CE 494 -101 Civil Engineering Design I
Saturday 9:00 AM
Colton Hall 416 Sep 05, 2017 - Dec 13

Fall 2017

Texts: No Textbook. Handout Materials Only.

Instructor: Joseph Baladi, P.E, P.P, CME, CPWM.

Contact information: joseph.baladi@njit.edu

Prerequisite: *Senior standing in civil engineering. Simulates the submission and acceptance process normally associated with the initial design phases for a civil engineering project. Familiarizes students with the preparation of sketch plats, preliminary engineering design, and a related environmental assessment. Requirements include written submittals and oral presentations in defense of the project.*

Date	**Topic**
Week 1	First class meeting, formation of teams & project overview. Lecture - Introduction to Land Development, Cad Data Management, Boundary Surveys and Topographic Maps. Project Management.
Week 2	Lecture - Subdivisions, Matching Existing Grade (Designing Parcels and Roadways to Minimize Grading), Editing CAD designs. NJDOT Design Standards. Handout.
Week 3	Subdivision boundary analysis and area computations may be submitted for informal review. Lecture Roadway Design: Alignments, Profiles and Cross Sections.
Week 4	Submittal deadline for Phase I Conceptual Subdivision Plan. Lecture - Roadway Design: Cul-de-sac and Intersection Design. Roadway Widening. RFP.
Week 5	Lecture - Soil Maps, Stormwater Management: Detention Basins and Water Quality Devices. FEMA MAPS & Procedures.
Week 6	Review of Conceptual Plans with each team. Lecture – Stormwater Management: Drainage Area Maps, Sizing Detention Basins and Storm Sewers. Review Check list
Week 7	Review of Conceptual Plans with each team. Lecture –. Sanitary and Domestic Water Services. Incorporate Signal Layout and Handout.
Week 8	Lecture – Handout: Site Grading. GIS Incorporation.
Week 9	Discussion on Environmental Impact Report and Wetland analysis. Lecture - Planning Board Report Requirements, Soil Erosion and Sediment Control Plans
Week 10	Planning Board Reports Due. Lecture - Residential Grading: Driveways Profiles, Cost Estimate, Management and I
Week 11	Lecture- Permits. Agencies Coordination. Project Award & Inspection.
Week 12	Lecture - Lecture-Public Speaking, Oral Presentation Requirements. Subdivision Plan sets, Sheet indexes and plan creation.
Week 13	Project Presentations.
Week 14	Deadline for Submission of Phase II Materials - Project Presentations.
Week 15	Final

Grading (200 total points)

Point Total	Grade
180 +	A
171-179	B +
160-170	B
151-159	C +
130-150	C
120-129	D
Below 120	F

*The NJIT Honor Code will be upheld and any violations will be brought to the immediate attention of the Dean of Students.

* Planning Board Report is required. Site visit is optional and will be coordinated per class time.
*Students will be consulted with by the instructor and must agree to any modifications or deviations from the syllabus throughout the course of the semester.

Department of Civil and Environmental Engineering (John Mayo. P.E)

CE 494 – Civil Engineering Design I

Description:

Simulates the submission and acceptance process normally associated with the initial design phases for a civil engineering project. Familiarizes students with the preparation of sketch plats, preliminary engineering design, and a related environmental assessment. Requirements include written reports and oral presentations in defense of the project.

Prerequisites: Senior standing in Civil Engineering

Textbook(s)/Materials Required:

No new textbooks. Students are expected to utilize the textbooks from preparatory courses as well as other related references.

Course Objectives:

1. Simulate the submission and acceptance process normally associated with the initial design phases for a civil engineering project to familiarize students with the preparation of sketch plats, preliminary engineering design, and a related environmental assessment.

Topics:

Depends on Site Selected. Typically the following topics are covered:

Introduction to project site, zoning requirement and other constraints

Check Boundary and Area

Street Design

Lot Design

Grading Plans

Environmental Impact Analyses and Report

Sanitary Sewer Design

Stormwater Collection Design

Stormwater Management Design

Soil Program and Sediment Control

Potable Water Analysis

Quantities and Cost Estimate

Schedule: Lecture/Recitation- 3 hour class, once per week

Laboratory- non engineering Topics (Design)

Program Objectives Addressed: 1, 2

Prepared By: John Mayo, PE **Date:** 1/8/15

Course Objectives Matrix – CE 494 Civil Engineering Design I

Strategies and Actions	**Student Learning Outcomes**	**Outcomes (a-k)**	**Prog. Object.**	**Assessment Methods/Metrics**
Course Objective 1: Simulate the submission and acceptance process normally associated with the initial design phases for a civil engineering project. To familiarize students with the preparation of sketch plats, preliminary engineering design, and a related environmental assessment.				
Present an open ended civil engineering practice design problem for solution by teams of students.	Learn how to identify, formulate, and solve open ended civil engineering practice design problems by applying knowledge of mathematics, science, and engineering integrated with CAD.	a, c, d, e, k	1, 2	Final project report and periodic progress reports.
Discuss specific code, performance, cost, time, quality and safety objectives.	Learn how to identify, formulate and solve area specific civil and environmental engineering practice design problems that meet specified code, performance, cost, time, quality and safety objectives.	c, d, e, f, h, i, j	1, 2	Final project report and periodic progress reports.
Work individually and within multi-disciplinary design teams.	Learn how to function and communicate effectively both individually and within multi-disciplinary design teams.	d, g	1, 2	Final project report, periodic progress reports, oral presentation of project.

CEE Mission, Program Objectives and Program Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program objectives are reflected in the achievements of our recent alumni.

1 – Engineering Practice: Recent alumni will successfully engage in the practice of civil engineering within

industry, government, and private practice, working in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Recent alumni will advance their skills through professional growth and development activities such as graduate study in engineering, professional registration, and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Recent alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, civic organizations, and humanitarian endeavors.

Our program outcomes are what students are expected to know and be able to do by the time of their graduation:

(a) an ability to apply knowledge of math, science, and engineering
(b) an ability to design and conduct experiments, as well as interpret data
(c) an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of ethical and professional responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use techniques, skills and modern engineering tools necessary for engineering practice

8/28/13

Additional Note*:

Attendance will be taken at the beginning of the class and could affect your final grade.

In case of any student misses a class, or fail to submit assignment or presentation on time, the ***Office of the Dean of Students*** is the only entity that would determine the legitimacy of the absence or the situation via a written email addressed to the course instructor.

It is the student's responsibility to contact the office mentioned above and make hos/her case with proper documentations.

*JB 08/07/2017