

Course Information

Date Submitted: 12/9/2016

Current Prefix and Number: CE - Civil Engineering , CE 429 CE SYSTEMS DESIGN

Other Course:

Proposed Prefix and Number: CE 429

What type of change is being proposed?

Major Change

Should this course be a UK Core Course? No

1. General Information

a. Submitted by the College of: ENGINEERING

b. Department/Division: Civil Engineering

c. Is there a change in 'ownership' of the course? No

If YES, what college/department will offer the course instead: Select...

e. Contact Person

Name: Sam Wright

Email: sam.wright@uky.edu

Phone: 7-4856

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

f. Requested Effective Date

Semester Following Approval: Yes OR Effective Semester:

2. Designation and Description of Proposed Course

a. Current Distance Learning (DL) Status: N/A

b. Full Title: CIVIL ENGINEERING SYSTEMS DESIGN

Proposed Title: CIVIL ENGINEERING SYSTEMS DESIGN

c. Current Transcript Title: CE SYSTEMS DESIGN

Proposed Transcript Title: CE SYSTEMS DESIGN

d. Current Cross-listing: none

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

LECTURE: 3

LABORATORY: 3

Proposed Meeting Patterns

LECTURE: 2

LABORATORY: 3

f. Current Grading System: ABC Letter Grade Scale

Proposed Grading System: *Letter (A, B, C, etc.)*

g. Current number of credit hours: 3

Proposed number of credit hours: 3

h. Currently, is this course repeatable for additional credit? No

Proposed to be repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester? No

2i. Current Course Description for Bulletin: The course is designed to provide the graduating civil engineer with an integration of professional practice issues with planning, design, and construction. Topics to be covered will include: development of teaming, problem solving, and decision-making skills; development of written and oral technical communication skills; procurement of professional services; integration of planning, design, and construction activities; integration of environmental, legal, political, and social issues and concerns into the project process. All activities will be conducted in teams. Lecture, three hours; laboratory three hours per week.

Proposed Course Description for Bulletin: The course is designed to provide the graduating civil engineer with an integration of professional practice issues with planning, design, and construction. Topics to be covered will include: development of teaming, problem solving, and decision-making skills; development of written and oral technical communication skills; procurement of professional services; integration of planning, design, and construction activities; integration of environmental, legal, political, and social issues and concerns into the project process. All activities will be conducted in teams. Lecture, two hours; laboratory three hours per week.

2j. Current Prerequisites, if any: Prereq: To be taken during the student's last semester.

Proposed Prerequisites, if any: Prereq: To be taken during the student's last semester.

2k. Current Supplementary Teaching Component:

Proposed Supplementary Teaching Component: No Change

3. Currently, is this course taught off campus? No

Proposed to be taught off campus? No

If YES, enter the off campus address:

4. Are significant changes in content/student learning outcomes of the course being proposed? Yes

If YES, explain and offer brief rationale: The course focuses on team-based learning so moving to a lab-type format allows for student engagement in their teams to problem solve and to facilitate the design process. COURSE FORMAT AND PHILOSOPHY: The class will be conducted using lecture, discussion, and laboratory formats. Please note the following: -The course is designed as an exercise in cooperative learning, where students work together in small groups to accomplish shared learning goals and to maximize their own and each other's learning. The class will be divided into approximately equal sized teams, which are intended to function as civil engineering firms. -The goals for the course are: 1) Provide information on concepts, 2) Improve understanding of the concepts, 3) Master and apply these basic concepts in solving the course project problems, and 4) Develop the ability to solve new problems with the skills learned.

5a. Are there other depts. and/or pgms that could be affected by the proposed change? No

If YES, identify the depts. and/or pgms:

5b. Will modifying this course result in a new requirement of ANY program? No

If YES, list the program(s) here:

6. Check box if changed to 400G or 500: No

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6.How do course requirements ensure that students make appropriate use of learning resources?

7.Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8.How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

9.Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10.Does the syllabus contain all the required components? NO

11.I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

The course focuses on team-based learning so moving to a lab-type format allows for student engagement in their teams to problem solve and to facilitate the design process.

COURSE FORMAT AND PHILOSOPHY:

-The course is designed as an exercise in cooperative learning, where students work together in small groups to accomplish shared learning goals and to maximize their own and each other's learning.

The class will be divided into approximately equal sized teams, which are intended to function as civil engineering firms.

