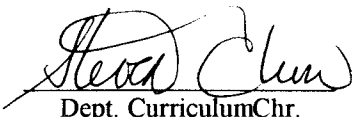
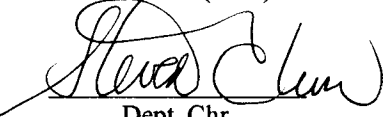
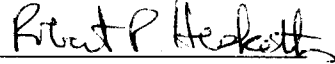



# ROWAN UNIVERSITY CURRICULUM PROPOSAL

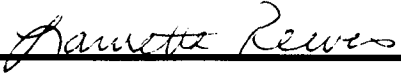
①

<b>PROPOSAL TITLE</b> ior Engineering Clinic II
<b>CHECK APPROPRIATE:</b> <input checked="" type="checkbox"/> UNDERGRADUATE <input type="checkbox"/> GRADUATE <u>3</u> SEMESTER HOURS
<b>SPONSOR(S):</b> College of Engineering Curriculum Committee
<b>DEPARTMENT/TELEPHONE #</b> Dean's Office/256-4670
<b>CHECK ONE:</b> <input checked="" type="checkbox"/> COURSE <input type="checkbox"/> MINOR PROGRAM <input type="checkbox"/> CONCENTRATION <input type="checkbox"/> SPECIALIZATION <input type="checkbox"/> ACHIEVEMENT CERTIFICATE <input type="checkbox"/> CERTIFICATION PROGRAM <input type="checkbox"/> MAJOR PROGRAM

<b>Step #1 (Department)</b> <u>10/24/97</u> Approved (Date) <input type="checkbox"/> Not Approved (Date)   Dept. CurriculumChr.  <u>10/24/97</u> Reviewed (Date)  Dept. Chr.	<b>Step #2 (Receipt)</b>  SCC# <u>97-98-173</u>  _____ Date Received Senate  _____ Senate CurriculumChr.	<b>Step #3 (School)</b> Reviewed Date: <u>10/24/97</u> <input checked="" type="checkbox"/> Recommend to Approved <input type="checkbox"/> Recommend NOT to Approve  Forward for Open Hearing: <input checked="" type="checkbox"/> WITHOUT Reservations <input type="checkbox"/> WITH Reservations: Comments:   School CommitteeChr.
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<b>Step #4 (Academic Dean):</b> <input checked="" type="checkbox"/> Recommended <input type="checkbox"/> NOT Recommended <input type="checkbox"/> Conditionally Recommended (See Comments)
Comments:
Dean Signature/Date  <u>10/28/97</u>

<b>Step #5 (Senate Curriculum Committee)</b> Open Hearing Date: _____    Approved by Curriculum Committee Date _____
Returned to Sponsor(s) for the following reason:

<b>Step #6 (Senate)</b> Date announced/voted on at Senate <u>12/16</u> If voted on: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> NOT Approved
Date forwarded to Executive Vice President/Provost <u>3/5/98</u>
Senate Curriculum Committee chair Signature/Date:  <u>3/4/98</u>

Step #7 (Executive Vice President/Provost): Date Received 3/12/98

Approved

NOT Approved If no, reasons are as follows:

Student Credit Hours \_\_\_\_\_

Faculty Load Hours \_\_\_\_\_

Equalized Credit Hours \_\_\_\_\_

Official Copy & Approval Sheet Filed (Date) 3/9/98

Executive Vice President/Provost Signature 

**Registrar**

Date Approved Course Description Received 3/12/98

Hegis Taxonomy and Course Number Assigned 0901-302

Date/Signature of Registrar 

**Notification Forward:**

\_\_\_\_\_ Senate Curriculum Committee Chairperson

\_\_\_\_\_ Department Chairpersons

\_\_\_\_\_ Academic Dean(s)

\_\_\_\_\_ Registrar

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

Course Proposal:

1. Details:

- a) Course Titles: Junior Engineering Clinic II
- b) Sponsor: College of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Junior
- e) Curricular Effect: Required sequence of courses for all undergraduate engineering students
- f) Prerequisites: Freshman Engineering Clinic I, Freshman Engineering Clinic II, Sophomore Engineering Clinic I, and Sophomore Engineering Clinic II, Junior Engineering Clinic I; or permission of instructor
- g) Suggested Time/  
Scale of Implementation: Approximately 25 junior project teams
- h) Resources:

Faculty: Existing faculty and new faculty to be hired over the next three years will teach this course.

Library: Library acquisitions may be required on a project-by-project basis.

Equipment: Laboratory equipment and supplies may be required on a project-by-project basis.

