



UNIVERSITY OF KENTUCKY

CE 539

TRANSMITTAL

JAN 12 2003

DATE: January 7, 2004

TO: Rebecca Scott
Senate Council

FROM: Lissa Holland
Graduate Council

The Graduate School
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Lexington, KY 40506-0027
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The Graduate Council met on November 20, 2003 and approved the following:

COLLEGE OF ENGINEERING

Civil Engineering

CE 539 Transportation Systems Design (4 credits)

Introduction to the processes and procedures for transportation systems design. Policy design, functional design and sizing, operation and schedule design, location and geometric design, supporting structures design as they individually and collectively affect the efficacy of transportation systems. Written and oral presentation of student projects will be required.

Lecture: 3 hours, Lab: 1 hour.

Prerequisites: CE 211 or CE 215 and CE 331 and engineering standing.

Change to:

CE 539 Transportation Systems Design (3 credits)

This course focuses on the design of urban intersections and the procedures used to evaluate the operational level of urban roadway systems. First, a review of urban intersection design principles and aspects is presented. Second, traffic signal timing techniques are reviewed and students are required to use two software packages for evaluation of traffic operation of urban roadway systems. The focal point of the course is a group design project where solutions to accommodate all transportation modes and their issues along a corridor in Lexington are sought. Fieldwork and data collection are part of this course. *Lecture: 2 hours, Lab: 1 hour.*

Prerequisites: CE 211 and CE 331; CE 531 prereq or concur.

UNIVERSITY OF KENTUCKY
APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

1. Submitted by College of Engineering Date 1/16/03

Department/Division offering course Civil Engineering

2. Changes proposed:

(a) Present prefix & number CE539 Proposed prefix & number CE539

(b) Present Title Transportation Svstems Design

New Title same

(c) If course title is changed and exceeds 24 characters (Including spaces), include a sensible title (not to exceed 24 characters) for use on transcripts:

(d) Present credits: 4 Proposed credits: 3

(e) Current lecture: laboratory ratio 3:1 Proposed: 2:1

(f) Effective Date of Change: (Semester & Year) Fall 04

3. To be Cross-listed as: _____
Prefix and Number Signature: Department Chair

4. Proposed change in Bulletin description:

(a) Present description (including prerequisite(s)):
See attached description.

(b) New description:
See attached description

(c) Prerequisite(s) for course as changed: CE 211 and CE 331; CE 531 prereq or concur

5. What has prompted this proposal?
New CE Curriculum and coverage of material in other courses

6. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:
A part of lectures relative to project scheduling and management will be eliminated, since it will be part of a new course (CE 429)

7. What other departments could be affected by the proposed change?
None

8. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky? Yes No

9. Will changing this course change the degree requirements in one or more programs? * Yes No
If yes, please attach an explanation of the change.*

10. Is this course currently included in the University Studies Program? Yes No
If yes, please attach correspondence indicating concurrence of the University Studies Committee.

11. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.

*NOTE: Approval of this change will constitute approval of the program change unless other program modifications are proposed.

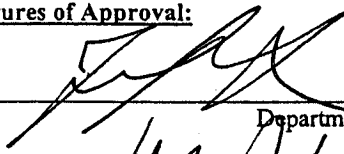
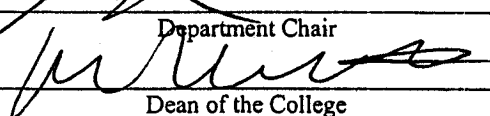
**UNIVERSITY OF KENTUCKY
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12. Is this a minor change? Yes No
 (NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)

13. Within the Department, who should be consulted for further information on the proposed course change?

Name: Nikiforos Stamatiadis Phone Extension: 7-8012

Signatures of Approval:

 Department Chair	1/24/03 Date
 Dean of the College	3/31/03 Date
**Undergraduate Council	3/17/03 Date of Notice to the Faculty
**Graduate Council	Date
**Academic Council for the Medical Center	Date
**Senate Council	Date of Notice to University Senate

