

ROWAN COLLEGE
CURRICULUM COMMITTEE

0901-103

(C)

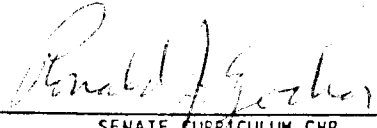
PROPOSAL TITLE: Sophomore Engineering Clinic I/ College Composition II-b

UNDERGRADUATE GRADUATE 3 CREDIT HOURS

SPONSOR(S): School of Engineering Curriculum Committee and College Writing Department, School

DEPARTMENT & TELEPHONE# John L. Schmalzel (Electrical Engineering) / of Communications
Janice Rowan (College Writing)

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

| STEP #1 (DEPARTMENT) | STEP #2 (RECEIPT) | STEP #3 (SCHOOL) |
|---|---|---|
| <u>APPROVED/DATE:</u> <u>NOT APPROVED/DATE:</u> <hr/> DEPT. CURRICULUM CHR. <u>REVIEWED/DATE:</u> <p style="font-size: 2em; text-align: center;">N/A</p> <hr/> DEPT. CHR. | SCC# <u>96-97-105</u> DATE RECEIVED: <u>3-4-97</u>  SENATE CURRICULUM CHR. | REVIEWED DATE: <u>2-24-97</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: <u>TRC</u> TRC <u>RL</u> RAD <u>JS</u> JLS <u>CV</u> CSS <u>[Signature]</u> SCHOOL COMMITTEE CHR. |

STEP #4 (ACADEMIC DEAN) COMMENTS:

RECOMMEND
 NOT RECOMMEND
 CONDITIONALLY RECOMMEND (SEE COMMENTS)

DATE & SIGNATURE, DEAN OF SCHOOL: Janice Rowan 2/27/97

STEP #5 (SENATE CURRICULUM COMMITTEE)

DATE OF OPEN HEARING: 4-24-97

APPROVED BY SENATE CURRICULUM COMMITTEE (DATE): _____

RETURNED TO SPONSOR(S) FOR THE FOLLOWING REASONS:

STEP #6 (SENATE)

DATE PRESENTED TO SENATE: _____

APPROVED NOT APPROVED

NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST (DATE): _____

SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE: Janice Rowan 5/21/97

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED _____

APPROVED: YES NO

IF NO, REASONS ARE AS FOLLOWS:

STUDENT CREDIT HOURS _____

FACULTY LOAD HOURS _____

EQUALIZED CREDIT HOURS _____

OFFICIAL COPY & APPROVAL SHEET FILED (DATE) _____

SIGNATURE, EXECUTIVE VICE PRESIDENT/PROVOST

[Handwritten Signature]

REGISTRAR

DATE APPROVED COURSE DESCRIPTION RECEIVED 4 June 47

HELD TAXONOMY AND COURSE NUMBER ASSIGNED 0901-103

DATE/SIGNATURE OF REGISTRAR B. J. Kelley

NOTIFICATION FORWARD:

SENATE CURRICULUM COMMITTEE CHAIRPERSON

DEPARTMENT CHAIRPERSON(S)

ACADEMIC DEAN(S)

REGISTRAR

SPONSOR(S)

Course Proposal

1. Details:

- | | |
|---|--|
| a) Course Title: | Sophomore Engineering Clinic I/ College Composition II-b |
| b) Sponsors: | School of Engineering College Writing Department, School of Communication |
| c) Credit Hours: | 3 credit hours |
| d) Course Level: | Sophomore (0901.201/1501.112) |
| e) Curricular Effect: | Required course for engineering majors |
| f) Prerequisites: | Prerequisites: Freshman Engineering Clinic II, College Composition I & II-a, Physics I, Computer Science and Programming; concurrent enrollment in Math for Engineering Analysis I |
| g) Suggested Time/ Scale of Implementation | Fall 1997 Six sections |
| h) Resources | Faculty will be hired and laboratory equipment obtained consistent with Engineering School multi-year budget. Library acquisitions will be required. |

2. Rationale:

The proposed course is a revision to Sophomore Project Lab (fall semester) that is 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 and the School of Communication as established by the Board of Trustees in July 1996.

