Engineering Faculty Document 21 - 04
October 14, 2004

MEMORANDUM

To: The Faculty of the Schools of Engineering
From: The Faculty of the School of Civil Engineering
Re: New Dual-Level Course

The Faculty of the School of Civil Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

CE567 Highway Traffic and Safety Analyses

Sem. 2, Class 2, lab. 3, cr. 3.

Prerequisite: CE463 or consent of instructor

Traffic and safety studies including: traffic and safety impact studies, control and geometry improvements, hazard and countermeasures identification, predicting safety benefits, before-and-after studies; data collection and computer tools for highway traffic and safety evaluation.

Reason: To advance students knowledge and skills in using engineering methods for evaluating and improving highway safety and safety-related operations. This course builds on the fundamentals of traffic engineering learned in CE463. No course offered in the School of Civil Engineering sufficiently covers highway safety.

This course has been offered under a temporary number five times starting in the Spring Semester of 2001. Enrollments were 11, 7, 14, 11, and 19.

Fred L. Mannering, Head
School of Civil Engineering

Supporting documentation

1. Justification: students in the School of Civil Engineering majoring in transportation learn fundamentals and methods of highway planning, design, and operations in separate courses. The proposed course exposes students to solving engineering problems that include multiple areas of transportation engineering. The course emphasizes safety aspects of transportation engineering. No other course taught in the School covers highway safety in a comprehensive manner.
2. Level: dual level
3. Prerequisites: CE 463 or consent of instructor
4. Instructor: Andrew P. Tarko
5. Course objectives: Students who complete the course should be able to:

    - Use highway transportation tools in an efficient and adequate manner,
    - Make reasonable assumptions to fill gaps in data and methodology,
    - Design and perform data collection and other efforts adequate to project needs,
    - Communicate efficiently within and outside a project team.
    - Supervise and conduct safety-related studies involving planning, design, and traffic operations,
    - Supervise and conduct highway safety management tasks.

6. Course outline (planned for Tuesday/Thursday offering)

Lectures	*Topic*
2	Introduction to traffic engineering, types of traffic studies
3	Traffic and safety impact studies
3	Field studies: traffic volumes, parking, speed, site investigation for safety improvements
2	Traffic quality concepts
3	Safety in traffic signals design
2	Computer tools for traffic evaluation
1	Midterm examination
4	Road safety concepts, estimation, and prediction
2	Hazardous sites identification
2	Safety deficiencies and countermeasures
2	Evaluation of safety projects, updating crash reduction factors
3	Safety vs. human perception and behavior
1	Course overview
30	

Lab sessions	*Topic*
1	Scoping a traffic impact study
3	Planning and conducting data collection
2	Traffic growth prediction in areas with stable development
4	Traffic generation and assignment for small developments
2	Evaluation of traffic and safety conditions
2	Determination of highway improvements
1	Project presentations
15	

7. Text: Class notes and other materials distributed in class