00 – 11:00 & T 13:00-14:15
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Class Time(s): M 14:00 – 15:50, LH 210
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Open Door Policy: My students are my priority. You are welcome to knock on my door at any time. Also, you can email me any time and I will respond to your questions/concerns as soon as I can. You are strongly encouraged to seek additional assistance outside of class.

COURSE OVERVIEW

Prerequisites: CIVL 307 — Materials Laboratory

Corequisites: CIVL 302 — Highway Engineering

Course Description: Laboratory applications involving design, preparation, curing and testing of asphalt and Portland Cement Concrete. Includes testing for component properties, component selection and grading, material handling, mix design, blending, applicable standards and specifications, construction practices, quality control, specimen testing and safety. Emphasis is placed on professional laboratory report preparation.

Course Learning Outcomes:

Upon completion of CIVL 327, Concrete & Asphalt Laboratory, a student should obtain a proficient level of knowledge for the following course goals:

1. Preparation of concrete mix design calculations.
2. Conduct an evaluation of concrete strength versus curing conditions, curing duration, and effect of additives (air entraining, water reducing, and high early strength.)
3. Analyze statistical variables and generate a job mix curve for local materials.
4. Describe test procedures and evaluation criteria of liquid asphalt properties.
5. Prepare laboratory specimens and conduct lab tests needed to collect data and analyze results using the Marshall Mix design procedure
6. Describe Superpave Mix design and testing procedures.
7. Recognize issues of concrete and asphalt manufacturing/plant operation

8. Develop proficiency in preparation of technical lab reports, describing procedures, results and findings.

Required Textbook/Materials:

The following textbooks are **REQUIRED** for this course:

Design and Control of Concrete Mixtures, 16th (2016) Ed., Portland Cement Association.

Traffic & Highway Engineering, 5th Ed., N.J. Garber, L.A. Hoel, CANGAGE Learning, 2015.

Course Format: CIVL 327 is a laboratory course that requires active student participation. Students are expected to read the relevant course material ***before*** coming to class. During class time, students will be assigned in-class activities and drills to have hands-on practice of the material covered.

COURSE RESOURCES

Writing/Tutoring Assistance: I strongly encourage you to visit the Writing Lab and Tutoring Center (in the Student Success Center in Thompson Hall), which offers one-on-one and group tutoring and consultations for students working on writing assignments.

Canvas /Citadel's Approved Learning Management System*:* Over the course of the semester, I may post reading notes, lesson plans, discussion prompts, self-guided lectures, grades, and other administrative information on the course Canvas site. Students must check Canvas each lesson for pertinent updates and other critical information.

COURSE POLICIES, EXPECTATIONS, AND REQUIREMENTS

COVID-19 Mandatory Mask Policy: You are mandated to wear a mask while in the classroom. If you do not wear a mask, you will be asked to leave class immediately and disciplinary action will be taken. Only time a mask can be pulled away in class is to drink water.

Updated Contact Information: Students must update contact information at the start of each semester to ensure instructor-student communication outside of Canvas, if required.

Course Material: Course material is for the sole use of students currently enrolled in the course and not for redistribution to electronic file sharing sites (share drives, Chegg, Course Hero, etc.).

Disability Policy: The Citadel complies with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Students with disabilities who seek accommodations must make their request through Services for Students with Disabilities in the Student Success Center (117 Thompson Hall, 843-953-6877) to verify their eligibility and to identify appropriate accommodations. Students should speak to his/her professor and also make requests for academic accommodations to services for students with disabilities so we can ensure these accommodations and facilitate student success. If you have an immediate access need, please reach out to your faculty immediately in person, via email, or during office hours. Students with short-term disabilities, such as a broken arm, can often work with instructors to

minimize classroom barriers. In situations where additional assistance is needed, students should contact the Services for Students with Disabilities as noted above. Please know that accommodations are not retroactive, so avoid any delays.