The proposed course is designed to provide second-year engineering students with a laboratory environment that continues the theme of multiple engineering applications drawn from the major disciplines offered within the School of Engineering and providing an integrated environment for understanding the relevancy of concurrent science, mathematics, and communication course work.

This is a team-taught course combining both engineering and communication topics. Communication is a central element in and focus of modern engineering. Successful engineers are expected to demonstrate skill in reading and writing complex documents as well as to possess the ability to translate complex data into a more easily understood language for non-technical coworkers. By emphasizing communication strategies so early in the curriculum, students can develop in-depth rhetorical skills spanning the four years of their education and they can apply

these strategies and skills to their individual disciplines on a regular basis. College Writing and Engineering faculty will share in instruction, grading, and evaluation (see subsequent sections). The second half of College Composition II is included in this semester of the engineering clinic. (The first half is included in Freshman Engineering Clinic II). The communication knowledge that students gain from this course advances their abilities to write complex technical documentation and to be able to present their ideas to diverse audiences. This approach to emphasizing communications will help students develop in-depth rhetorical skills over their four-year programs.

3. Essence of the Course:

a) Objectives:

At the conclusion of the proposed course, students will be able to:

- (i) Demonstrate expanded knowledge of the general practices and the profession of engineering through their immersion in an engineering laboratory environment taught by engineering professionals from the civil, chemical, electrical, and mechanical engineering disciplines.
- (ii) Understand multidisciplinary design based on their investigations of principles of the various engineering disciplines and performance of laboratory experiments related to engineering projects.
- (iii) Solve expanded engineering application problems drawn from work performed in other supporting courses, so as to demonstrate relevance of that supporting course work.
- (iv) Participate in original problem solving and open-ended design experiences using skills and tools that emphasize analysis, simulation, visualization, and communication.
- (v) Learn and apply working principles of laboratory safety to their experimental work.
- (vi) Integrate elements of engineering professionalism and ethics in their work and as it relates to the context of engineering in society.
- (vii) Demonstrate a working knowledge of communication skills needed to communicate effectively about technical and non-technical topics, including: rhetoric, data visualization and presentation, engineering problem solving, short reports, memos and others. These objectives are consistent with those of College Composition II and include the following: principles of the writing process; fundamentals of logic and critical reasoning; use and interpretation of evidence and analysis; tools and methods of life-long research; etc.
- (viii) Formulate and present a written argument which rigorously conforms to the demands of critical thinking and rhetoric. Students should be able to formulate and evaluate the

validity of claims, warrants, and other elements of argumentative structure as they relate to changing rhetorical situations..

(ix) Apply specific composition strategies to summarize and paraphrase text, synthesize multiple sources, analyze the logical and rhetorical development of ideas in the essays they read and write, research a complex technical subject, and write competent argumentative, persuasive, and critical essays.

(x) Apply the principles of academic discourse styles of writing for engineering and other general education courses.

b) Topical Outline:

Communication

NOTE: Communication content in Freshman Engineering Clinic II and Sophomore Engineering Clinic I (this course), will satisfy the requirements of written communication commensurate with College Composition II. See *College Composition II Guide*, Fall 1996, (Itzkowitz, McMeniman, and Penrod)

General objectives for written communication include:

- Principles of the writing process
- Fundamentals of logic and critical reasoning
- Development of arguments
- Use and interpretation of evidence/analysis
- Conventions and practices of academic and technical discourse
- Tools and methodologies for life-long research
- Ethics of scholarship

Specific Content of Freshman Engineering Clinic II:

- Laboratory notebook (journal)
- Summary writing
- Electronic research (e.g., WWW)
- Short project proposal and collaborative research report with oral component
- Progress report
- Position memorandum on engineering ethical issue
- Letter of transmittal

Specific Content of Sophomore Engineering Clinic I:

- Laboratory notebook (journal)
- Product/process instructions
- Documentation styles
- Extended definition for multiple audiences
- Formal project report

Recommendation report
Supporting report appendixes (examples: parts/supplier list, working drawings)
Extended individual research paper on engineering ethical issue

Engineering

Engineering material is presented in the context of a multidisciplinary engineering design projects derived from a number of sources including, commercial product reverse-engineering with modification, and other design problems obtained from industry partners. The design projects are chosen to provide opportunities for engineering science and design content, and for their open-ended analysis and design potential. Fundamental elements for the chosen project are presented in both lecture and laboratory formats to cover major components

For a representative engineered product (e.g., a coffee brewing machine), the following typical elements would be covered:

- Thermodynamics
- Fluid Flow
- Heat Transfer
- Diffusional Mass Transfer
- Unit Operations
- Packed Column Dynamics
- Materials
- Manufacturing
- Signals and Systems
- Simulation
- Environmental issues

Students will be required to undertake a design project derived from the product case study experience; e.g., the design of a completely new coffee brewing machine based on feedback obtained from a marketing survey.

Other topics that are included within the context of the projects are:

- Engineering cost estimation
- Engineering entrepreneurial fundamentals (profit, non-recurring engineering costs, etc.)
- Ethics and safety
- Integration of summer internship experience consistent with discipline-specific topics

c) Evaluation and Grading Procedures:

The final course grade will be determined on a 50/50 basis between the grade evaluated by the respective Engineering and College Writing faculty, based on the assignments from their parts of the course. These assignments can include projects, examinations, homework, and written and oral technical communication.

d) Course Evaluation:

The proposed course will be evaluated based on student evaluations and critical review by Engineering and College Writing faculty, particularly as to whether or not the course meets the goals delineated for the programs and meets the needs of follow-on courses. Engineering and College Writing faculty will meet on a regular basis to assess progress.

Communication and engineering assignments should continue to relate closely, if not overlap, in structure and intent. Assigned readings from communication faculty often relate to engineering problems, but readings from topical issues, communication theory and/or the rhetoric of science are also possible.

The proposed course will be assessed by student evaluations, critical reviews of both the communication and engineering faculties, and the input of the Department Chairs of College Writing and Engineering to determine if the course meets the needs of the student population and if the course remains consistent with the spirit of College Composition II as it was originally outlined and taught.

4. Results of Consultations:

a) **Consulted Departments:** College Writing.

b) **Consultants and Consultant Statements:**

c) **Written Consultations:**

5. Additional Supporting Information:

Example texts that could serve as primary or supplemental references for the course:

C.T. Brusaw, et al. *Handbook of Technical Writing*. St. Martin's Press: New York, 1993.

H.S. Fogler and S.E. LeBlanc, *Strategies for Creative Problem Solving*. Prentice-Hall: New York, 1995.

J.P. Holman, *Experimental Methods for Engineers*, 6th ed., McGraw-Hill: New York, 1994.

M.J. Killingsworth. *Information in Action: A Guide to Technical Communication*. Allyn & Bacon: Boston, 1996.

M. Markel, *Technical Communication: Situations & Strategies*. St. Martin's Press: New York, 1996.

6. Catalog Description:

Sophomore Engineering Clinic I/College Composition II (0901.201 /1501.112)

(Prerequisites: Freshman Engineering Clinic II; College Composition II-a; Physics I, Computer Science and Programming; Co-requisites: Math for Engineering Analysis I)

This course, a continuation of the Engineering Clinic series, provides expanded treatment of the practice of engineering through applications drawn from various engineering disciplines and industry. Project work includes a variety of technical communication topics, analytic and computer-based tools, including the design process, engineering ethics, safety, and team work. The composition component presents critical thinking, reading, writing, research and argumentation as they reinforce rhetorical and research practices begun in Freshman Engineering Clinic II. Evaluation of information, exercises in critical thinking and research design advance student skills acquired in the composition component of Freshman Engineering Clinic II.