CATALOG DESCRIPTION: Engineering ethics and professionalism. Project development skills, feasibility and cost estimation, project management, AutoCAD applications in Civil Engineering. Selection of projects, formation of design teams, development of a design proposal. Written and oral presentations of the design proposal. Prerequisite: Physics 205B and Physics 255B, completion of/concurrent enrollment in CE 320, 330,418,442 or 444, and 474.

PURPOSE AND OBJECTIVE OF THE COURSE:

The main objective of this course is to provide understanding of the basic concepts of planning, execution, and design of civil engineering projects to undergraduate students planning to pursue a career in any area of Civil Engineering. The purpose of the course is to give students an opportunity to:

- Participate on a project design team,
- Learn how to apply tools and procedures learned in other courses to a complete project,
- Understand how typical Civil Engineering Projects progress from concept to completion, and
- Learn about the professional aspects of engineering.

INSTRUCTOR: William F. Eichfeld
OFFICE: ENGR B, Room 30
CEE Department, MC 6603
453-7838 (Office)
457-5242 (Home-Before 9:00 p.m.)
Email: eichfeld@engr.siu.edu

OFFICE HOURS: 1:00-3:50 p.m. MW
1:00-2:50 p.m. T

Important Facts:

REFERENCES:
How to Write Winning Proposals (1990) by Ron Tepper, John Wiley & Sons, Inc.
Pocket Book of Technical Writing for Engineers and Scientists (2000) by Leo Finkelstien, Jr., McGraw-Hill

COURSE CONTENTS:

In developing the course, it is believed that you have the skills necessary to function as a member of a design team and successfully complete a civil engineering design project. It is likely that this is your first opportunity in the curriculum to solve a complete, open-ended problem. The main components of the course are to teach students the topics listed on the next page and the important aspects of project development including how to successfully complete a design by working as a member of a team of design professionals. You will work in teams on complete civil engineering projects.
Topics that will be discussed in the class:

- Engineering ethics
- Professionalism, licensing, and career planning
- Professional communication
- Team building and project teamwork
- Contracts
- Types of construction projects
- Planning, scheduling, and cost estimation for civil engineering projects
- Design specifications

TEAM PROJECT:

The whole class will be divided into teams. Each team will be assigned a team project. The projects selected will represent, as closely as possible, typical civil engineering projects.

Each student in the project teams will have responsibility for designing part of the project as well as responsibilities in the overall project design, plan preparation, and presentation.

Each team will work under the general guidance of the Instructor. Each team will have a Project Manager who is responsible for coordinating the work of the team members, regularly communicating with the Instructor, facilitating communication between all team members, and ensuring that the work is accomplished on schedule. The role of each team member will be to develop (at a minimum) the scope of work, proposal, basis of design, limitations, and cost estimate for part of the project. During the presentation of the Proposal, each team member will present the appropriate part of the Proposal.

Each team may designate sub-tasks and sub-teams particularly responsible for those sub-tasks as necessary. Each sub-team should have a sub-team leader to coordinate activities as well as work on the sub-task.

DELIVERABLES FOR CE 495A:

Each team will submit a complete Proposal for the design of the project which will include preliminary plans for the project. At the end of the semester, each team will orally present and defend its Proposal. Oral presentations must be made using PowerPoint or other similar presentation software. Each team will be allotted a maximum time of 20 minutes for their presentation. Each member of the team will participate in the presentation on a nearly equal basis except for the Project Manager who will begin and summarize the presentation.

The presentation describes the topics addressed in the written Proposal in less detail. For example, in the written Proposal the description of each team member’s responsibilities will include a reference to an appendix which contains all of the resumes, but only a brief description of the assignment of duties will be possible in the time available for the presentation.

The Proposal will include, at a minimum, the items listed on the last page and a drawing of the proposed work at the site. The drawing should show all of the project components with respect to other site features (e.g. buildings, roads, intersections, drainage, bridges etc.) along with topography of the area. The drawing must be bound in the Proposal.
**SCHEDULE**

Field Trip
Organizaion of Design Teams

**General Class Meeting**
Submission of Final Written Proposals
Oral Presentations
Final Exam

to be scheduled
October

**Monday, November 28, 2016**
Wednesday, December 7, 2016
Thursday, December 8, 2016*
Monday, December 12, 2016, 12:30 p.m.

*The presentations will be given on Thursday afternoon. Everyone will need to be present from 3:00 p.m. to 5:00 p.m.

**GRADING POLICY**

One of the objectives of the course is to help students understand how to successfully complete their portion of the project while working as a member of the design team. Therefore, your final grade will depend on your individual performance in completing the project and your interpersonal relationships with other team members. Each of the team members will be asked to evaluate each of their teammates in order to assess each team member's contribution to the team and project. Final grades will be calculated using the grading distribution and final grade assessment provided below.

**GRADE DISTRIBUTION**

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Written Proposal - Individual Effort</td>
<td>5%</td>
</tr>
<tr>
<td>Final Written Proposal - Team Effort</td>
<td>20%*</td>
</tr>
<tr>
<td>Oral Presentation - Individual Performance</td>
<td>10%</td>
</tr>
<tr>
<td>Oral Presentation - Team Performance</td>
<td>10%*</td>
</tr>
<tr>
<td>Confidential Evaluations by other Team Members</td>
<td>10%</td>
</tr>
<tr>
<td>Homework Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Test</td>
<td>25%</td>
</tr>
<tr>
<td>* Each team member will be given the same grade for these items</td>
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</tbody>
</table>

**FINAL GRADING SCALE**

<table>
<thead>
<tr>
<th>Percent Scores</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 and above</td>
<td>A</td>
</tr>
<tr>
<td>80 → 89</td>
<td>B</td>
</tr>
<tr>
<td>70 → 79</td>
<td>C</td>
</tr>
<tr>
<td>60 → 69</td>
<td>D</td>
</tr>
<tr>
<td>59 and Below</td>
<td>F</td>
</tr>
</tbody>
</table>
Title Page
 Cover Letter - You can start selling your Proposal here. Remember to “transmit” the Proposal, express thanks for the opportunity, and encourage contact. Also remember to sign the letter.

Table of Contents – Include the appendices, figures, and tables as needed.

Project Description – This is where you show that you understand the problem. Include descriptions of the project and the site.

Scope of Work – This is your largest single section. This is where you explain how you plan to solve the problem.

Deliverables – The things you are proposing to deliver when you are done. At a minimum these are: a complete set of plans and specifications, a list of required permits, a design report, and a presentation of your design.

Limitations or Items not included – Note the things that you believe need to be done but are not included in the work you are proposing. There may be no items here. If that is the case, there is no need to include the section.

Organization – Explain how you are organized to solve the problem. Explain the responsibilities of each team member. Refer to the resumes in the Appendix.

Schedule – Construct a Gantt chart for designing the Project that shows all of the important tasks. Give an estimate of the person-hours that the tasks will require and an estimate of the approximate cost of the design including your fee. Leave the detailed calculation of the price for the Appendix.

Appendix – Include everyone's resume in the same format. In this case the resumes are there to sell the team more than to sell the individuals.

Include a communication schedule. Give the frequency of the meetings your team is planning. In this case, include weekly progress reports to the Instructor. In practice, some Proposals do this and some don’t. It might also be part of the Scope.

Include the detailed calculation of your costs and fee. This is also found in some actual Proposals but not in others. Some just provide the lump sum price. In CE 495, this is for instructional purposes.

Include anything else that you think will be helpful.