CGN 4806 Special Problems in Civil Engineering
as topic “Transportation – Water - Materials Design”
Required Capstone Course for Hydrology & Water Resources and Transportation Tracks /
Elective Capstone Course for General CE Track

1. Catalog Description – Selected problems or projects in the student’s major field of engineering study.
   Credits: 3 for “Transportation-Water-Materials Design” Capstone course

2. Prerequisite – recommendation of undergraduate coordinator.

3. Course Objectives – Expose students to the business of engineering design by participating on
   multidisciplinary teams in an actual design project with as realistic conditions as can be created in the
   classroom. This course is intended to be the pinnacle or capstone of the college career of the student,
   incorporating material learned in all of the courses taken to date, using the science and engineering
   fundamentals learned, along with the ability to communicate clearly about what is being done in solving
   a design problem. At this stage, the student should be able to perform the assigned design project in
   this class with little or no technical instruction.

4. Contribution of course to meeting the professional component (ABET only) – This course contributes to the
   design of systems and components to meet desired needs, functioning on multi-disciplinary teams, and
   communicating effectively through written proposals and reports and verbally through formal public
   presentations, while supporting the College’s education objectives.

5. Relationship of course to program outcomes (ABET only) –
   a) 10% - Apply knowledge of mathematics, science and engineering
   c) 25% - Design systems and components to meet desired needs
   d) 30% - Function on multi-disciplinary teams
   g) 25% - Communicate effectively
   k) 10% - Use state-of-the-art problem-solving tools and techniques

6. Instructor – Mr. Steve Scanlan; 234 Weil Hall; (352) 745-0139; e-mail – capstone.cgn4806@gmail.com;
   office hours – TBD, or by appointment

7. Teaching Assistance – To Be Determined

8. Meeting Times – M Periods 8, 9 and 10 (3:00 pm - 5:30 pm)

9. Class/Laboratory Schedule – One 150-minute session per week

10. Meeting Location – 234 Weil Hall

11. Material and Supply Fees – N/A

12. Textbook and Software Required – The following books are available free, electronically on the internet:
   FDOT Project Development & Environment Manual (PD&E Manual); 2017
   FDOT Plans Preparation Manual, Volume I; Topic 625-000-007; 2017
   FDOT Plans Preparation Manual, Volume II; Topic 625-000-008; 2017
   of Streets and Highways; Topic 625-000-015; April 2016
   FDOT Standard Specifications for Road and Bridge Construction, July 2018
   FDOT FY 2018-19 Standard Plans for Road and Bridge Construction; Topic 625-010-003; July 1, 2018
   FDOT Flexible Pavement Design Manual; Topic 625-010-002; January 2018
   FDOT Drainage Manual; Topic 625-040-002; January 2018
   FDOT Drainage Design Guide; January 2018
   Florida Intersection Design Guide; 2015

13. Recommended Reading – N/A
14. Course Outline – (list of topics)

Multidisciplinary design problem assignment
Phase 1: Proposal – 20%
  Request for proposal (RFP)
  Written proposal
  Team interview/presentation
Phase 2: Project Development & Envir. – 25%
  Field investigation
  Consider options and develop conceptual design from FDOT scope of work

Phase 3: Preliminary design – 35%
  Engineering report submissions
  Preliminary design submission
  Preliminary design presentation
  Team Participation – 20%

