Description
This course provides students with the type of design experience they would receive if engaged in civil and environmental engineering design practice. This section will focus on transportation.

Course Outline
Week 1 (9/5)
  Introduction
  Review Syllabus
  Split into Groups
  Review Project Examples
  Reference Materials
Week 2 (9/12)
  Data Collection
  Assign a Project to each Group
Week 3 (9/19)
  Project Impacts
  Designing for Safety
  Expectations for Final Project/Presentation
Week 4 (9/26)
  Roadway Geometry
  Different Types of Users
  Large Vehicle Turning
Week 5 (10/3)
  Traffic Signal Design
Week 6 (10/10)
  Capacity Analysis
  Traffic Data Submission
Week 7 (10/17)
  Traffic Calming
  Parking
Week 8 (10/24)
  Project Costs
Week 9 (10/31)
  Submission of Progress Plans/Reports
Week 10 (11/7)
  Group Meeting – Informal presentations
Week 11 (11/14)
  Stakeholder Concerns
  11/21 – Thursday Schedule (No Class)
Week 12 (11/28)
  Group Meetings
Week 13 (12/5)
  Group Meetings
Week 14 (12/12)
  Presentations to Class/Reviewing Body
  Submissions of Plans/Reports
Note – The order in which lecture topics are presented may change based on the projects selected by the groups.

**Grading (100 points total)**

Attendance/Class Participation (All Semester) – 10 points

Traffic Data Submission (10/10) – 10 points

Progress Plans/Reports (10/31) – 10 points

Informal Presentations (11/7) – 10 points

Final Presentations (12/12) – 25 points

Final Plans/Reports (12/12) – 35 points

**Project Ideas**

Corridor Study – Traffic Signal Optimization

Corridor/Network Study – Intersection Improvements

Pedestrian Plaza

Parking Study (Downtown Area)

Discrete Intersections

**CEE Mission, Program Objectives and Student 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 toward sustainable solutions 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, educational institutions, civic organizations, and humanitarian endeavors.

Our student 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 on 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

Course Objectives Matrix – CE 495 Civil Engineering Design II

<table>
<thead>
<tr>
<th>Strategies and Actions</th>
<th>Student Learning Outcomes</th>
<th>Outcomes (a-k)</th>
<th>Prog. Objective</th>
<th>Assessment Methods/Metrics</th>
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</thead>
<tbody>
<tr>
<td>Course Objective 1: Provide students with the type of design experience they would receive if engaged in a specific area of civil and environmental design practice.</td>
<td>Present an area specific civil and environmental engineering practice design problem.</td>
<td>Learn how to identify, formulate and solve area specific civil and environmental engineering practice design problems by applying mathematics, science, and engineering integrated with CAD.</td>
<td>a, c, d, e, k</td>
<td>1, 2 Final project report and periodic progress reports.</td>
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<td></td>
<td>Discuss specific code, performance, cost, time, quality and safety objectives.</td>
<td>Learn how to identify, formulate and solve specific civil and environmental engineering practice design problems that meet specified code, performance, cost, time, quality and safety objectives.</td>
<td>c, d, e, f, h, i, j</td>
<td>1, 2 Final project report and periodic progress reports.</td>
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<tr>
<td>Work individually and within multidisciplinary design teams.</td>
<td>Learn how to function and communicate effectively both individually and within multidisciplinary design teams</td>
<td>d.g</td>
<td>1,2</td>
<td>Final project report, periodic progress reports oral presentation of project.</td>
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