-The goals for the course are: 1) Provide information on concepts, 2) Improve understanding of the concepts, 3) Master and apply these basic concepts in solving the course project problems, and 4) Develop the ability to solve new problems with the skills learned.

SYLLABUS – FALL 2016

COURSE:	CE 429 Civil Engineering Systems Design
TIME and PLACE:	MW 2:00-4:50 p.m.; RGAN 207
INSTRUCTORS:	Professor Samantha Wright, sam.wright@uky.edu 257 Oliver H. Raymond Building, (859) 323-1668 Office Hours: MWR 10:00-12:00, drop-in (if available), or by appointment
TEACHING ASSISTANTS:	TBD
COURSE PREREQUISITE:	Last semester of undergraduate study in Civil Engineering
REQUIRED TEXT:	<i>Engineering Design: A Project-Based Introduction, 4th edition</i> by Clive L. Dym, Patrick Little and Elizabeth Orwin
COURSE AWARD:	<i>American Engineers Inc. Outstanding Senior Design Team Award</i>

COURSE GOAL:

To provide students an in-depth understanding of the multidisciplinary nature of civil engineering projects; to allow students to become familiar with various stages of project development and design; and to provide the students a hands on experience with a real life project. The focus of this class is understanding the design process. It is purposeful that the instructor(s) will not teach you how to do the design.

COURSE DESCRIPTION:

CE 429 focuses on synthesizing the taught material in individual civil engineering courses into a civil engineering project, which includes design, environmental concerns, cost analysis, construction scheduling as well as the project roles of the owner (client), design team and contractor. The course introduces students to the process of project development including planning, design, and construction. Students work in teams to complete the course requirements.

STUDENT LEARNING OUTCOMES:

Students will be evaluated on class participation, oral presentations, and submitted material, including written reports. Upon successful completion of this class, students should accomplish the following learning outcomes:

1. Demonstrate the classical Client/Engineer/Contractor project structure typically encountered in practice in the engineering industry.
2. Perform the programming and planning phases of a project by identifying client needs and formulating a problem statement/approach to the client's needs.

3. Design a system, component, or process to meet desired needs by conducting an engineering analysis and prepare a design to satisfy client needs.
4. Function professionally on multi-disciplinary teams by planning and executing all assignments on a team basis and using management skills to lead the work on a portion of the term assignment.
5. Identify, formulate, and solve engineering problems by describing situations; identify and prioritize problems; identify and evaluate potential problem solutions; select effective problem solutions; identify and evaluate potential adverse consequences for problem solutions; and prepare implementation plans.
6. Communicate effectively by preparing and submitting technical reports, preparing and making formal oral presentations, and presenting material in figures, drawings, graphs, etc.
7. Identifying, analyzing, and addressing the environmental, legal, political, and social factors influencing the selection of problem solutions via the impact of engineering solutions in a global and societal context.
8. Demonstrate knowledge of contemporary issues by covering contemporary issues such as the deteriorating civil infrastructure, sustainability and quality-based selection of professional services.
9. Apply the techniques, skills, and modern engineering tools necessary for engineering practice by using appropriate computerized project planning, management, and design tools and developing an awareness of techniques used in civil engineering practice.

COURSE FORMAT AND PHILOSOPHY:

The class will be conducted using lecture, discussion, and laboratory formats. Please note the following:

- The course is designed as an exercise in cooperative learning, where students work together in small groups to accomplish shared learning goals and to maximize their own and each other's learning.
- The class will be divided into approximately equal sized teams, which are intended to function as civil engineering firms.
- Each team will include members with varying interests in civil engineering, as to cover all topics presented in the class project.
- Team members are expected to participate in all areas of the class project, with each team member acting as a Task Manager at least once during the project. Task Managers are responsible for the work plan, scheduling, and progress tracking for each topic; Task Managers are not responsible for completing all of the work within their area of interest.
- All class members are expected to come prepared to class; we will have the most productive class time if everyone is ready to discuss the topic at hand.
- The purpose of this course is not to provide you with the technical knowledge to perform design. It is to provide you knowledge of the design process.
- Practicing planners and engineers in several areas of the project will meet with the class and make presentations on planning and design in those areas.

- The members of your team constitute its primary resources. You are free to draw upon other resources as necessary. You are encouraged to approach other faculty members in the department with your questions.
- The goals for the course are: 1) Provide information on concepts, 2) Improve understanding of the concepts, 3) Master and apply these basic concepts in solving the course project problems, and 4) Develop the ability to solve new problems with the skills learned.
- All materials submitted as part of the assignments are to be of professional quality. Every submittal must be prepared on a computer; handwritten materials will not be accepted.