Weather & Campus Emergencies: In case of adverse weather, or other campus emergency, critical information will be posted on the Bulldog Alert homepage, as well as pushed to email addresses and phone numbers of those people who have updated their contact information within the Bulldog Alerts section of the Lesesne Gateway (or Canvas).

If you have not yet updated your contact information, or set up course notifications within Canvas, you should do so immediately.

Privacy Statement: The Citadel is committed to safeguarding and maintaining the privacy of your personal information. Please see privacy statements below related to technology used in this course.

Canvas Privacy Policy: https://www.instructure.com/policies/privacy
Zoom Privacy Policy: https://zoom.us/privacy
LockDown Browser Privacy Policy: https://web.respondus.com/privacy-policy/

Continuity of Instruction (COI): During a pandemic or catastrophic event, and after all face-to-face instruction has been suspended, communication for our class will continue to take place through Citadel email and Canvas. In the event of such an emergency, check your Citadel email account and Canvas course announcements for instructions. The following areas will also adjust during COI:

Course Requirements

- Computer
- Reliable Internet connection and software (DSL, LAN, or cable connection desirable)
- Access to Canvas
- Headset or Earbuds
- Webcam
- Scanning (possibly with smartphone)

Course Structure

This course will be delivered in a hybrid format with two alternating groups of face-to-face and online students. The online sessions will be held through virtual conferencing via the Citadel's Learning Management System, Canvas. You will need your Citadel CWID and password to login to the course from the Canvas home page (https://lesesnegateway.citadel.edu/cp/home/displaylogin).

Virtual Conferencing: Zoom will be used as the virtual conferencing platform in this class. Your participation in live Zoom sessions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. The use of all recordings will be in keeping with The Citadel's Privacy Policy.

Zoom Expectations: *If you do not follow these expectations, you may be removed from the Zoom meeting and marked as absent.*

1. Cameras must be on and you must remain in view during the Zoom sessions. Classes may be recorded, conduct yourself appropriately.

2. Remain on mute while your professor and/or classmates are speaking.
3. Class materials (books, notes etc.) should be out and accessible throughout the class.
4. Honor Code and Code of Conduct apply even in the virtual environment.
5. Taking photos, screenshots or recordings during class is prohibited.
6. Uniform or the appropriate attire is required at all times.
7. All classroom norms and rules apply when in a Zoom meeting. No sleeping, eating, leaving the virtual meeting without permission, being on your phone, playing video games, working on another class, etc.
8. Electronic backgrounds on your Zoom platform must be appropriate and you cannot have any inappropriate items behind you in the room while on a Zoom meeting.

Technical Assistance: If you need technical assistance at any time during the course or to report a problem you can:

- Email the Center for Excellence and Innovation in Teaching, Learning, and Distance Education (CEITL &DE) at ceitlde@citadel.edu
- Visit the Canvas tutorials found in your Citadel Online Student Resource course, or visit the HELP MENU in your course navigation bar.

Code of Conduct: Responsibility for professional conduct rests with students as adult individuals and as members of The Citadel community. CGC students and cadets are expected to conduct themselves as responsible adults. All members of the campus community are expected to use reasonable judgement in all aspects of campus life and activity and to show due concern for the welfare and rights of others. Students are expected to adhere to all federal, state, and local laws. The Citadel protects freedom of action and speech, so long as the exercise of this freedom is not of an inflammatory or demeaning nature and does not interfere with the operation of the College. The Citadel's Conduct Policy prohibits the possession of drugs, destruction of property, making false statements of emergency situations, physical or verbal abuse, or harassment of any sort. Students who violate the rules and regulations of The Citadel are subject to expulsion or lesser sanctions. These rules and regulations are published in "Regulations for Non-Cadet Students for Fall and Spring Semester And All Students, Including Cadets, for Maymester or Summer School," which can be found online at: http://www.citadel.edu/root/images/cgc/cgc_catalog/cgc-academic-catalog.pdf

