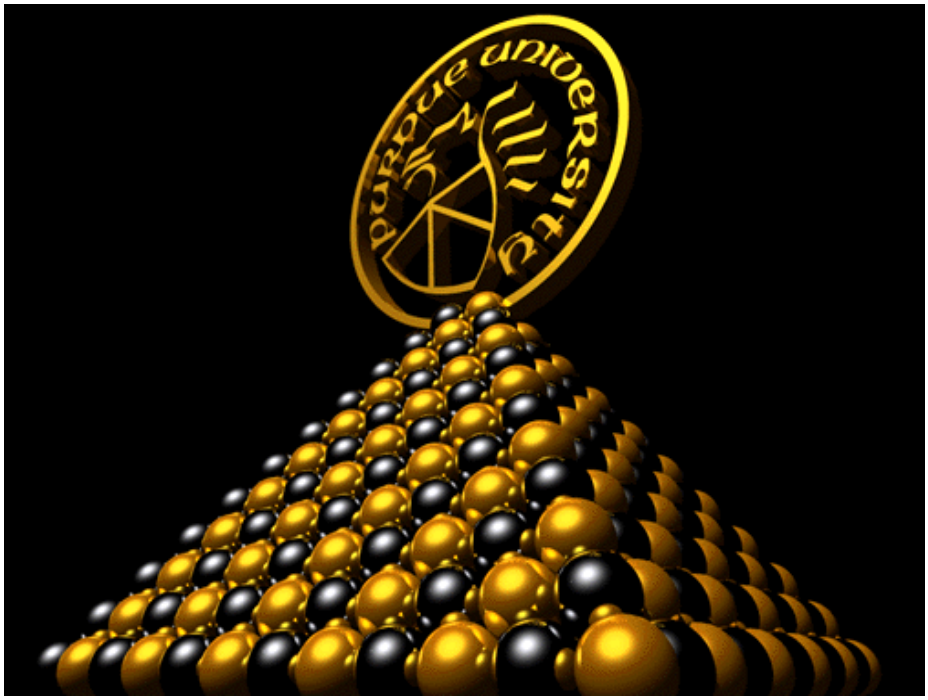
CE 398

Introduction to Civil Engineering Systems Design



With well-rounded qualities glued together with determination and discipline, we will reach the pinnacle!

Course Information, Fall 2015

Sam Labi, Associate Professor

Purdue University
Lyles School of Civil Engineering, G175A
Hampton Hall, 550 Stadium Mall Drive
W. Lafayette, IN 47907

August 2015

CE 398
Introduction to Civil Engineering Systems Design

Class Time and Venue: Tuesdays and Thursdays, 12 NOON to 1:15 PM Room: HAMP 1144

Contact Information:
Instructor (Sam Labi) HAMP G175A 637-6038 (cell, text only), labi@purdue.edu
Teaching Assistant (Sky Chen) HAMP 1268/2155 494-7381/2206, chen1670@purdue.edu
Office Hours: Instructor: Mon 12-1PM, at G-175A Teaching Assistant: Wed 4-6PM, at 1268.

Course Type
CE 398, a core course for undergraduate studies in Civil Engineering, is useful to all undergraduate students intending to pursue a career in civil engineering and related disciplines.

Course Objectives
1. Provide the CE undergraduate with an **overall picture of civil engineering systems development**, from the initial phase of needs assessment, to planning, design, implementation (construction), operations, maintenance, and end of life (system replacement).
2. Expose the CE undergraduate to the various **tasks (**such as system description, analysis, and evaluation) that are faced by civil engineers at the phases of the system development process.
3. Equip the student with the requisite **analytical tools** needed to carry out the tasks encountered at the various phases of the system development process. These tools include engineering economics, life-cycle costing, financial analysis, probability-based and statistical modeling, simulation, optimization, risk & reliability, and systems dynamics.
4. Help the CE student to **design a CE system component**, or process to meet desired needs; Expose the CE undergraduate to real-life instances and applications and lessons learned that are associated with each phase of the CE systems design process.
5. Expose the CE undergraduate to **current and emerging issues** of civil engineering systems vulnerability and resilience, and sustainability.
6. Help the student to prepare for **CE licensure** by exposing them to topics such as ethics and economic analysis.
7. Help the CE undergraduate to develop vital skills of **technical report writing**, and to work effectively in teams.
8. Serve as an integrated part of a **three-course sequence**: (Semester 6) Systems Design, (Sem 7) Management and Communication, (Sem 8) Senior Design.