**If applicable, as provided by the Rules of the University Senate.

ACTION OTHER THAN APPROVAL

The Minor Change route for courses is provided as a mechanism to make changes in existing courses and is limited to one or more of the following:

- a. change in number within the same hundred series;
- b. editorial change in description which does not imply change in content or emphasis;
- c. editorial change in title which does not imply change in content or emphasis;
- d. change in prerequisite which does not imply change in content or emphasis;
- e. cross-listing of courses under conditions set forth in item 3.0;
- f. correction of typographical errors. [University Senate Rules, Section III - 3.1]

Rev 8/02

Print Form

Clear Form

COURSE: CE 539-001 Transportation Systems Design (Fall, 2004)

TIME and PLACE: Tuesday, Thursday 2:00-4:30; 203 Anderson Mechanical Bldg.

INSTRUCTOR: Nick Stamatiadis, Professor; 257-8012; nstamat@engr.uky.edu

OFFICE and HOURS: C265 Raymond Building;
office hours Tuesday, Thursday 1:00-2:00 and by appointment

REQUIRED TEXT: CE-539 Class Notes, available in the web at
www.engr.uky.edu/~ce539

Additional readings are assigned from various texts, periodicals, and technical journals. A list of the textbooks to be used follows.

TEACHING ASSISTANT: Joe Beam, 216 Raymond Bldg., jjych@yahoo.com
Office Hours: Monday and Wednesday 3:00-4:30 p.m. and by appointment

COURSE GOAL:

To introduce students to the current design and analysis techniques used in traffic engineering for urban road systems.

COURSE CONTENT:

This course focuses on the design of urban intersections and the procedures used to evaluate the operational level of urban roadway systems. First, a review of urban intersection design principles and aspects is presented. Second, traffic signal timing techniques are reviewed and students are required to use two software packages for evaluation of traffic operation of urban roadway systems. The focal point of the course is a group design project where solutions to accommodate all transportation modes and their issues along a corridor in Lexington are sought. Fieldwork and data collection are part of this course.

OBJECTIVES:

Students will be evaluated on class quizzes, homework submissions, oral presentations, and written reports on their ability to accomplish the following course objectives:

1. To understand the design principles of an urban intersection.
2. To understand the calculation procedures for evaluating level of service at Intersections.
3. To calculate optimal traffic signal timing plans.
4. To develop a traffic calming plan for a roadway corridor.

5. To evaluate alternatives and recommend a final design solution for an urban roadway system.
6. To use the required traffic engineering software to design traffic control and evaluate alternatives.
7. To communicate technical and non-technical design issues and results in both oral and written form.

COURSE COMPONENTS, REQUIREMENTS, AND GRADING:

Lectures

Lectures in a design course are very few and given to present some directions for design and calculation procedures, to introduce new software, and to discuss methodological approaches for the completion of the projects. A large part of the lecture sessions are dedicated to group work, where the instructor and TA will be available for consultation. Attendance and participation in discussions is a **MUST** (let alone the fact that the instructor will be positively impressed). *If you missed class, you missed important information!!*

Questions and comments from students are welcome at any time during class.

Homework Assignments

Homework problems are assigned periodically to facilitate the understanding of the concepts presented. Some of the homework sets are included in the Class Notes and tentative due dates are as presented in this syllabus. Homework assignments will be completed in groups of *two or three* students. All homework submissions must be **TYPED** and should conform to acceptable engineering standards. Follow the instructions provided in the Class Notes carefully (Section 1). Remember, that you need to rationalize all your answers and explain how and why you arrived at these conclusions. Simply stating the answer or your suggestion is not enough to get you full credit. One last thing: **Do not fold your submission!!**

Quizzes

Throughout the semester short quizzes will be given to test your knowledge on the material presented and discussed. The quizzes will consist of multiple-choice questions and will be either statements or short problems. For most quizzes, the date will be announced during the previous lecture period. However, pop-quizzes may be given without any prior notice.