Computers: Computer access will be required for most project. Acquisition, training, and utilization of professional software packages may be required on a project-by-project basis.

## 2. Rationale:

The goal of this sequence of courses is to give teams of undergraduate engineering students a meaningful, leading-edge, team-based research and design experience. The proposed sequence of courses is designed to give the four engineering programs (Chemical, Civil, Electrical, and Mechanical) the necessary flexibility for the formation, monitoring, and success of junior and senior research and design projects.

Each program will formulate guidelines for the projects sponsored by that department and for the participation of their students in projects sponsored by other departments. In this way, this sequence of courses will satisfy all of the requirements as specified by the Accreditation Board for Engineering and Technology (ABET) for the sponsoring department. The sequence of courses will also maintain sufficient flexibility for both interdisciplinary and multi-disciplinary research and design projects.

## 3. Essence of the Course:

### a) Objectives:

Upon completion of this sequence of courses, undergraduate engineering students working in research and design teams and guided by a faculty advisor will be able to do the following:

Conduct a thorough literature search and review.

Prepare a clear and concise problem statement.

Consult with other faculty and professional experts.

Develop and implement a detailed research and design plan.

Prepare weekly oral and/or written progress reports.

Derive publishable research and design results.

Make a final written report and oral and written presentation.

b) Topical Outline:

The research and design topic chosen by each undergraduate team will depend upon the mutual interests of the undergraduate students and their faculty advisor, and upon the requirements of the engineering department that is sponsoring the project (usually the department to which the majority of the team members and the faculty advisor belong). The sequence of courses will include the following basic components:

A thorough literature search and review.

A clear and concise problem statement.

A record of consultations with other faculty and professional experts.

A research and design plan developed and implemented in close collaboration with a faculty mentor.

A record of project development and execution including weekly progress reports.

A final set of publishable research results.

A final written report and oral presentation.

c) Evaluation and Grading Procedure of Students:

Evaluation of team progress will be made on a weekly basis by the faculty advisor and on a monthly basis by the chair of the sponsoring department. The appropriateness of the research and design content of each project will be determined each semester by the faculty of the sponsoring department (acting as a committee of the whole). Students working on inter-disciplinary and multi-disciplinary projects sponsored by other departments will also be required to report to their department chairs on a monthly basis and to the faculty of their department (acting as a committee of the whole) each semester .

d) Course Evaluation:

The proposed courses will be evaluated based on student evaluations and curriculum review conducted by each department.

4. Results of Consultations:

The proposed sequence of courses will be required for all undergraduate students in the College of Engineering. This sequence is consistent with the engineering curricula that were approved by the University Senate in December 1994 and the revised curricula that were approved in June 1996. Consultations were submitted with the original proposals and the revised proposals as specified by the Senate Curriculum Committee.

Catalog Description:

Junior Engineering Clinic II (0901.301)

Prerequisite: Freshman Clinic I (0901.101), Freshman Clinic II (0901.102), Sophomore Clinic I (0901.201), Sophomore Clinic II (0901.202), Junior Clinic I (0901.301); or permission of instructor

This course is an extension of Junior Engineering Clinic I, and is part of a sequence of courses that will provide a meaningful research and design experience for a team of undergraduate students under the direction of an engineering faculty advisor. The research topic will be chosen by mutual agreement of the undergraduate students and their advisor. The sequence will include a thorough literature search and review, the development of a clear and concise problem statement, consultations with other faculty and professional experts, and the derivation of publishable results. The research will culminate in a final written report and oral presentation.

# ROWAN UNIVERSITY CURRICULUM PROPOSAL

Minor Change

R

**PROPOSAL TITLE:** Minor change in Master of Science in Engineering

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**CHECK APPROPRIATE:**     UNDERGRADUATE     GRADUATE     SEMESTER HOURS