Academic Integrity Statement: Students will submit only their own work for evaluation in this course, except as appropriately documented. All rules and stipulations of The Citadel's Honor Manual and Honor Code apply to this course, including its definitions and policies related to cheating, lying, stealing, and non-toleration. Cheating or evidence of academic dishonesty on any work submitted for evaluation will result in an "F" for both the assignment and the course. To ensure academic integrity, you must abide by both the letter and spirit of all honor, documentation, and citation requirements. Plagiarism in any form is unacceptable, as it fails to meet any standard of academic work. It is your responsibility to read and understand what constitutes intentional and negligent plagiarism. Plagiarism, intentional or negligent, may be referred as an honor violation. The complete Honor Manual may be found at: http://krausecenter.citadel.edu/wp-content/uploads/2019/08/2019-2020-Honor-Manual-WEB.pdf and the Honor Code can be found in the CGC Course Catalog: http://www.citadel.edu/root/images/cgc/cgc-academic-catalog.pdf

Student Use of Electronic Devices: Students may use laptop computers or tablets for taking notes so long as they do so in a manner that does not interfere with the learning of others. Students may not play games, work on other assignments, or use their electronic devices during class except for taking notes and/or completing instructor-assigned work.

Missed or Late Work Policy: All tests, quizzes, and final examinations must be taken on the assigned date and time. Any exceptions to this policy **must** be approved **in advance** by the instructor.
All course deliverables (homework, assignments, etc) are due as assigned. No late deliverables will be accepted without **approval prior to the due date**. Late submissions will receive reduced grades.

Attendance and Participation Requirements: I will record and report attendance for every class meeting. It is the student's responsibility to arrive to class on time, and to maintain class attendance throughout the duration of the semester. With this in mind:

- Class attendance is mandatory.
- Students may miss class only for authorized reasons (athletic events, academic travel, special ceremonies, guard duties, etc.)
- Illness and personal emergencies may also cause students to be absent for legitimate reasons.
- Should a student miss class for any reason, he/she will make every reasonable effort to notify the professor in advance of the absence.
- The student will be responsible for any material covered in class.
- If a student knows he/she will be absent for an examination or on the due date of a major graded requirement, that student will coordinate with his/her instructor for completion/submission requirements.
- Whether excused or unexcused, absences in excess of 20% of the meetings of a particular course can, at the discretion of the instructor, result in a grade of "F" in the course.)
- Active participation in class discussions and activities is an expectation of this course.

Assignments: Refer to the course schedule table to the assigned activities for each class. All assignments should be submitted through Canvas.

Course Grades:

Basis of Grade

Course Requirement	Weight
Professionalism	10%
Lab quizzes	15%
Sieve analysis exercise	10%
sustainability submittal	10%
Lab Project	40%
Final Lab Exam	15%
Total	**100%**

These weights may be changed at the discretion of the professor to reflect the emphasis placed on the material presented during the course. All examinations, homework, and other student work are the intellectual property of the student but may be retained by the professor. Examination dates and homework assignments are indicated in the Course Schedule but are subject to change at the professor's discretion. **It is the responsibility of the student to keep abreast of the class schedule.** Absence from class will not be acceptable as a valid reason for missing a scheduled assignment such as a HW or an exam.

Grading Scale:

Final Grading is based on the following scale for *Cadets*:
A= 90-100% B= 80-89% C= 70-79% D= 60-69% F=59 and below

PROFESSIONALISM

The instructor expects and insists that the class environment remain professional, businesslike, and conducive to learning. Behavior or actions that disrupt this environment are not acceptable and will subject the student to removal from the class by the University Public Safety Department. Use of computers, cellular phones, PDAs, text messaging devices, or any other electronic devices is not permitted during class unless directed by the instructor. **The use of an electronic device for non-class activities will result in a deduction of 1% from the final grade per infraction with or without warning.** Any student who uses electronics in class for the third time will be asked to leave the class and not return during that class session. Repeated disruption of the class environment will subject a student to expulsion from the course, solely at the instructor's discretion. **Students owning cellular telephones, PDAs, or any other electronic or mechanical devices that emit audible alarms must turn them off or set them to a silent mode** immediately upon the beginning of the class.
Assessing the student's credit for "professionalism" portion of the final grade is at the sole discretion of the instructor.