Course Description
This course introduces a fundamental systems approach to civil engineering systems design and includes the various phases of civil systems development. In order to provide a solid context and foundation for the rest of course, the student is made to understand and appreciate the evolution of civil engineering disciplines, the definition of a system, and the typical goals and objectives of civil engineering systems. Then the course discusses the different phases of

development and the tasks typically faced by civil engineers at each phase. Next, current and emerging issues associated with civil systems development such as legal, ethics, CE systems vulnerability, resilience, and sustainability, are discussed.

The course exposes the CE undergraduate to real life instances and applications and lessons learned that are associated with each phase of the CE systems design process, and inculcates in the student, the need for life-long learning in today's fast-evolving world. The course also helps the CE undergraduate to develop vital skills of technical report-writing and oral presentation. The course applies the concepts to problems in the various areas of civil engineering and provides a vast array of illustrations, examples, numerical problems, case histories, and case studies in the various civil engineering disciplines: architectural, construction, environmental, geotechnical, hydraulics, materials, structures, and transportation. The didactic mechanisms in the course includes lecture presentations, quizzes, video shows, homework assignments, software demonstrations, jeopardy competitions, a term project, and lectures by external speakers.

Course Material

The textbook for the course is:
Introduction to Civil Engineering Systems, by S. Labi, published by Wiley, 2014.
Also, supplemental course materials including powerpoints will be provided on the course web site. The address is:
https://mycourses.purdue.edu/

Class Attendance

Yup! Everyone expects you to attend classes except those that are designated as "optional". Absences should be preceded by notification (e-mail or otherwise).

Homework Policy

Please turn in your homework just before the start of class session on the day that they are due. Justifiable excuses for late submission should be preceded by early notification (e-mail or otherwise) with a good explanation. Every late day of submission results in 20% loss of overall points for the assignment. Let's resolve any adjustments to homework grades within two weeks of the day on which that homework assignment is returned. All questions about homework scores should first be directed to the TA. All grades must be finalized within this period -- in other words, no additional points shall be awarded at the end of the semester to "boost" your grade even if you are just below the grade cutoff.

Grading Policy

There will be a mid-term exam and a final exam. With or without prior notification, in-class quizzes may be given. The grading distribution for the course is as follows:

Final Exam	20%
Mid-Term Exam	20%
Term Project	20%
Homework	20%
Quizzes	20%

Grade Limits will be as follows:

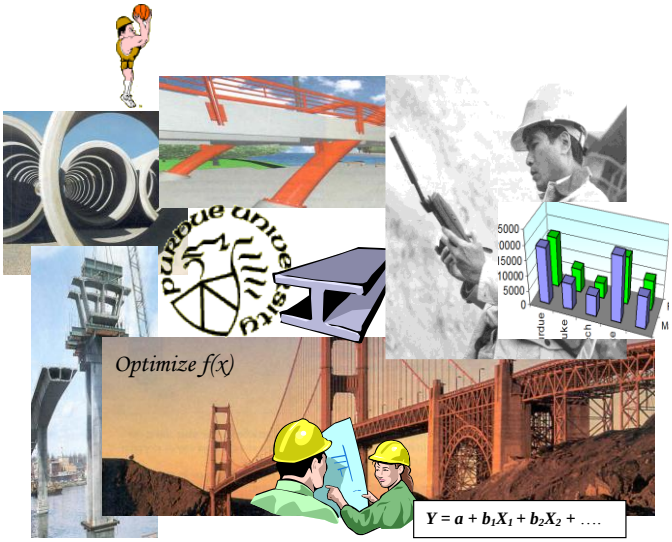
90 – 100%	A
80 – 89.99%	B
70 – 79.99%	C
60 – 69.99%	D
<60%	F

In the course of the semester, the above grading scheme may be amended at the discretion of the Instructor.

Student Conduct:

Students are expected to abide by the Purdue University Student Conduct Code. Further, it is assumed that each and every student subscribes to a personal code of ethics based on a value system that is adheres to the highest standards of academic integrity. Any breach of academic honesty or disruptive classroom behavior will be handled in accordance with established university procedures. You will be required to carry out assignments independently (simply put: "thou shall not copy thy neighbor's homework").

I am assuming you want to have a great and stress-free semester. And let's make it an interesting one too! Go Boilers!



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COURSE OUTLINE