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CURRICULUM PROPOSAL FORM 2001-2002

**NON-GENERAL EDUCATION PROCESS A**

**\*DEADLINES:** Deadline dates for 2001/2002 submissions: Regular proposals: October 19, 2001 to be implemented in Fall 2002; Short-Term proposals: December 7, 2001 to be implemented in Fall, 2002; Regular proposals February 15, 2002 to be implemented in Spring, 2003; March 22, 2002 for short-term courses to be implemented in Spring 2003.

**PROPOSAL TITLE:** Highway and Traffic Design, and Transportation Planning

**SPONSOR(S):** Yusuf Mehta, x 5327

**DEPARTMENT:** Civil and Environmental Engineering

**COLLEGE:**

IF LAS CHECK ONE:  History/Humanities  Math/Sciences  Social/Behavioral Sciences

Check one:  Undergraduate  Graduate

THE ATTACHED **NON-GEN-ED** PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED.

New non-gen-ed course

Short-term non-gen-ed course

Minor curricular changes (fewer than three) to:

existing non-gen-ed course

non-gen-ed degree requirements

major

minor, specialization, concentration, track, certificate program

**DEPARTMENT**  
(Signature indicates approval)

Dept. Curriculum Chair / Date Daryl D. Chen, 2/15/02

Dept. Chairperson / Date Kausar Jahan, 2/15/02

**ACADEMIC DEAN**

Approved  Not Approved  Comments: No resource issues

Dean's Signature/Date Dianne Dala, 4/22/02

**COLLEGE CURRICULUM COMMITTEE**

Date of open hearing (if necessary) 4/26/02 Approved X Not Approved \_\_\_\_\_

Comments:

Signature of College Chair/Date: Kevin D. Schum

**UNIVERSITY CURRICULUM COMMITTEE**

Date Received/Processed \_\_\_\_\_

Comments:

Curriculum Chair Signature Phillip A. Fleury 7/25/02 Date Announced At Senate 7/11/02

**EXECUTIVE VICE PRESIDENT/PROVOST**

Approved  Not Approved \_\_\_\_\_ If no, reasons are as follows:

Student Credit Hours \_\_\_\_\_ Faculty Load Hours \_\_\_\_\_ Equalized Credit Hours \_\_\_\_\_

Official Copy & Approval Sheet Filed (Date): \_\_\_\_\_ Executive VP/Provost Signature/Date Allen Gels-See  
11/23/02

**REGISTRAR**

Date Approved Course Description Received \_\_\_\_\_ Hegis Taxonomy & Course Number Assigned 0908-564

Registrar Signature/Date E.C. Eigenbrodt 12/18/02

**NOTIFICATION FORWARD**

Senate Curriculum Committee Chairperson

Academic Dean(s)

Department Chairpersons

Registrar

T/M - 1/2/03

CAP - Gels  
Inst. Review

\_\_\_\_ Sponsor(s) run

## Course Proposal – New Non-Gen. Ed. Course

### 1. Details

- a) Course Title: Design of Elements of Transportation Engineering (0908-564)
- b) Sponsor: Dr. Yusuf A. Mehta, x 5327  
Civil and Environmental Engineering
- c) Credit Hours: 3 hours
- d) Course Level: Graduate (500 level)
- e) Prerequisites: Transportation Engineering (0908.461), or permission of instructor.
- f) Implementation: The new course will be implemented when approved and will be offered in alternating years.
- g) Curricular Effect: Implementation will be coordinated with companion courses as described below. The proposed change, in conjunction with the addition of a new course, will offer undergraduate and graduate students in Civil and Environmental Engineering a greater variety in the courses they can take to complete their respective degrees. The existing course this replaces will be removed after the transition.
- h) Resources: No new resources required.
- i) Library: No new resources required.

### 2. Rationale

#### a) Need for change

This proposal is essentially a name change of an existing course and a minor change in the course content. The existing course, “Advanced Transportation Engineering” (0908-562) is part of the graduate Civil and Environmental Engineering curriculum, and is offered every year. Current Rowan undergraduates who wish to continue toward a Masters degree at Rowan in Civil Engineering must take the co-listed companion course, “Advanced Transportation Engineering for Seniors” (0908-462), and risk repetition of course content.

The new course will cover in greater depth some aspects of the original course, and add selected new topics. The course will be offered in even years, and a new, complementary course will be created and offered in odd-numbered years.

