

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

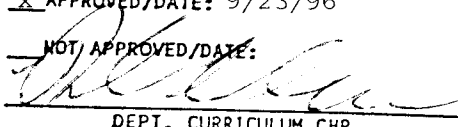
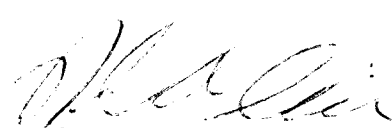
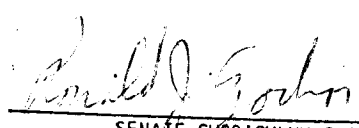
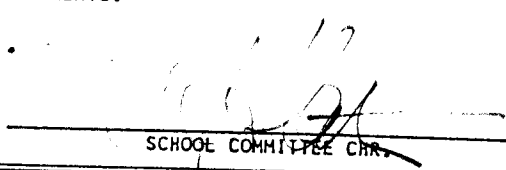
PROPOSAL TITLE: ENVIRONMENTAL ENGINEERING I - 908.311 (C)

UNDERGRADUATE       GRADUATE      3 CREDIT HOURS

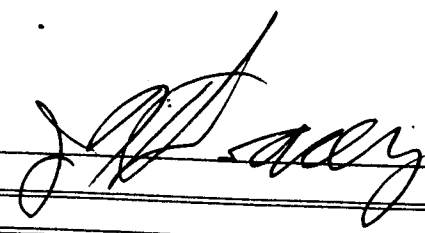
SPONSOR(S): DR. RALPH ALAN DUSSEAU, P.E. AND THE SCHOOL OF ENGINEERING CURRICULUM COMMITTEE

DEPARTMENT & TELEPHONE# CIVIL ENGINEERING Extension 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: 9/23/96 <input type="checkbox"/> NOT APPROVED/DATE:  DEPT. CURRICULUM CHR. Ralph Alan Dusseau <input checked="" type="checkbox"/> REVIEWED/DATE: 9/23/96  Ralph Alan Dusseau DEPT. CHR.	SCC# <u>46-47-52</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:

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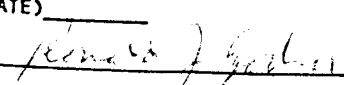


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STEP #6 (SENATE)

DATE PRESENTED TO SENATE 2/6/97       APPROVED       NOT APPROVED

NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST. (DATE) \_\_\_\_\_

SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE:  3/5/97

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED MAY 27 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 4 June 97  
REGIS TAXONOMY AND COURSE NUMBER ASSIGNED 0908-311  
DATE/SIGNATURE OF REGISTRAR B. J. Keisley

NOTIFICATION FORWARD:

- SENATE CURRICULUM COMMITTEE CHAIRPERSON
- DEPARTMENT CHAIRPERSON(S)
- ACADEMIC DEAN(S)
- REGISTRAR
- SPONSOR(S)

Course Proposal:

1. Details:

- a) Course Title: Water Treatment
- b) Sponsor: Dr. Ralph Alan Dusseau and the School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Junior (0908.311)
- e) Curricular Effect: Required course for all civil engineering students in the environmental emphasis
- f) Prerequisites: Fluid Mechanics I, 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 water testing, treatment, 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 " Environmental Engineering I" 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 course is to give civil engineering

students a working knowledge of the principles of water treatment including water testing, treatment, and design methods. 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:

Understand and apply the fundamental physical, chemical and microbiological principles that are the basis of water treatment techniques

Address detailed design and operational issues for a water treatment plant

Utilize graphical and computer methods to solve process problems and work in teams to solve design projects

#### 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 Water Chemistry:

- Chemical Water Analysis
- Chemical Equilibria
- Chemical Kinetics
- Alkalinity
- Laboratory Chemical Analyses

##### Water Quality and Pollution:

- Quality of Surface Waters
- Groundwater Quality
- Water Quality Standards (Physical, Chemical and Biological)

##### Water Distribution Systems:

- Water Quantity and Pressure Requirements
- Surface Water Intakes
- Piping Networks
- Backflow Preventors

## Design Layout and Evaluation of Distribution Systems

### Water Treatment and Processing:

- Mixing and Flocculation
- Sedimentation
- Filtration
- Turbidity Removal
- Taste and Odor Control
- Softening
- Disinfection
- Ion Exchange
- Dewatering and Disposal of Wastes from Water Treatment

### Plants:

- Operation of Waterworks:
  - Distribution System Maintenance
  - Water and Energy Conservation
  - Control of Waterworks Operations
- Visit to the Local Water Treatment Plant

### 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 from the Biological Sciences Department was received.

Catalog Description:

Water Treatment (0908.311)

(Prerequisites: Fluid Mechanics I, Organic Chemistry I)

The course deals with the fundamentals of water treatment and design; water quality parameters; treatment processes, process variables and design; water distribution system design; and maintenance and operation of waterworks. The course includes appropriate laboratory experiments and computer applications.

# ROWAN

Biological Sciences Department

(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*