Professional Practice.

Students will meet professional practice expectations including professional demeanor and work ethic, consistent daily preparation, commitment to learning and fulfilling obligations, and engagement in classroom activities.

Attendance and note taking is *the* way to obtain the course notes. If absent, students may acquire notes from their classmates. Meaningful note creation (not class transcription) effectively engages long-term memory; "I'm writing it down to remember it now" (Field Notes 2017).

Students may not use music or video players during class. Analogue note taking is strongly preferred. *The use of an electronic device for non-class activities will result in a deduction of 1% from the final grade per infraction with or without warning.*

Attendance and participation

- **Attendance is required at all class sessions. Unexcused absences and late arrivals will be penalized.** The instructor MUST be notified of any anticipated absences in writing (email). Otherwise, the absence will be noted as unexcused.
- **Each unexcused absence will result in deduction of 5% of course grade in participation.**
- **Late arrivals or sneaking off the class for less than 10 minutes will be penalized by 1% of course grade toward participation. Missing more than 10 minutes of each session will be considered an absence.**
- "Absences, whether excused or unexcused, in excess of 20% of the meetings of a particular course can, at the discretion of the professor, result in a grade of "F" in the course" (The Citadel 2017). Attendance could be taken at any time of the lab session. If late for class, the student must inform the professor of his or her presence.

LAB QUIZZES

There will be a quiz at the start of every lab. Students are expected to come to class prepared by having read the assigned course material including relevant sections of the textbook.

Honor code, cheating and plagiarism

"A cadet does not lie, cheat, or steal, nor tolerate those who do" (The Citadel 2018). Society places its trust in engineers to ensure public safety. Accordingly, neither the Citadel Honor Code nor the engineers Code of Ethics will tolerate any form of cheating (ASCE 2017; NSPE 2007). Any evidence of direct copying of assignments may result in an honor violation; therefore, students should not share homework.

Testing Schedule, Class Responsibilities & Recording Data for course-wide use

- Results of tests should be entered on **Excel spreadsheet** in tablet for each of the three course sections.
- It is important that all **data be recorded** for each of the test cylinders.
- Students must identify and **coordinate break dates** for 3-day, 7-day, 14-day, 21-day and 28-day tests and are **responsible** to return to the lab at necessary times to break cylinders.
- Students are responsible for **striping forms day after the lab**, labeling each cylinder according to assigned codes and placing cylinders in the appropriate curing locations.

Lab Safety & Lab Procedures

- Safety First! The **instructor will review safety procedures** and laboratory tests with students prior to conducting any laboratory tests. Safety equipment must be worn when appropriate, and safety procedures must be followed.
- Students are responsible for **cleaning** the equipment and lab after each lab period. This includes cleaning equipment, storing equipment, cleaning mixing tools, removing debris, hosing our catch drain and other tasks as identified by course instructor.

Preparation of Lab Reports, Data Summary and Calculation Submittals

- Lab submittals are generally **due one or two weeks** after completion of data collection and testing.
- Submittal of **data summaries** will be required for some lab procedures and exercises.
- Submittal of **calculations and analysis summaries** will be required for some exercises.
- On occasion, data summaries and calculations will need to be incorporated into **lab report submittals**.
- Specific instructions regarding the objectives, contents and format of lab reports, data summaries and calculations will be **provided by the professor** and should be closely followed by students in preparing all submittals.
- All lab reports and lab submittals need to be submitted electronically and named: **last name_title of submittal**. Hard copies will not be accepted and files named wrong will not be graded.
- Students need to go through their graded submissions every time.

Sustainability Submittal and Field Trips

- Students will be required to prepare a memo related to current topics on **sustainability issues** pertaining to concrete and asphalt materials.
- It is the intent of the instructors to arrange **field trips** to: 1.) Concrete manufacturing plant and 2.) Asphalt manufacturing plant. Field trips will be scheduled outside the scheduled afternoon lab periods. Students are highly encouraged to make necessary arrangements to participate in field trips that will provide valuable learning experiences.