### 3. Essence of the Course

a) Objectives:

Upon completion of the course, students will be able to design and analyze the following phenomena by laboratory and/or field experimentation, computer modeling, and hand calculation:

Characteristics of the driver, the pedestrian, the vehicle, and the road  
Traffic engineering studies  
Fundamental principles of traffic flow  
Intersection design and control  
Capacity of freeway sections and two-lane highways and level of service at signalized intersections  
The transportation planning process  
Forecasting travel demand  
Geometric design of highway facilities

In addition, at the completion of the course, graduate students will be able to independently investigate additional areas related to the topic, conduct a seminar on their findings, and develop a design exercise of a quality suitable for use in an undergraduate course.

b) Topical Outline

The topical outline of the course may vary to some extent depending on the interests of the instructor and the students, and on advances in transportation engineering. The topics initially planned include the following:

Characteristics Of The Driver, The Pedestrian, The Vehicle, And The Road  
*Perception-Reaction Process*  
*Pedestrian, Driver, Vehicle and Road Characteristics.*

Traffic Engineering Studies  
*Spot Speed, Volume, Travel Time and Delay, and Parking*

Fundamental Principles Of Traffic Flow  
*Stochastic Approach to Gap and Gap Acceptance Problems*  
*Queuing Theory*

Intersection Design And Control  
*Conflict Points at Intersections*  
*Types of Intersection Control*  
*Signal Timing for Different Color Indications and Freeway Ramps*

Capacity Of Freeway Sections And Two-Lane Highways And Level Of Service At Signalized Intersections  
*Freeway Capacity of Two-Lane and Two-Way Rural Highways and signalized intersections*  
*Operation and Planning Analysis*

The Transportation Planning Process  
*Institutionalization of Urban Transportation Planning and Forecasting Travel*

Forecasting Travel Demand  
*Demand Forecasting Approaches*

*Trip Generation and Distribution*  
*Traffic Assignment*  
*Other Methods for Forecasting Demand*  
Geometric Design Of Highway Facilities  
*Design of the Alignment,*  
*Special Facilities for Heavy Vehicles on Steep Grades*  
*Bicycle and Parking Facilities*  
*Computer Use in Geometric Design*

c) Evaluation and Grading Procedure of Students

Student grades will be based on individual and/or group examinations, individual homework, design projects, and lab reports.

d) Course Evaluation

The proposed course will be assessed based on student evaluations and curriculum review by engineering faculty.

**4. Results of Consultations**

The proposed course is the revised version of an existing course entitled "Advanced Transportation Engineering" (0908.562) which is part of the current Civil and Environmental Engineering Curriculum approved by the University Senate. Consultations were submitted with the original proposal as specified by the Curriculum Committee.

## **Catalog Description**

Design of Elements of Transportation Engineering (0908.564)

Prerequisites: Transportation Engineering (0908.461), or permission of instructor.

(Offered even-numbered years) The fundamental theme of the course is the study of advanced topics in highway design and analysis, signalized and un-signalized intersection design, forecast travel demand modeling and transportation planning. Topics covered vary from year to year based upon instructor and student interests. This course also includes field measurements and computer applications.



*Department of Geography and Anthropology*

October 29, 2002

Dr. Ralph Dusseau  
DRBA Professor and Chair  
Department of Civil and Environmental Engineering  
Rowan University  
Glassboro, NJ 08028

Dear Dr. Dusseau:

As you requested, I am writing to offer my support for five course proposals written by professor Mehta of your department. I have carefully reviewed the proposals for the following courses:

1. Transportation Engineering [0908-361]
2. Design Elements of Transportation Engineering [0908-564]
3. Pavement Analysis and Evaluation
4. Advanced Pavement Analysis and Evaluation
5. Surveying and Engineering Graphics [0908-203]

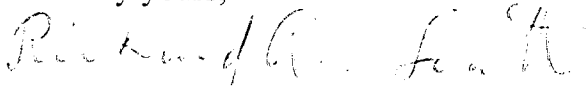
Considered individually, each of the course proposals is complete, logical, and well thought out. Taken together, the proposals would seem to provide undergraduate and graduate students with a comprehensive overview of many of the issues relevant to transportation systems. I am especially impressed by the way in which the proposals dovetail with one another, thereby providing students with a complete tapestry of related material relevant to the topics covered.

A frequent concern of curriculum committees is the question of whether or not proposals for new courses in one department overlap inappropriately with those offered by another department. In this set of courses, I see no significant overlap with courses offered by our department. Even though we do offer a course in transportation geography, that course has very little in common with those proposed here. Specifically, the only area in which there might be overlap is with the course, Design of Elements of Transportation Engineering, where there is some treatment of traffic generation and demand forecasting, a topic treated, to some degree, in our geography of transportation course. Inasmuch as this course is at the graduate level, this overlap in material treated is no concern to me. Moreover, I am very strongly opposed to the notion that there can be no overlap among or between disciplines.

Additionally, I believe that some of the courses might be of interest to students in departments other than yours. For instance, majors in our department who have an interest in planning could certainly benefit from Transportation Engineering [0908-361] and Surveying and Engineering Graphics [0908-203].

After careful review of these proposals, I can give my strong support to all of them and urge the curriculum committee to vote their approval.

Sincerely yours,

A handwritten signature in cursive script that reads "Richard A. Scott".

RICHARD A. SCOTT, Ph.D.

Professor of Geography