

K O W A N C O L L E G E
C U R R I C U L U M C O M M I T T E E

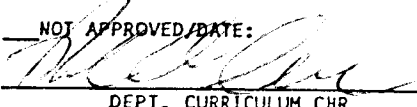

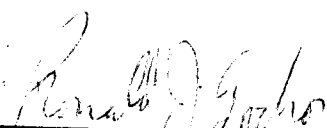
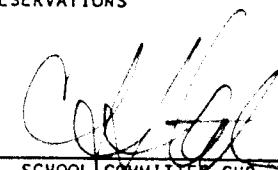
PROPOSAL TITLE: SOLID WASTE MANAGEMENT — 0968-431 (R)

UNDERGRADUATE GRADUATE 3 CREDIT HOURS


SPONSOR(S): DR. RALPH ALAN DUSSEAU, P.E. AND THE SCHOOL OF ENGINEERING CURRICULUM COMMITTEE

DEPARTMENT & TELEPHONE# CIVIL ENGINEERING Ext. 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>9/23/96</u> <input type="checkbox"/> NOT APPROVED/DATE: _____  DEPT. CURRICULUM CHR. Ralph Alan Dusseau <input checked="" type="checkbox"/> REVIEWED/DATE: <u>9/23/96</u>  DEPT. CHR.	SCC# <u>96-97-56</u> DATE RECEIVED: _____  SENATE CURRICULUM CHR.	REVIEWED DATE: <u>9/27/96</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:

RECOMMEND
 NOT RECOMMEND
 CONDITIONALLY RECOMMEND (SEE COMMENTS)
 DATE & SIGNATURE, DEAN OF SCHOOL:  9/27/96

STEP #5 (SENATE CURRICULUM COMMITTEE)

DATE OF OPEN HEARING 3-5-97

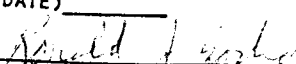
APPROVED BY SENATE CURRICULUM COMMITTEE (DATE) 3/5/97

RETURNED TO SPONSOR(S) FOR THE FOLLOWING REASONS:

STEP #6 (SENATE)

DATE PRESENTED TO SENATE 3-6-97 APPROVED NOT APPROVED

NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST (DATE) _____

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

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED _____

APPROVED: _____ YES _____ NO

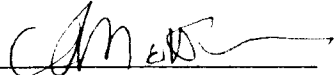
IF NO, REASONS ARE AS FOLLOWS:

STUDENT CREDIT HOURS 3

FACULTY LOAD HOURS 3

EQUALIZED CREDIT HOURS _____

OFFICIAL COPY & APPROVAL SHEET FILED (DATE) _____

SIGNATURE, EXECUTIVE VICE PRESIDENT/PROVOST 

REGISTRAR

DATE APPROVED COURSE DESCRIPTION RECEIVED 4 June 97

REGIS TAXONOMY AND COURSE NUMBER ASSIGNED 0908.431

DATE/SIGNATURE OF REGISTRAR B. F. Kelsey

NOTIFICATION FORWARD:

___ SENATE CURRICULUM COMMITTEE CHAIRPERSON

___ DEPARTMENT CHAIRPERSON(S)

___ ACADEMIC DEAN(S)

___ REGISTRAR

___ SPONSOR(S)

Course Proposal:

1. Details:

- a) Course Title: Solid and Hazardous Waste Management
- b) Sponsor: Dr. Ralph Alan Dusseau and the School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Senior (0908.431)
- e) Curricular Effect: Required course for all civil engineering students in the environmental emphasis
- f) Prerequisites: Organic Chemistry I
- g) Suggested Time/
Scale of Implementation: One section each spring semester

h) Resources:

Faculty: Existing faculty will teach this course.

Library: Library acquisitions will be required.

Equipment: Laboratory space and appropriate experimental equipment for solid waste management analysis and design will be required.

Computers: Computer laboratory space and appropriate environmental engineering analysis and design software will be required.

2. Rationale:

The proposed course is the revised version of a course entitled "Pollution and Waste Management" which was part of the Engineering Curriculum that was 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 purpose of the courses is to give civil engineering

students a working knowledge of the rapidly growing field of solid and hazardous waste management. This knowledge is essential for civil engineers who work in the area of environmental engineering.

3. Essence of the Course:

a) Objectives:

Upon completion of the course, civil engineering students will be able to do the following:

Apply the environmental regulations for solid and hazardous wastes.

Understand the management practices, treatment and disposal methods of solid and hazardous wastes.

Understand the basic principles of toxicology and risk assessment.

Work in teams to solve design problems.

b) Topical Outline:

The instructor will supply the students with a syllabus during the first week of classes. The instructor will assess any engineering technology advances and make necessary topic changes as deemed appropriate to maintain the standards of the course. The topics to be covered are listed below:

Introduction to Solid and Hazardous Wastes:

Working Definition

Classification and Generation

Historical Roots and Landmark Episodes

The Regulatory Process:

Environmental Laws:

Resource Conservation and Recovery Acts (RCRA)

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Toxics Substance Control Act (TSCA)

Other Federal Regulations:

Solid Wastes:

Collection, Transfer and Transport

Processing Techniques and Equipment

Recovery of Resources, Conversion Products and Energy

Disposal of Solid Wastes:

- Site Selection
- Landfill Design and Operation
- Incineration
- Other Disposal Methods

Hazardous Wastes:

Toxicology:

- Principles of Toxicology:
 - Dose Response Relationships
 - Carcinogens and Non-Carcinogens
 - Toxic Effects

Ecotoxicology

Risk Assessment:

- Hazard Identification
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

Site Remediation:

- Site and Subsurface Characterization
- The Remedial Investigation/Feasibility (RI/FS) Study
- Treatment and Disposal Methods
- Containment

c) Evaluation and Grading Procedure of Students:

Student grades will be based on team problems, team projects, team lab reports, 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 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.

Additional consultations were sought from the Biological Sciences Department and the Department of Chemistry and Physics. A letter of consultation was received from the Biological Science Department.

Catalog Description:

Solid and Hazardous Waste Management (0908.431)

(Prerequisites: Organic Chemistry I)

The course deals with solid and hazardous waste sources, regulations and management; engineering principles, treatment and disposal methods; design of landfills; recycling; toxicology principles; and risk assessment. The course includes appropriate laboratory experiments and computer applications.

ROWAN

Biological Sciences Department

TEL: (609) 256-4833

FAX: (609) 256-4921

*TO: Dr. R. A. Dusseau, Chairperson
Environmental Engineering*

FROM: Biological Sciences Department

RE: Environmental Engineering Course Proposal

DATE: November 15, 1996

The Biological Sciences Department in its review of the six course proposals for the Environmental Engineering program, offers the following comments or concerns.

The department supports all six proposals, however most of these courses have a strong biological component, therefore we believe students should have Biology I and Microbiology as prerequisites.

Also we believe the engineering courses must be team-taught and that the biology component taught by a member of the Biology Department. The environmental field is an interdisciplinary one, and our department has the experts to integrate with engineering in this particular area. We would like to see a more active participation between the two departments.

*All of these courses could be beneficial to Biology majors in the Ecology/
Environmental track. The graduate courses in Environmental Engineering would be especially appealing to students when the Biological Sciences Department develop the Master Program in Environmental Sciences. Therefore, we propose that these courses be taken with "or approval of instructor."*

cc: P. Bartelt