Group Project

Since this is a design class, it is natural that semester projects will be required. One design project is required for this class with a due date of **XX December 2004, 12:00 p.m.**

The description and details of the project will be provided at a later date. The project deals with a comprehensive study of Alumni Road Corridor from Tates Creek Rd. to Nicholashville

Rd. The study will seek solutions to meet most of the goals of our client (the University and Lexington-Fayette Urban County Government) while addressing the needs and desires of various affected users (automobile drivers, pedestrians and bicyclists). The project will involve determination of traffic volumes and flows in the area, meeting with concerned citizens and stakeholders, development and evaluation of alternative designs, and proposals for potential implementation to address existing and future problems.

A technical report of professional quality should be completed presenting the problem definition, data collection, analysis procedure, and findings of the analysis for the project. Examples of reports from consulting firms who have completed similar reports will be placed on reserve in the library. More details will be presented at a later date, when the requirements and assignments of the project will be discussed.

Progress Reports

The completion of any project could be viewed as a multi-task step by step process. Target dates for the completion of each step and progress reports will be compiled to ensure the timely completion of the tasks and the project itself. The progress reports will summarize the activities between reports and should be TYPED. The description of tasks will be defined with the project announcement indicating the topics that should be covered in each report. Additional guidelines will be provided prior to the due date of the report. The target dates will be set at a later date.

Oral Presentations

The findings of your work will be presented during two class periods depending on the number of groups. The first presentation is scheduled for Tuesday, YY December, 2004 and the second for Thursday, YY December, 2004. Each presentation will be given to a committee and your results will be evaluated. A short question and answer period will follow after each presentation to allow the committee and your classmates to comprehend and criticize your findings.

Graduate Course Credit

For graduate students a paper on pedestrian or bicyclist transportation issues is also required. The student could select a topic regarding safety, design of facilities or mobility needs of such users. This substitutes the grade of the quizzes.

Grading

The weight distribution for the grade in this course is as follows:

Homework	15%	90 - 100 = A
Quizzes	10%	80 - 89 = B
Project #1	45%	70 - 79 = C
Oral presentation	15%	60 - 69 = D
Progress reports	15%	< 60 = E

GRADES WILL NOT BE ADJUSTED AT ANY TIME USING ANY "CURVE" SCHEME.

"TEAM WORK":

Students working together is required for homework and the group project. However, it is not allowed for taking quizzes and trading homework problems among groups is **NOT** considered "team work". These forms of team-work will be punished accordingly--in addition to receiving a zero (0) as grade for the homework, the chairman and dean will be notified!!

Each individual will be required to provide a Confidential assessment of the work contribution of other members at the end of each project and with each homework. If at any time during the term a group member is considered not be contributing to the course work, the instructor should be notified immediately to act as an arbitrator.

DEADLINES:

Late assignments will be accepted only in case of an appropriately verified 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.

MY EXPECTATIONS:

The following is a list of my expectations regarding your attendance, progress, and participation in the class. A similar list with your expectations from me will be compiled to create the basis for an enjoyable semester. Thus,

I expect you:

1. to come on time and attend the class lectures
2. to turn your homework in time and at the assigned due dates
3. to be attentive during the class lectures and actively participate in discussions
4. to complete the reading assignments and come prepared to class
5. to be able to complete assignments (homework and projects) and exams
6. to think critically and be creative as future civil engineers
7. to learn what is deemed necessary for completing your engineering education
8. to become familiar with the class subject
9. to be able to acquire at least adequate knowledge to complete work in the future in the area of traffic engineering
10. to not be afraid to ask questions and express your opinion

I want you to become "critical thinkers" and not "number-crunchers"

LIST OF ASSIGNED READINGS

Most of the readings are from the course notes but some are from textbooks and reference manuals which are on reserve in the library. The numbers on the schedule refer to those below.

