

1. CEE 4600 (5600) – Civil Engineering Materials II
2. Course credit hours: 3
 Contact hours per week: 4
 Credit category: Engineering Topics (Significant Design)
3. Course coordinator: L. K. Crouch
4. Textbook: Basic Construction Materials, Methods, and Testing, Herubin and Marotta, Fifth Edition.

5. Course information:

2020 Catalog description	High-strength PCC mixture design and adjustment. Concrete formwork design. Design and testing of flowable fill and pervious concrete mixtures. Masonry materials evaluation. Aggregate production and improvement.
Prerequisite(s)	CEE 3030
Course type	Selected Elective

6. Course instructional outcomes:

Course Outcome No.	Course Outcome (CO)	ABET Student Outcome
CO1	Be familiar with the techniques used in design and testing of high-strength PCC, self-consolidating PCC, high volume fly ash PCC and pervious PCC	1, 2, 3, 6
CO2	Be familiar with design and testing of controlled low-strength materials	1, 2, 3, 6
CO3	Design and analyze PCC formwork	1, 2
CO4	Perform several ASTM laboratory evaluations of masonry materials	6
CO5	Discuss aggregate production and improvement	1

ABET criterion 3 Student Outcomes addressed by this course:

SO No.	Student Outcome (SO)
3.1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
3.2	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
3.3	An ability to communicate effectively with a range of audiences
3.6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

7. Course topics:
 1. Design and testing procedures for high-strength PCC, self-consolidating PCC, high volume fly ash PCC, controlled low-strength materials, and pervious PCC (50%)
 2. ACI design and analysis techniques for PCC formwork (20%)
 3. ASTM techniques for evaluating masonry materials (15%)
 4. Aggregate production and improvement (15%)

Program criteria (curriculum) addressed by this course:

1. Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science
 2. Analyze and solve problems in at least four technical areas appropriate to civil engineering
 3. Conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data
 4. Design a system, component, or process in at least two civil engineering contexts
8. Additional topics, assignments, or requirements for dual-level (4000/5000) course:
Additional work in the form of a term paper, presentation, computer modeling exercise or laboratory project on a subject chosen in consultation with the instructor will be required for graduate credit.

9. Date: 01/29/2020