COURSE REQUIREMENTS (TENTATIVE):

The work to be required in this course will consist of the following, as time permits:

	Points Possible (500)	% of Grade
1. Professionalism (Individual Grade)	40	8%
2. Team Deliverables	400	80%
a. Team Reports (Team/Individual Grade)		
- Report 1	50	10%
- Report 2	75	15%
- Report 3	125	25%
- Team Schedule/Progress Documentation	25	5%
b. Team Presentations (Team Grade)	75	15%
c. Team Behavioral Criteria (Team Grade)	25	5%
d. Team Behavioral Evaluation (Individual Grade)	25	5%
3. Reading Response Assignments (Individual Grade)	60	12%

Professionalism

The Professionalism grade will primarily be determined by the instructors' perception of your class participation, enthusiasm, and team work ethic. Plan to attend all scheduled lectures and labs (please refer to Senate Rule 5.2.4.2 for excused absences) and come prepared to participate. On days when we have presentations or guests in the classroom (such as outside lecturers), plan to dress in business casual attire (please note all of these dates in the schedule – it is about once a week as the semester progresses!). Points may also be deducted from your Professionalism grade for unexcused absences (5 points each) or for failure to complete the required graduating senior survey before Finals Week (25 point deduction).

Please note that you can earn a negative score in Professionalism if you miss a sufficient number of classes, or do not complete the required graduating senior survey.

Team Deliverables

The majority of your grade in this course will be based on your team's deliverables. With the exception of item 2d, each member of your team will receive the same grade for items submitted. However, if the majority of your team determines that the work distribution was not equal or fair for the items under 2a, your team will have the option to redistribute team points earned for these items among team members.

All materials submitted as part of the assignments are to be of professional quality. Every submittal must be prepared on a computer; handwritten materials will not be accepted. Each technical report should be structured in the following manner (unless other, specific guidelines are provided):

- All submitted reports must include a separate transmittal (cover) letter
- All work is to be submitted on 8½" x 11" paper except for project drawings
- Margins are 1.5" for the left margin (for binding) and 1" for the rest
- Title/Cover page
- Executive Summary
- Table of contents and lists of tables, figures and drawings, if any exist
- Introduction, Summary/Recommendations and Appendices
- Specific sections as required by the individual reports (details given with each assignment)
- All drawings/figures must include borders and a caption (below figure)
- All tables must include a caption (above table)
- All tables/figures must be placed appropriately
- Appendices must have a description at the beginning of each one, and may have a table of contents if it has significant amount of information
- If the drawing is larger than 8½" x 11", it must be drawn on larger size paper and folded such that it can be bound as part of the report. For example, 11" x 14" or 11" x 17" paper can be folded and bound with 8½" x 11" paper
- The report must be presented in a 3-ring binder with section dividers for Phases 1, 2 and 3
- The 1.5-spaced body of the report must be at least 11-point Arial font, or equivalent.
- References must adhere to the Modern Language Association (MLA) standard, which can be found at <http://www.cws.illinois.edu/workshop/writers/citation/mla/>

Failure to comply with these specifications may render the report non-responsive and the report could receive a grade of zero.

A variety of submitted materials are required in this course. Please note that an electronic submission (in PDF and Word formats) is required for each submittal along with a hard copy. The hard copy of any submittal must be submitted following the guidelines given above. The administrative submittals must be included as a separate volume (i.e., team schedule and progress documentation). The submitted materials will be graded and returned to the teams. The final report is a combination of the previous reports, plus the appropriate additional information. Your team will

address any deficiencies in the phase reports as part of the compiling the final report. A portion of the final report grade will be based on how well you improved any deficiencies. Furthermore, if the team does not agree with any comment provided by the reviewer, the team must explain its rationale/justification on a separate document and submit within one week of receiving the Phase report feedback/grade. Finally, all materials in a report must be included in a single PDF document entitled in the format "Team # - Title of Report".

Team Evaluation

Since the course is team-based, your contribution to the team's performance is a factor in your final grade. Team member participation is measured in two ways in this course. First, each team will develop performance standards and criteria to measure their own success; team members will then evaluate themselves and other team members at a few points during the semester. Second, the reports for the class project will be graded on a team basis; however, team members will then recommend the division of awarded points among the team members. More information on this process will be provided later in the semester.