1. Stamatiadis, N. *CE 539 Course Notes*, Lexington, KY, 1999.
2. Institute of Transportation Engineers. *A Toolbox for Alleviating Traffic Congestion*, Washington, D.C., 1989.
3. Institute of Transportation Engineers. *Traffic Engineering Handbook 4th Edition*, James L. Pline, Editor, Prentice Hall, Englewood Cliffs, New Jersey, 1992.
4. McShanne, William R. and Roger P. Roess. *Traffic Engineering*, Prentice Hall, Englewood Cliffs, New Jersey, 1990.
5. Transportation Research Board. *Highway Capacity Manual*, TRB Special Report No 209, Washington, D.C., 1994.
6. Institute of Transportation Engineers. *Transportation and Land Development*, V. Stover, F. J. Koepke, Englewood Cliffs, N.J., 1988.
7. Federal Highway Administration. *Roundabouts: An Informational Guide*, FHWA-RD-00-067, Washington, D.C. 2000.
8. American Association of State Highway Transportation Officials. *A Policy on Geometric Design of Highways and Streets*, Washington, D.C., 2001.
9. Federal Highway Administration and Institute of Transportation Engineers. *Traffic Calming State of the Practice*, Washington, D.C., 1999 (www.ite.org/traffic/index.htm)

TENTATIVE SCHEDULE:

In the absence of announced deviations due dates for the homework assignments given below are correct. Readings SHOULD BE DONE PRIOR to the lecture. Additional readings may be required and handouts will be provided as needed.

Week	Topic	Readings
1 (8/28)	Introduction.	Ch 4 and 5 (4); Ch 18 (4); Ch 2 (1)
2 (9/ 2)	Traffic Signal Warrants; Critical Movement Analysis; Phasing and timing of traffic signals; Capacity and delays of intersections; Project #1 assignment	Ch 9 and 10 (5); Ch 3, 7 (1); Ch 6 (3); Ch 5 (6); Ch 9 (8)
3 (9/ 9)	Geometric design of intersections; Highway Capacity Software (Lab) 10 September - Homework #1 DUE	Ch. 7 (1); Ch. 2-8 (7)
4 (9/16)	TRANSYT-7F traffic network optimization program; Data entry; Output analysis and coding tricks (Lab) 11 September - Homework #2 DUE	Ch 6 (1); Ch 1- 4 (6); Ch IX (8); Ch 7 (1)
5 (9/23)	20 September - Homework #3 DUE	Ch 6 (3); Ch 5 (1)
6 (9/30)	Special classes this week 25 September - Tom Slater, ASCE 27 September - Project work in lab	
7 (10/ 7)	Project time (Lab) 1 October - Homework #4 DUE (1:00 p.m.)	Ch 6 (1)
8 (10/14)	Congestion alternatives and solutions	
9 (10/21)	Classes might be canceled. Stay tuned for details Presentation guidelines; Project crunch time (Lab) Project #2 assignment 16 October--Homework #5 DUE	Handout
10 (10/28)	Project time	
11 (11/ 4)	Presentation week 1 November--Presentation Project #1	
12 (11/ 11)	Traffic Calming: what is it, problems and issues: 5 November - Project #1 DUE (12:00 p.m.)	Ch 1, 2, 3 (9)

13 (11/18)	Traffic Calming solutions and future Challenges	Ch 4, 5, 6 (9)
14 (11/25)	Traffic problems, issues and Challenges; Congestion management 22 November - Thanksgiving Holiday	Ch 2, 3 (2)
15 (12/ 2)	Project week	
16 (12/ 9)	Presentation week 6 December - Presentation Project #2	
17 (12/16)	Final exams week 10 December - Project #2 DUE 12:00 p.m.	

Note: Numbers in parenthesis denote the reference number given in the list of assigned readings.