---

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>January 7, 2019</td>
<td>Course and Project Overview.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Phase 1 Team Proposals due by 5:30 pm, Jan 25.</strong></td>
</tr>
<tr>
<td>Monday</td>
<td>January 21, 2019</td>
<td>Martin Luther King Jr., Birthday – No Class</td>
</tr>
<tr>
<td>Monday</td>
<td>January 28, 2019</td>
<td>Team Proposal Presentations.</td>
</tr>
<tr>
<td>Monday</td>
<td>February 18, 2019</td>
<td>Class Topic: Design Process and Project Scheduling Review.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pavement Design Report due at end of class.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Traffic Count Data due by 5:30 pm, Feb 22.</td>
</tr>
<tr>
<td>Monday</td>
<td>February 25, 2019</td>
<td>Phase 2 PD&amp;E Presentations. Phase 2 Submissions due at presentation.</td>
</tr>
<tr>
<td>Monday</td>
<td>March 4, 2019</td>
<td>Spring Break – No Class</td>
</tr>
<tr>
<td>Monday</td>
<td>March 11, 2019</td>
<td>Class Topic: Stormwater Design Review.  <strong>Preliminary Schedule due at the end of class.</strong></td>
</tr>
<tr>
<td>Monday</td>
<td>March 18, 2019</td>
<td>Class time for project development.</td>
</tr>
<tr>
<td>Monday</td>
<td>March 25, 2019</td>
<td>Class time for project development.</td>
</tr>
<tr>
<td>Monday</td>
<td>April 1, 2019</td>
<td>Class time for project development.</td>
</tr>
<tr>
<td>Monday</td>
<td>April 8, 2019</td>
<td>Class time for project development.  <strong>Pond Site Selection/Pond Design Report due at end of class.</strong></td>
</tr>
<tr>
<td>Monday</td>
<td>April 15, 2019</td>
<td>Class time for project development.  <strong>Traffic Analysis Report due at end of class.</strong></td>
</tr>
</tbody>
</table>

15. Attendance and Expectations – Because of the limited number of class meetings and the multi-disciplinary team nature of this course, each student is expected to attend every class, and effectively use the class time to identify, assign and coordinate work assignments and effort among the team members. Each team should have a minimum of one laptop / notebook computer with them for each class session.

16. Grading (Methods of Evaluation) – (No examinations for this class). For each phase of an assigned project, each group will receive a single letter grade. This grade will include the written submittals and the presentation. After each phase submission and presentation, each manager is required to submit a team participation report for his or her group. It should reflect the percent contribution each team member made toward the submission, with all percentages totaling 100%. At the end of the semester, each student will be asked to summarize the performance of their team members over the semester by completing an optional peer review. Each individual’s final grade will be calculated from the group grades received from the instructor and individual grades received from managers and peer reviews. The relative weight of the individual grades are: Phase 1 Proposal, 20%; Phase 2 Project Development and Environment Submission, 25%; Phase 3 Preliminary Design, 35%; Participation, 20%.
17. Grading Scale – A = 93-100 B+ = 87-89.9 C+ = 77-79.9 D+ = 67-69.9 E ≤ 59.9
   A- = 90-92.9 B = 83-86.9 C = 73-76.9 D = 63-66.9
   B- = 80-82.9 C- = 70-72.9 D- = 60-62.9

Information on current UF grading policies for assigning grade points may be found at:

18. Make-up Exam Policy – Any presentation that is not presented on the scheduled date will receive a 0.0.
    Late reports will lose one full letter grade for each day late; if later than one week, it will receive a 0.0.

19. Honesty Policy – All students admitted to the University of Florida have signed a statement of academic
    honesty committing themselves to be honest in all academic work and understanding that failure to
    comply with this commitment will result in disciplinary action. This statement is a reminder to uphold
    your obligation as a UF student and to be honest in all work submitted and exams taken in this course
    and all others.

Information on current UF’s Student Conduct and Honor Code may be found at:
may be found at: http://www.asce.org/code-of-ethics/

20. Accommodation for Students with Disabilities – Students requesting classroom accommodation must first
    register with the Dean of Students Office. That office will provide the student with documentation that
    he/she must provide to the course instructor when requesting accommodation.

21. UF Counseling Services – Resources are available on-campus for students having personal problems or
    lacking clear career and academic goals. The resources include:
    - University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
    - SHCC Mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
    - Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center,
      392-1161, sexual assault counseling.
    - Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

22. Software Use – All faculty, staff and students of the University are required and expected to obey the laws
    and legal agreements governing software use. Failure to do so can lead to monetary damages and/or
    criminal penalties for the individual violator. Because such violations are also against University policies
    and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida
    community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.