

**M.E. Rinker Sr. School of Building Construction,
University of Florida
Course Syllabus
BCN 3223 Soils and Concrete Construction**

Prerequisite: BCN 1210

Prerequisite or Co-requisite: BCN 2405

Description: This course will familiarize students with the construction process that includes, site clearing, soil mechanics, testing, foundations, concrete mix design, concrete construction practice, testing, safety, and ethics.

Method: 2 – 1 hr lectures, 1 - 2 hr laboratories

Course Learning Outcomes:

Upon completion of the course students will demonstrate their ability to:

1. Understand the basic principles of concrete construction in hot/cold weather including concrete making materials, concrete mix design, and concrete testing (ACCE SLO 8 and 15).
2. Understand how concrete embodied energy can be reduced by replacing Portland cement with fly ash/slag and other pozzolanic materials (ACCE SLO 18).
3. Perform basic plastic and hardened concrete tests (ACCE SLO 8 and 15).
4. Prepare accurate report and interpret concrete and soil test data (ACCE SLO 1).
5. Understand the basic principles of soil mechanics, including soil classification, soil compaction, soil testing and reading soil borehole logs (ACCE SLO 8).
6. Understand basic principles of design and construction of shallow and pile foundations (ACCE SLO 19).

Instructor: Dr. Larry C. Muszynski, RNK 327, 273-1160
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Office hours:
TBD

Lab Instructor: Mr. Ebenezer Takey-Otoo
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ASSESSMENT METHODS AND TARGETS:

| Assessment | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 | Target |
|-----------------|-------|-------|-------|-------|-------|-------|----------------------|
| Mid-term Exam | X | | | | | | 70% or better |
| Quiz 1 | | X | | | | | 70% or better |
| Lab Reports 1-3 | | | X | | | | 80% or better |
| Lab Reports 1-6 | | | | X | | | 80% or better |
| Lab Reports 4-6 | | | | | X | | 80% or better |
| Quiz 2 | | | | | X | | 70% or better |
| Final Exam | | | | | | X | 70% or better |

Texts:

1. Design and Control of Concrete Mixtures, Portland Cement Association, (15th edition).
2. Soils and Foundations, Liu and Evett (8th edition).
3. Powerpoints

Suggested References:

- (1) Building Code Requirements for Reinforced Concrete, American Concrete Institute, (latest edition).
- (2) Soils in Construction, Schroeder, Dickenson & Warrington, 5th edition.

GRADING SYSTEM:

| | |
|---------------------|--------------------|
| 1 Mid-term Exam | =100 points |
| 2 Quizzes | =100 points |
| Lab Reports | =150points |
| Final Exam | =100 points |
| Homework/Attendance | = <u>25 points</u> |
| Total | =475 points |

Grades will be computed according to the University of Florida Grading Policy.

| | |
|----|--------------|
| A | 93-100 |
| A- | 90-92.9 |
| B+ | 87-89.9 |
| B | 83-86.9 |
| B- | 80-82.9 |
| C+ | 77-79.9 |
| C | 73-76.9 |
| C- | 70-72.9 |
| D+ | 67-69.9 |
| D | 63-66.9 |
| D- | 60-62.9 |
| E | less than 60 |

EXAMS AND QUIZZES: Quizzes will be one hour in duration and will be normally given during class hours. Midterm will be given during the two hour lab time on Thursday during 6th and 7th period.
Note: Quiz dates a subject to change. Any changes will be announced in class or on the professor's web site for the class.

MAKE-UP EXAMS: **No make-up quizzes will be offered or given.**

HOMEWORK: Assigned homework problems are due at the beginning of the next lecture period. **LATE HOMEWORK WILL NOT BE ACCEPTED.** All sketches should be neatly drawn using a scale. All answers should be underlined and pages stapled together. Homework may be graded by detailed checking or based on overall attempt. Instructor may choose not to grade some homework. Homework grades will be computed according to these policies.

ATTENDANCE: **ATTENDANCE IS REQUIRED.** Instructor may choose the days for taking the roll.

HONOR POLICY: The Rinker School policy agreed to by all faculty is that professors will **always** provide a failing grade **for the entire course** in which a student is found to be cheating on any test, quiz, paper, or project or any other academic dishonesty.

CELL PHONES ARE TO BE TURNED OFF AND NOT ALLOWED TO BE USED DURING QUIZZES OR EXAMS – THEY MUST ALSO BE PLACED IN YOUR BACKPACK OR PURSE AND NOT BE ON YOUR PERSON.

LAPTOPs, NETBOOKs and TABLET COMPUTERS ARE NOT TO BE USED DURING QUIZZES OR EXAMS. THEY ALSO MUST BE TURNED OFF AND STORED APPROPRIATELY.

YOU WILL NEED A CALCULATOR – SMART PHONES WILL NOT BE ALLOWED IN LIEU OF A CALCULATOR.

STUDENTS WITH DISABILITIES:

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must provide this documentation to the Instructor when requesting accommodation.

STUDENT RESPONSIBILITIES:

1. Attend all classes and turn in homework when due.
2. Be aware of all the announcements or changes made by the instructor for this course.
3. Not to engage in talking or disruptive behavior in the class.
4. Read the text assignments before the class and come prepared with questions.
5. Work extra problems to understand each topic. Seek timely help if you are not making satisfactory progress.
6. Inform the instructor if you withdraw from this course or otherwise terminate your activity in this course.
7. Be honest in all homework and quizzes. Be aware of the Honor System at the University of Florida.

SEMESTER SCHEDULE

| <u>Week</u> | <u>Topics</u> | <u>Assignment</u> |
|--------------------|---|-------------------|
| 1&2 | Concrete Fundamentals | Ch 3-9 & PP |
| 3 | Concrete Testing – Aggregates & Plastic Concrete <ul style="list-style-type: none">• Laboratory 1: Aggregate Properties• Laboratory 2: Plastic Properties Demonstration (not graded) | Ch. 18 (PCA) |
| 4 &5 | Mix design <ul style="list-style-type: none">• Laboratory 3: Mix Design | Ch. 12 (PCA) |
| Quiz 1..... | | TBD |
| 6 | Concrete Mixing, Placing and Curing <ul style="list-style-type: none">• Cast-in-Place | Ch.13-15(PCA) |
| 7 | Concrete Testing – Hardened Concrete <ul style="list-style-type: none">▪ Laboratory 4: Mechanical Properties | Ch. 17 (PCA) |
| 8 | Hot-Weather Concreting | Ch 16 (PCA) |

Midterm Exam

TBD

| | | |
|--------------------|--|-------------|
| 9 &10 | Introduction to Soil, Soil Exploration and Reports | Ch. 1 & 3 |
| 11 | Properties of Soils <ul style="list-style-type: none">• Laboratory 5 : Soils Classification | Ch. 2 |
| 12 | Soil Compaction <ul style="list-style-type: none">• Laboratory 6: Soil Compaction | Ch. 4 |
| Quiz 2..... | | TBD |
| | <ul style="list-style-type: none">• Laboratory 7: In-Place Unit Weight | |
| 13 -15 | Shallow & Pile Foundations | Ch. 8 and 9 |

Final Exam Time: TBD