Because most work in the course will be performed on a team basis, it is imperative that students be cooperative and productive members of the team. However, there may be a possibility that an individual team member will behave in a dysfunctional manner by not participating, being disruptive, etc... In that event, the team may submit a request to the instructor to mediate the situation. The instructor will meet with the entire team to determine the facts of the situation and work with the team members to resolve the situation. If the situation cannot be resolved, the instructor will conduct a secret ballot vote of the team members as to whether the problem individual should be removed from the team. If a majority of the team believes the member should be removed from the team, the instructor will do so. The individual removed from the team will then constitute a team of one and be responsible for the performance of all the work required of each team.

If an individual's failure to function as an effective team member is not brought to the instructor's attention until the end of the term or when the team evaluation is conducted, the instructor reserves the right to give that individual a zero (0) for his/her score on the work performed by his/her team, and lower the professionalism grade (before the attendance score is applied) of the entire team for lack of diligence.

FINAL GRADES:

Final grades will be assigned according to the grading scale as shown below:

Letter Grade	Percentage Earned
A	90% and above
B	80-89%
C	70-79%
D	60-69%
E	59% and below

The University of Kentucky describes these grades in the University Bulletin as follows:

- **A:** Represents exceptionally high achievement due to aptitude, effort, and *intellectual initiative* (emphasis added).
- **B:** Represents high achievement due to ability and achievement.
- **C:** Represents average achievement.
- **D:** Represents minimum passing grade.
- **E:** Represents unsatisfactory performance and indicates failure in the course.

If you disagree with the grading of an individual assignment, you must submit a written statement of your disagreement and the assignment to the instructor within one week after the instructor returns the graded assignment. The assignment will then be completely reviewed. Please note that Undergraduate Students will be provided with a Midterm Evaluation (by the midterm date) of course performance based on the grades earned and the criteria in the syllabus.

DEADLINES & ABSENCES:

Late assignments will be accepted only in case of a university approved excused absence; otherwise a grade of zero (0) will be given for the assignment. In the event of absence, you are responsible for learning about any changes in the due dates of the homework and progress reports.

Plan to attend all scheduled lectures and labs (please refer to Senate Rule 5.2.4.2 for excused absences) and come prepared to participate. Points may be deducted from your Professionalism grade for unexcused absences (5 points each) or for failure to complete the required graduating senior survey before Finals Week (25 point deduction).

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class (Jan. 20, 2016). Information regarding dates of major religious holidays may be obtained through the Academic Ombud Services:

https://www.uky.edu/Ombud/ForStudents_ReligiousHolidays.php

PLAGIARISM & CHEATING:

There is a zero tolerance policy for plagiarism and cheating in this course. Information about plagiarism and the penalties for offenses are provided at the following:

- Through the Academic Ombud's office at <http://www.uky.edu/Ombud/Plagiarism.pdf>, and
- Through UK's Student Rights and Responsibilities Handbook or at <http://www.uky.edu/StudentAffairs/Code/part2.html>.

OTHER ITEMS:

- Accommodations: If the student has a documented disability that requires academic accommodations, please contact the instructor within the first two weeks of class. To receive accommodations in this course, you must provide a Letter of Accommodation from the Disability

Resource Center (Multidisciplinary Science Building, Suite 407, 257-2754, David Beach, dtbeac1@uky.edu) for coordination of campus disability services available to students with disabilities.

- Tobacco: Please note that the use of any tobacco products during the class period is not allowed.
- Computers: The class maintains a no-laptop policy during lectures. All laptops need to be off during the lecture class period but can be used during labs.
- Phones: The class maintains a no-mobile phone policy. All phones need to be off during the class period and lab and cannot be used at any time.

TENTATIVE SCHEDULE:

In the absence of announced changes, due dates for the assignments given below are correct. Readings should be done prior to the lecture.

Week	Day	Time	Topic	Instructor
1	Aug. 24	W 2:00-4:50	Team Assignments, Teaming Exercises	Yost
2	Aug. 29	M 2:00-4:50	Course Overview and Administration Project Introduction	Wright/Souleyrette
	Aug. 31	W 2:00-4:50	Introduction to NEPA Qualifications Based Selection Reading: Chapters 1 (Engineering Design), 2 (Defining a Design Process) and 3 (Problem Definition) Response: Reading Response #1 Due	Wright/Souleyrette
3	Sept. 5	M 2:00-4:50	No Class – Labor Day	-
	Sept. 7	W 2:00-4:50	Project Information Project: TBD Assignment Due: Team S.W.O.T. Analysis and Team Assessment Criteria	Guests: Project Client Team (TBD)
4	Sept. 12	M 2:00-4:50	Project Site Visit	Wright/Souleyrette
	Sept. 14	W 2:00-4:50	Team Work Day Prepare for Team Report 1 (Response to Request for Proposal)	Wright/Souleyrette

