

ROWAN COLLEGE
CURRICULUM COMMITTEE

(C)

PROPOSAL TITLE: Advanced Structural Analysis 1908.573

 UNDERGRADUATE X GRADUATE 3 CREDIT HOURS

SPONSOR(S): Ralph Alan Dusseau

DEPARTMENT & TELEPHONE# Civil Engineering, 4628

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

<p>STEP #1 (DEPARTMENT)</p> <p><u> X </u> APPROVED/DATE: <u>9/30/96</u></p> <p><u> </u> NOT APPROVED/DATE:</p> <p><i>[Signature]</i></p> <p>DEPT. CURRICULUM CHR. Ralph Alan Dusseau</p> <p><u> X </u> REVIEWED/DATE: <u>9/30/96</u></p> <p><i>[Signature]</i></p> <p>ph Alan Dusseau DEPT. CHR.</p>	<p>STEP #2 (RECEIPT)</p> <p>SCC# <u>96-97-43</u></p> <p>DATE RECEIVED:</p> <p><i>[Signature]</i></p> <p>SENATE CURRICULUM CHR.</p>	<p>STEP #3 (SCHOOL)</p> <p>REVIEWED DATE:- <u>9/30/96</u></p> <p><u> X </u> RECOMMEND TO APPROVE</p> <p><u> </u> RECOMMEND NOT TO APPROVE</p> <p>FORWARD FOR OPEN HEARING</p> <p><u> X </u> WITHOUT RESERVATIONS</p> <p><u> </u> WITH RESERVATIONS</p> <p>COMMENTS:</p> <p><i>[Signature]</i></p> <p>SCHOOL COMMITTEE CHR.</p>
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STEP #4 (ACADEMIC DEAN) COMMENTS:

 ✓ RECOMMEND

 NOT RECOMMEND

 CONDITIONALLY RECOMMEND
(SEE COMMENTS)

DATE & SIGNATURE, DEAN OF SCHOOL *[Signature]* 9/30/96

STEP #5 (SENATE CURRICULUM COMMITTEE)

DATE OF OPEN HEARING _____

APPROVED BY SENATE CURRICULUM COMMITTEE (DATE) 1/28/97

 RETURNED TO SPONSOR(S) FOR THE FOLLOWING REASONS:

STEP #6 (SENATE)

DATE PRESENTED TO SENATE 2/7/97 X APPROVED NOT APPROVED

NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST (DATE) _____

SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE *[Signature]* 2/7/97

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED FEB 13 1997

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 COURSE DESCRIPTION RECEIVED 14 Mar 97

HEGIS TAXONOMY AND COURSE NUMBER ASSIGNED 0908-573

DATE/SIGNATURE OF REGISTRAR B. J. Keibler

NOTIFICATION FORWARD:

___ SENATE CURRICULUM COMMITTEE CHAIRPERSON

___ DEPARTMENT CHAIRPERSON(S)

___ ACADEMIC DEAN(S)

___ REGISTRAR

___ SPONSOR(S)

Course Proposal

1. Details:

- a) Course Title: Advanced Structural Analysis
- b) Sponsor: Dr. Ralph Alan Dusseau and School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Graduate (0908.573)
- e) Curricular Effect: Elective course for civil engineering 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 the revision of a civil engineering elective entitled "Advanced Structural Analysis I" that was part of the Engineering Curriculum Proposal 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 a study of the matrix method of structural analysis. This method of analysis is the standard for mathematical modeling and computer analysis of civil engineering structures. This method is used to analyze a wide range of civil engineering structures including structural steel and reinforced concrete buildings and bridges.

3. Essence of the Course:

a) Objectives:

Upon completion of the course, civil engineering students will be able to analyze a variety of civil engineering structures (by hand calculation and by computer) using the matrix method of structural analysis and including the following tasks:

Member and global structural matrix construction:

- Identification and selection of structural members
- Identification and characterization of member joints
- Identification and modeling of member end conditions
- Selection of local and global coordinate systems
- Coordinate transformations in local and global systems
- Construction of member structural matrices
- Construction of global structural matrices
- Reduction of global structural matrices by condensation

Analysis of structural systems by matrix method:

- Static analysis of structural systems
- Dynamic analysis of structural systems

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

Matrix Method of Structural Analysis

- Members, Joints, and End Conditions
- Coordinate Systems and Coordinate Transformation
- Member and Global Structural Matrices
- Condensation of Global Structural Matrices

Structural Analyses Utilizing the Matrix Method:

Static Analysis

Dynamic Analysis

c) Evaluation and Grading Procedure of Students:

Student grades will be based on individual and team projects, individual examinations, and individual homework.

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 the revised version of a civil engineering elective entitled "Advanced Structural Analysis I" that was part of the Engineering Curriculum Proposal approved by the College Senate in December 1994. Consultations were submitted with the original proposal as specified by the Curriculum Committee.

Catalog Description:

Advanced Structural Analysis (0908.573)

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

The course deals with the matrix method of structural analysis. The topics covered include structural members, member joints, member end conditions, local and global coordinate systems, coordinate transformation, member structural matrices, global structural matrices, condensation of global structural matrices, static structural analysis, and dynamic structural analysis. The course will include appropriate computer applications.