Final Exam

There will be an open-book, 1hr and 50min comprehensive exam at the last day of the lab.

Academic Integrity

The Citadel Honor Code applies equally to all students in the civil engineering program. The purpose of this section is to establish an understanding of what is and is **not allowed** in conducting academic work and submitting assignments for this laboratory course. Students must comply with the following requirements:

- Since each laboratory report carries the name of the student submitting the report, and that **individual student** must complete ALL work. Therefore, copying of ANY part of someone else's work is **NOT permitted.**
- There will be **NO electronic file transfer** of laboratory data or related material directly between students. Electronic data files are to be provided by and obtained DIRECTLY from the professor.
- Test data will be collected through group laboratory procedures and combined with data from all five (5) student-laboratory sections, (4-day; 1-evening). Once data has been obtained students must conduct data analysis, evaluation, data graphs, results and conclusions on an **individual basis**.
- All work shown in the report must be documented in detail. More specifically, all lab reports and submittals must show a direct connection between the data collected during tests, and any **results or conclusions**. (Results or numerical values cannot mysteriously appear in the report)

COURSE SCHEDULE

Note: Schedule subject to change. Additional reading/activities will be assigned as needed.

Week	Subject	READINGS	Assignments Due (Tentative)
1	Syllabus, Grading Rubrics, Explanation of Sustainability Memo, Concrete Mix Design	Ch. 1 and Ch. 12	
2	Sieve Analysis, Fineness Modulus Exercise, Properties of Concrete Quiz and Discussion, 3000 psi Mix, Strength vs. Curing Duration	Ch. 15 and Ch. 18	**Sustainability Submittal**
3	Curing Quiz and Discussion, 3,000 psi mix, Strength vs. Curing Conditions	Ch. 17	**Fineness Modulus Submittal** 3000 psi Mix Design Excel Sheet
4	Placing and Finishing Quiz and Discussion 4,000 psi mix	Ch. 8 p. 181-195 and Ch. 9	4000 psi Mix Design Excel Sheet
5	Admixtures Quiz and Discussion Strength vs. Curing Conditions Sub. Explanation 5,000 psi mix		5000 psi Mix Design Excel Sheet
6	Strength vs. Curing Duration Sub. Explanation 3,000 psi mix with Admixture	Ch. 10 and 11	3000 psi with Admixture 1 Mix Design Excel Sheet **Strength vs. Curing Location/Conditions Lab Submittal (1)**
7	Reinforcement Quiz and Discussion 3,000 psi mix with Admixture	Ch. 6	3000 psi with Admixture 2 Mix Design Excel Sheet **Strength vs. Curing Duration Lab Submittal (2)**
8	Supplementary Cementitious Materials Quiz and Discussion Job Mix Curve Explanation High-Performance Concrete	Ch. 15	

9	Prepare Aggregates for Marshall Mix Design, Blending Materials	Class Handouts	
10	Admixtures Sub. Explanation Prepare Marshall Specimens (Pills) of varying % a.c.	Class Handouts	**Job Mix Curve Lab Submittal (3)**
11	Test Marshall Specimens (Pills), Destructive testing of samples.	Class Handouts	**3000 psi with no admixtures vs. 3000 psi with admixtures Lab Submittal (4)**
12	Prepare & Test Superpave Mix Review material covered in lab for final exam. Clean lab.		**Revised Project for bonus points!**
13	Comprehensive Final Lab Exam		**Marshall Mix Design Lab Report**

DISCLAIMER

The course schedule is a plan. The professor reserves the right to make changes in the schedule. Students will be notified accordingly.

RIGHT TO REVISE

The instructor reserves the right to modify, solely at his discretion, the course content, and the number, format, and due dates of exams, assignments, quizzes, or projects as well as their weights that will be used to determine the final grade.