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ROWAN COLLEGE  
CURRICULUM COMMITTEE


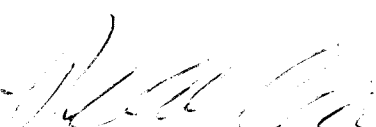
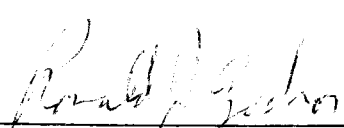
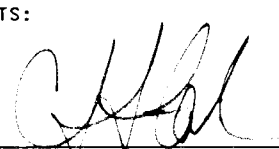
PROPOSAL TITLE: Bridge Engineering for Seniors 0908-486

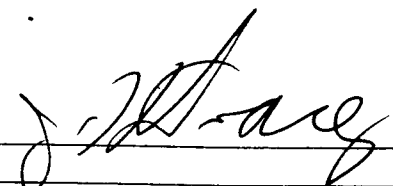
UNDERGRADUATE       GRADUATE      3 CREDIT HOURS

SPONSOR(S): Ralph Alan Dusseau

DEPARTMENT & TELEPHONE# Civil Engineering, 4628

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

STEP #1 (DEPARTMENT)	STEP #2 (RECEIPT)	STEP #3 (SCHOOL)
<input checked="" type="checkbox"/> APPROVED/DATE: <u>9/20/96</u> <input type="checkbox"/> NOT APPROVED/DATE:  DEPT. CURRICULUM CHR. Ralph Alan Dusseau <input checked="" type="checkbox"/> REVIEWED/DATE: <u>9/20/96</u>  DEPT. CHR.	SCC# <u>96-97-37</u> DATE RECEIVED:  SENATE/CURRICULUM CHR.	REVIEWED DATE:- <u>9/23/96</u> <input checked="" type="checkbox"/> RECOMMEND TO APPROVE <input type="checkbox"/> RECOMMEND NOT TO APPROVE FORWARD FOR OPEN HEARING <input checked="" type="checkbox"/> WITHOUT RESERVATIONS <input type="checkbox"/> WITH RESERVATIONS COMMENTS:  SCHOOL COMMITTEE CHR.

STEP #4 (ACADEMIC DEAN)	COMMENTS:
<input checked="" type="checkbox"/> RECOMMEND <input type="checkbox"/> NOT RECOMMEND <input type="checkbox"/> CONDITIONALLY RECOMMEND (SEE COMMENTS) DATE & SIGNATURE, DEAN OF SCHOOL <u>9/23/96</u> 	

STEP #5 (SENATE CURRICULUM COMMITTEE)
DATE OF OPEN HEARING <u>1/24/97</u> APPROVED BY SENATE CURRICULUM COMMITTEE (DATE) <u>1/24/97</u> <input type="checkbox"/> RETURNED TO SPONSOR(S) FOR THE FOLLOWING REASONS: <hr/> <hr/>

STEP #6 (SENATE)
DATE PRESENTED TO SENATE _____ <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> NOT APPROVED NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST (DATE) _____ SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE <u>Ronald J. Gordon 2/7/97</u>

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED \_\_\_\_\_

APPROVED:  YES  NO

IF NO, REASONS ARE AS FOLLOWS:

STUDENT CREDIT HOURS 3

FACULTY LOAD HOURS 3

EQUALIZED CREDIT HOURS \_\_\_\_\_

OFFICIAL COPY & APPROVAL SHEET FILED (DATE) \_\_\_\_\_

SIGNATURE, EXECUTIVE VICE PRESIDENT/PROVOST [Signature]

REGISTRAR

DATE APPROVED / FORMAL DESCRIPTION RECEIVED 14 Mar. 97  
HEGIS TAXONOMY AND COURSE NUMBER ASSIGNED 0908-486  
DATE/SIGNATURE OF REGISTRAR [Signature]

NOTIFICATION FORWARD:

\_\_\_ SENATE CURRICULUM COMMITTEE CHAIRPERSON

\_\_\_ DEPARTMENT CHAIRPERSON(S)

\_\_\_ ACADEMIC DEAN(S)

\_\_\_ REGISTRAR

\_\_\_ SPONSOR(S)

## Course Proposal:

### 1. Details:

- a) Course Title: Bridge Engineering for Seniors
- b) Sponsor: Dr. Ralph Alan Dusseau and School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Seniors (0908.486)
- 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 for Seniors (0908.486)

(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.