

ROWAN COLLEGE CURRICULUM COMMITTEE

(R)

PROPOSAL TITLE: Bridge Engineering 0908.586

UNDERGRADUATE x GRADUATE 3 CREDIT HOURS

SPONSOR(S): Ralph Alan Dusseau and School of Engineering Curriculum Committee

DEPARTMENT & TELEPHONE# Civil Engineering Program, School of Engineering

CHECK ONE: x COURSE MINOR PROGRAM CONCENTRATION SPECIALIZATION ACHIEVEMENT CERTIFICATE CERTIFICATION PROGRAM MAJOR PROGRAM

STEP #1 (DEPARTMENT) APPROVED/DATE: 4-24-96 DEPT. CURRICULUM CHR. STEP #2 (RECEIPT) SCC# 96-47-18 DATE RECEIVED: SENATE JUL 9 RECEIVED SENATE CURRICULUM CHR. STEP #3 (SCHOOL) REVIEWED DATE: 4-18-96 RECOMMEND TO APPROVE FORWARD FOR OPEN HEARING WITHOUT RESERVATIONS WITH RESERVATIONS COMMENTS: SCHOOL COMMITTEE CHR.

STEP #4 (ACADEMIC DEAN) COMMENTS: RECOMMEND NOT RECOMMEND CONDITIONALLY RECOMMEND (SEE COMMENTS) DATE & SIGNATURE, DEAN OF SCHOOL James P. Tracy 5/14/96

STEP #5 (SENATE CURRICULUM COMMITTEE) DATE OF OPEN HEARING 10-28-96 APPROVED BY SENATE CURRICULUM COMMITTEE (DATE) 1/28/96 RETURNED TO SPONSOR(S) FOR THE FOLLOWING REASONS:

STEP #6 (SENATE) DATE PRESENTED TO SENATE 11-20-96 x APPROVED NOT APPROVED NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST (DATE) SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE Ronald J. Zochon 1/23/97

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED 11/31/07

APPROVED: YES NO

IF NO, REASONS ARE AS FOLLOWS:

STUDENT CREDIT HOURS

FACULTY LOAD HOURS

EQUALIZED CREDIT HOURS

OFFICIAL COPY & APPROVAL SHEET FILED (DATE) 11/31/07

SIGNATURE, EXECUTIVE VICE PRESIDENT/PROVOST *C. M. [Signature]*

REGISTRAR

DATE APPROVED COURSE DESCRIPTION RECEIVED 14 Mar 97

HEGIS TAXONOMY AND COURSE NUMBER ASSIGNED 0908-586

DATE/SIGNATURE OF REGISTRAR B. Kelly

NOTIFICATION FORWARD:

 SENATE CURRICULUM COMMITTEE CHAIRPERSON

 DEPARTMENT CHAIRPERSON(S)

 ACADEMIC DEAN(S)

 REGISTRAR

 SPONSOR(S)

Course Proposal:

1. Details:

- a) Course Title: Bridge Engineering
- b) Sponsor: Dr. Ralph Alan Dusseau and School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Graduate (0908.586)
- e) Curricular Effect: Elective course for civil engineering graduate students
- f) Prerequisites: Structural Engineering I, II, and III or equivalent
- g) Suggested Time/
Scale of Implementation: One section during spring semesters

h) Resources:

Faculty: Existing faculty can teach this course.

Library: Library acquisitions will be required.

Equipment: No laboratory equipment will be required.

Computers: Computer laboratory access will be required. Acquisition, training, and utilization of professional structural engineering analysis and design software will also be required.

2. Rationale:

The proposed course is an additional civil engineering elective that would supplement the Engineering Curriculum approved by the College Senate in December 1994. The proposed course is consistent with the establishment of the School of Engineering approved by the Board of Trustees in February 1995.

The fundamental theme of the course is the analysis and design of modern steel highway bridges. Unlike steel or concrete buildings, the analysis techniques and design procedures for modern highway bridges are much more complex. A separate design code written by the American Association of State Highway and

Transportation Officials (AASHTO) covers the analysis and design of all types of modern highway bridges. This AASHTO bridge code will provide the basis for the proposed course.

3. Essence of the Course:

a) Objectives:

Upon completion of the course, civil engineering students will be able to analyze and design modern steel highway bridges by hand calculation and by computer utilizing the AASHTO code and including the following tasks:

Determination of the following:

Appropriate bridge design loads

Appropriate load combinations

Appropriate design methods

Selection of the following for reinforced concrete deck slabs:

Cross-section dimensions

Cross-section properties

Selection of steel wide-flange sections for standard steel girder highway bridges

Spacing of steel wide-flange sections for standard steel girder highway bridges

Selection of the following for composite steel-concrete girder highway bridges:

Concrete cross-section dimensions

Concrete cross-section properties

Steel wide-flange sections

Steel wide-flange spacings

Steel shear stud sizes

Steel shear stud spacings

Analysis of highway bridges with continuous spans including the following:

Influence lines

Moving loads

Selection of the following for steel-concrete composite plate-girder highway bridges:

Concrete cross-section dimensions

Concrete cross-section properties

Steel cross-section dimensions

Steel cross-section properties

Steel shear stud sizes

Steel shear stud spacings

Selection of the following for elastomeric bridge bearing connections:

Materials

Dimensions

Selection of the following for fixed bridge connections:

Materials

Dimensions

Selection of the following for roller bridge connections:

Materials

Dimensions

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 structural engineering technology. The topics to be covered will include the following:

Bridge Design Loads

Load Combinations

Design Methods

Reinforced Concrete Deck Slabs

Steel Wide-Flange Stringer Bridges

Composite Steel Wide-Flange Stringer Bridges

Continuous Bridge Spans

Steel Composite Plate-Girder Bridges

Elastomeric Bridge Bearing Connections

Steel Fixed Bridge Connections

Steel Roller Bridge Connections

c) Evaluation and Grading Procedure of Students:

Student grades will be based on midterm and final examinations and homework assignments.

d) Course Evaluation:

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

4. Results of Consultations:

The proposed course is an additional elective that would supplement the Engineering Curriculum approved by the College Senate in December 1994. Consultations were submitted with the original proposal as specified by the Curriculum Committee.

Catalog Description:

Bridge Engineering (0908.586)

(Prerequisites: Structural Engineering I, II, and III or
 equivalent)

The fundamental theme of the course is the analysis and design of modern steel highway bridges utilizing the bridge code of the American Association of State Highway and Transportation Officials. The topics covered include bridge loads, load combinations, design methods, reinforced concrete deck slabs, steel wide-flange stringer bridges, steel composite wide-flange stringer bridges, continuous bridge spans, steel composite plate-girder bridges, elastomeric bearing connections, steel fixed bridge connections, and steel roller bridge connectins. The course includes appropriate computer applications.