---

**SPONSOR(S):** Tirupathi R. Chandrupatla and college of Engineering Curriculum Committee

---

**DEPARTMENT/TELEPHONE #** 4632

---

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

Step #1 (Department)	Step #2 (Receipt)	Step #3 (School)
<p><input checked="" type="checkbox"/> Approved (Date) <u>10/23/97</u></p> <p><input type="checkbox"/> Not Approved (Date)</p> <p style="text-align: center;"><u>Robert P. Hesketh</u> 10/23/97 Dept. Curriculum Chr.</p> <p style="text-align: center;"><u>10/23/97</u> Reviewed (Date)</p> <p style="text-align: center;"><u>TR Chandrupatla</u> Dept. Chr.</p>	<p style="text-align: center;">SCC# <u>97-98-109</u></p> <p style="text-align: center;"><u>10-24-97</u> Date Received Senate</p> <p style="text-align: center;"><u>A Reeves</u> Senate Curriculum Chr.</p>	<p style="text-align: right;">Reviewed Date: <u>10/23/97</u></p> <p><input checked="" type="checkbox"/> Recommend to Approved</p> <p><input type="checkbox"/> Recommend NOT to Approve</p> <p>Forward for Open Hearing:</p> <p><input checked="" type="checkbox"/> WITHOUT Reservations</p> <p><input type="checkbox"/> WITH Reservations:</p> <p>Comments:</p> <p style="text-align: center;"><u>Robert P. Hesketh</u> School Committee Chr.</p>

**Step #4 (Academic Dean):**     Recommended     NOT Recommended     Conditionally Recommended (See Comments)

Comments:

Dean Signature/Date: [Signature] 10/24/97

**Step #5 (Senate Curriculum Committee):**    Open Hearing Date: \_\_\_\_\_    Approved by Curriculum Committee Date \_\_\_\_\_

Returned to Sponsor(s) for the following reason:

**Step #6 (Senate)**    Date announced/voted on at Senate: \_\_\_\_\_    If voted on:     Approved     NOT Approved

Date forwarded to Executive Vice President/Provost: 2/25/98

Senate Curriculum Committee chair Signature/Date: [Signature] 2/25/98

TM 3/5/98

Step #7 (Executive Vice President/Provost): Date Received ~~11/19~~ ~~2007~~

Approved

NOT Approved If no, reasons are as follows:

Student Credit Hours \_\_\_\_\_

Faculty Load Hours \_\_\_\_\_

Equalized Credit Hours \_\_\_\_\_

Official Copy & Approval Sheet Filed (Date) 2/24/98

Executive Vice President/Provost Signature *C. M. Atkinson*

### Registrar

Date Approved Course Description Received \_\_\_\_\_

Hegis Taxonomy and Course Number Assigned \_\_\_\_\_

Date/Signature of Registrar *E. C. Giddens* 3/2/98

### Notification Forward:

Senate Curriculum Committee Chairperson

Department Chairpersons

Academic Dean(s)

Registrar

Sponsor(s)

*Transmitted  
3/5/98*

Minor Change in  
**Master of Science in Engineering**

Following are proposed as minor changes in the MS in Engineering program.

1. Required Courses ..... ~~12 S.H.~~ 9 S.H.

All graduate students must take the following ~~four~~ three courses unless they can demonstrate equivalent proficiency as determined by the graduate advisor.

- \* Mathematics I: Engineering Applications of Analysis
- \* ~~Mathematics II: Engineering Applications of Probability and Statistics~~
- \* Engineering Applications of Computers or equivalent level computational course in a specific field
- \* One business course from those listed below
  - Quantitative Methods for Business Decision Making
  - Managerial Economics
  - Principles of Management Science
  - Strategic Engineering Management

Students who are excused from any of these required courses must take additional technical electives to complete the 30 semester hours required in the program.

2. Technical Electives or project work..... ~~9-12 S.H.~~ 12 - 21 S.H.

All technical electives must be approved by the student's graduate advisor.

~~Independent Study~~ ..... ~~6-9 S.H.~~

All Students ~~must~~ may participate in ~~an independent study or~~ project work (6-9 S.H.), patterned along one of the two options described below.

- \* Option I: Thesis Research/Engineering Project (6 - 9 S.H.)
 

Research leading to a master's thesis carried out under the supervision of a Rowan engineering faculty member. Successful completion of the thesis includes satisfactory oral and written reports to a thesis committee. The thesis committee may include members from industry or from other schools in the University.

A project identified by a faculty member, a student, or industry and approved by a Rowan engineering faculty member can fulfil the Option I requirement.
- \* Option II: Leadership of Clinic Project (A maximum of 6 S.H.)
 

Students, under the supervision of a faculty member, may serve as advisors in clinic projects. In addition to a clinic report to the client, the graduate student must present a satisfactory written and oral report to a Rowan University Graduate Committee chaired by the Clinic Faculty Advisor.

Students who are excused from any of these options must take additional technical electives to complete the 30 semester hours required in the program.

\* Strike through = delete  
underline = add

## OVERVIEW OF CHANGES

The changes are 1) dropping the required number of mathematics courses to one, and 2) permitting technical electives in place of thesis/project.

