

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

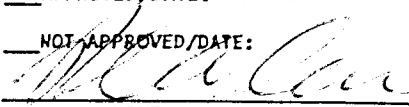

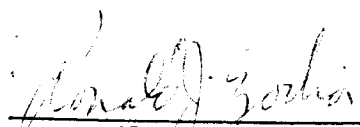

PROPOSAL TITLE: ENVIRONMENTAL ENGINEERING II - 11 0908-421 (2)

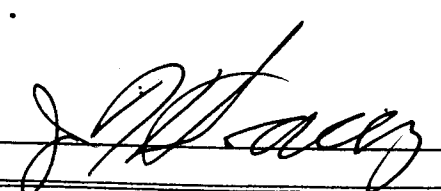
UNDERGRADUATE GRADUATE 3 CREDIT HOURS

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

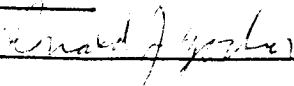
DEPARTMENT & TELEPHONE# CIVIL ENGINEERING Extension 4628

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

<p style="text-align: center;">STEP #1 (DEPARTMENT)</p> <p><input checked="" type="checkbox"/> APPROVED/DATE: <u>9/23/96</u> <input type="checkbox"/> NOT APPROVED/DATE: _____  DEPT. CURRICULUM CHR. <u>Ralph Alan Dusseau</u> <input checked="" type="checkbox"/> REVIEWED/DATE: <u>9/23/96</u>  DEPT. CHR.</p>	<p style="text-align: center;">STEP #2 (RECEIPT)</p> <p>SCC# <u>96-97-51</u> DATE RECEIVED: _____  SENATE CURRICULUM CHR.</p>	<p style="text-align: center;">STEP #3 (SCHOOL)</p> <p>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.</p>
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<p>STEP #4 (ACADEMIC DEAN)</p> <p><input checked="" type="checkbox"/> RECOMMEND <input type="checkbox"/> NOT RECOMMEND <input type="checkbox"/> CONDITIONALLY RECOMMEND (SEE COMMENTS) DATE & SIGNATURE, DEAN OF SCHOOL _____</p>	<p>COMMENTS: _____  9/27/96</p>
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<p>STEP #5 (SENATE CURRICULUM COMMITTEE)</p> <p>DATE OF OPEN HEARING <u>3-5-97</u> APPROVED BY SENATE CURRICULUM COMMITTEE (DATE) <u>3/5/97</u> <input type="checkbox"/> RETURNED TO SPONSOR(S) FOR THE FOLLOWING REASONS: _____ _____</p>
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<p>STF 5 (SENATE)</p> <p>DATE PRESENTED TO SENATE <u>3-6-97</u> <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> NOT APPROVED NOTIFICATION TO EXECUTIVE VICE PRESIDENT/PROVOST (DATE) _____ SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE <u></u></p>
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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 0908-421

DATE/SIGNATURE OF REGISTRAR B. J. Keelvey

NOTIFICATION FORWARD:

 SENATE CURRICULUM COMMITTEE CHAIRPERSON

 DEPARTMENT CHAIRPERSON(S)

 ACADEMIC DEAN(S)

 REGISTRAR

 SPONSOR(S)

Course Proposal:

1. Details:

- a) Course Title: Wastewater Treatment
- b) Sponsor: Dr. Ralph Alan Dusseau and the School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Senior (0908.421)
- e) Curricular Effect: Required course for all civil engineering students in the environmental emphasis
- f) Prerequisites: Water Treatment
- g) Suggested Time/
Scale of Implementation One section each fall semester
- h) Resources:

Faculty: Existing faculty will teach this course.

Library: Library acquisitions will be required.

Equipment: Laboratory space and appropriate experimental equipment for wastewater 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 II" 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 working knowledge of the principles of wastewater treatment and design. 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:

Perform basic calculations to estimate wastewater flows required for the design of both collection systems and wastewater process components

To analyze process parameters and design wastewater treatment plant components

To use graphical and computer methods to solve process problems

To 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 Wastewater Engineering:

- Wastewater Treatment
- Sludge Disposal and Reuse
- Wastewater Reclamation and Reuse
- Effluent Disposal

Wastewater Flowrates:

- Components of Wastewater Flows
- Estimating Wastewater Flowrates
- Analysis of Wastewater Flowrate Data

Wastewater Characteristics:

- Physical, Chemical and Biological Properties
- Wastewater Composition and Characterization

Wastewater Collection Systems:

- Storm and Sanitary Sewer Systems

Lift Stations in Wastewater Collection
Measuring Flow in Sewer Pipes
Loads on Buried Pipes

Introduction to Wastewater Treatment Plant Design:

Physical Unit Processes:

Screening, Grit Removal
Flow Equalization
Sedimentation
Flotation
Filtration

Chemical Unit Processes:

Chemical Precipitation
Adsorption
Disinfection

Biological Unit Processes:

Introduction to Microbiology
Bacterial Growth Kinetics
Metabolism
Aerobic Processes (Suspended and Attached Growth)
Anaerobic Processes (Suspended and Attached
Growth)
Biological Nutrient Removal
Pond Treatment Processes

Treatment and Disposal of Sludge:

Solids and Sludge Sources
Sludge Treatment
Land Application of Sludge

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 Sciences Department.

Catalog Description:

Wastewater Treatment (0908.421)

(Prerequisites: Water Treatment)

The course deals with wastewater treatment and design; process kinetics, theory, design and operation of wastewater treatment plant components; sludge treatment and disposal; and wastewater collection system design. 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