5	Sept. 19	M 2:00-4:50	Five-Minute Sales Pitch Team Report 1 Due Informal Presentations in Class	Wright/Souleyrette
	Sept. 21	W 2:00-4:50	Managing a Project In-class team work session: developing a Work Plan and Schedule Reading: Chapters 15 (Design Team Dynamics) and 16 (Managing a Design Project) Reading Response #2 Due	Wright/Souleyrette
6	Sept. 26	M 2:00-4:50	Guest Lecture Topic: TBD Report 2 (Conceptual Design) Schedule Due	Guest: TBD
	Sept. 28	W 2:00-4:50	Objectives and Constraints Reading: Chapters 4 (Clarifying Objectives) and 5 (Identifying Constraints) Response: Reading Response #3 Due	Wright/Souleyrette
7	Oct. 3	M 2:00-4:50	Noise Analysis and Impacts Lecture and Field Work	Wright/Souleyrette
	Oct. 5	W 2:00-4:50	Guest Lecture Topic: TBD Conceptual Design and Evaluation Reading: Chapters 6 (Establishing Functions), 7 (Generating Design Alternatives), and 8 (Evaluating Design Alternatives) Reading Response #4 Due	Guest: TBD
8	Oct. 10	M 2:00-4:50	Team Work Day In-class work session to prepare for Report 2	Wright/Souleyrette
	Oct. 12	W 2:00-4:50	Team Work Day Use this time to work with your team Report 2 (Conceptual Design) Submittal by Oct. 13 at 12:00 noon	-
9	Oct. 17	M 2:00-4:50	Report 2 Presentation OHR 112	Guest: Client Group (TBD)
	Oct. 19	W 2:00-4:50	Report 2 Presentation OHR 112	Guest: Client Group (TBD)

10	Oct. 24	M 2:00-4:50	Report 3 – Schedule In-class team work session Communicating Designs Reading: Chapters 9 (Communicating Designs Graphically) and 11 (Communicating Designs Orally and in Writing) Reading Response #5 Due	Souleyrette/ Wright
	Oct. 26	W 2:00-4:50	Guest Lecture Topic: TBD Report 3 Schedule Due	Guest: TBD
11	Oct. 31	M 2:00-4:50	CE Industry Advisory Group meeting with students (date is subject to change)	Souleyrette
	Nov. 2	W 2:00-4:50	In-Lab Work Session with Teaching Assistants	TAs: TBD
12	Nov. 7	M 2:00-4:50	Guest Lecture Topic: TBD	Guest: TBD
	Nov. 9	W 2:00-4:50	E-Studio Appointments (10:00-5:00) Prep for Poster Design	Guides: TBD
13	Nov. 14	M 2:00-4:50	Sustainability and Ethics Reading: Chapters 14 (Design for Production, Use and Sustainability) and 17 (Ethics in Design) Reading Response #6	Souleyrette/ Wright
	Nov. 16	W 2:00-4:50	Team Work Day In-class Work Session to prepare for Report 3	Souleyrette/ Wright
14	Nov. 21	M 2:00-4:50	Team Work Day Use this time to work with your team Report 3 (Final Design) Submittal by Nov. 22 at 12:00 noon	-
	Nov. 23	W 2:00-4:50	No Class – Thanksgiving Holiday	-
15	Nov. 28	M 2:00-4:50	Report 3 Presentation OHR 112	Guest: Client Group
	Nov. 30	W 2:00-4:50	Report 3 Presentation OHR 112	Guest: Client Group
Note: Project Poster files are due for printing by 8:00 a.m. on Thursday, Dec. 1				

16	Dec. 5	M 2:00-4:50	Senior Seminar Day OHR 112 Outstanding Senior Team Award	Guest: Client Group
	Dec. 7	W 2:00-4:50	Guest Lecture Topic: Life Lessons Semester Wrap-up, Items Due: Graduating Senior Survey Team Assessment Collection Team Schedule and Progress Documentation Package	Guest: TBD
17	Dec. 12	T 12:30-1:45	No Class FINALS WEEK	-
	Dec. 14	W 2:00-4:50	No Class FINALS WEEK	-