## RATIONALE

1. The minor changes proposed here provide flexibility in the program. Mathematics topics are covered in various engineering courses in chemical, civil, electrical, and mechanical engineering. Some students in the program may still take a second course in mathematics in consultation with their advisor. The option of substituting the independent study/thesis with technical electives gives the practicing engineers to take a variety of courses as needed. Practicing engineers form the majority of our students in the program.
2. The change is consistent with the scope of the program as given in the catalog. “The master’s program in engineering is designed to provide students opportunities to enhance the breadth of their education or to specialize in a technical area.” The changes proposed will enable the student to take the breadth or specialization option.

# **Rowan University**

## **Master of Science in Engineering Program**

The Master of Science in Engineering program is designed to respond to the changing needs of engineers today. The program aims to aid in the technological and economic development of southern New Jersey by providing post-baccalaureate educational programs for a diverse student body.

The Master of Science in Engineering program was developed with the assistance of a National Advisory Council of internationally renowned leaders in engineering education and industry. The graduate program started in the Fall of 1995.

The Master of Science in Engineering program provides the students with the opportunity to enhance the breadth of their education or to specialize in a technical area. The Master of Science in Engineering program will enable the student to:

- \* have access to higher level courses leading to a graduate degree or professional development
- \* understand the higher level technical principles that can be used to identify and solve problems beyond the scope of a bachelor's degree
- \* increase the breadth of understanding and application of engineering principles

### **Admission Requirements**

- \* a bachelor of science in engineering from a program accredited by the Accreditation Board for Engineering and Technology (ABET) or equivalent degree
- \* a minimum undergraduate GPA of 2.5 / 4
- \* submission of scores from the Graduate Record Examination (GRE) taken within five years prior to the date of application

Students holding a bachelor's degree in science or mathematics disciplines can be admitted into the program provided they have completed all the course requirements listed in Group A and any 6 courses from Group B

Group A: Chemistry I, Physics I, Calculus I, II, and III, Linear Algebra, Differential Equations

Group B: Physics II, Statics, Solid Mechanics, Engineering Materials, Dynamics, Thermodynamics, Fluid Mechanics, Chemistry II, Chemical Process Principles, Transfer Processes, Physical Chemistry I, Organic Chemistry I, Reaction Engineering, Separation Processes, Electromagnetics, Digital Signal Processing, Communication Theory, Network Theory, Electronics, Control Systems, Data Communication and Networking, Operating Systems, Principles of Digital Computers, Digital Design, Numerical Analysis, Partial Differential Equations

Note: **Students should review their transcripts with the graduate advisor to develop a course plan for the degree program.**

### **Graduate Program Requirements**

- \* a GPA of 3.0
- \* transfer credits may not exceed 9 semester hours
- \* all graduate study requirements of Rowan University

## General Requirements

The Master of Science in Engineering requires 30 semester hours (S.H.) of graduate level courses and independent study. Each student is assigned a graduate advisor who must approve the student's individual program, subject to University guidelines.

Required Courses ..... 9 S.H.

All graduate students must take the following four courses unless they can demonstrate equivalent proficiency as determined by the graduate advisor.

- \* Mathematics I: Engineering Applications of Analysis
- \* Engineering Applications of Computers or equivalent level computational course in a specific field
- \* One business course from those listed below
  - Quantitative Methods for Business Decision Making
  - Managerial Economics
  - Principles of Management Science
  - Strategic Engineering Management

Students who are excused from any of these required courses must take additional technical electives to complete the 30 semester hours required in the program.

Technical Electives or project work ..... 12 - 21 S.H.

All technical electives must be approved by the student's graduate advisor.

Students may participate in a project work (6-9 S.H), patterned along one of the two options described below.

\* Option I: Thesis Research/Engineering Project (6 - 9 S.H.)

Research leading to a master's thesis carried out under the supervision of a Rowan engineering faculty member. Successful completion of the thesis includes satisfactory oral and written reports to a thesis committee. The thesis committee may include members from industry or from other schools in the University.

A project identified by a faculty member, a student, or industry and approved by a Rowan engineering faculty member can fulfil the Option I requirement.

\* Option II: Leadership of Clinic Project (A maximum of 6 S.H.)

Students, under the supervision of a faculty member, may serve as advisors in clinic projects. In addition to a clinic report to the client, the graduate student must present a satisfactory written and oral report to a Rowan University Graduate Committee chaired by the Clinic Faculty Advisor.

Students who are excused from any of these options must take additional technical electives to complete the 30 semester hours required in the program.

For admissions information and/or application form contact: (609) 256-4050

Graduate Studies Office  
Memorial Hall, Rowan University  
201 Mullica Hill Road  
Glassboro, NJ 08028-1701