

ROWAN COLLEGE
CURRICULUM COMMITTEE

PROPOSAL TITLE: ADVANCED ENVIRONMENTAL ENGINEERING FOR SENIORS - 0968-422 (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

<p align="center">STEP #1 (DEPARTMENT)</p> <p><input checked="" type="checkbox"/> APPROVED/DATE: <u>9/23/96</u></p> <p>NOT APPROVED/DATE: _____</p> <p><i>[Signature]</i></p> <p align="center">DEPT. CURRICULUM CHR. Ralph Alan Dusseau</p> <p><input checked="" type="checkbox"/> REVIEWED/DATE: <u>9/23/96</u></p> <p><i>[Signature]</i></p> <p align="center">DEPT. CHR.</p>	<p align="center">STEP #2 (RECEIPT)</p> <p>SCC# <u>96-47-46</u></p> <p>DATE RECEIVED: _____</p> <p><i>[Signature]</i></p> <p align="center">SENATE CURRICULUM CHR.</p>	<p align="center">STEP #3 (SCHOOL)</p> <p>REVIEWED DATE:- <u>9/27/96</u></p> <p><input checked="" type="checkbox"/> RECOMMEND TO APPROVE</p> <p><input type="checkbox"/> RECOMMEND NOT TO APPROVE</p> <p align="center">FORWARD FOR OPEN HEARING</p> <p><input checked="" type="checkbox"/> WITHOUT RESERVATIONS</p> <p><input type="checkbox"/> WITH RESERVATIONS</p> <p>COMMENTS: _____</p> <p><i>[Signature]</i></p> <p align="center">SCHOOL COMMITTEE CHR.</p>
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STEP #4 (ACADEMIC DEAN) COMMENTS:

RECOMMEND

NOT RECOMMEND

CONDITIONALLY RECOMMEND (SEE COMMENTS)

DATE & SIGNATURE, DEAN OF SCHOOL: *[Signature]* 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:

STI (SENATE)

DATE PRESENTED TO SENATE 3-26-97 APPROVED NOT APPROVED

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

SENATE CURRICULUM COMMITTEE CHAIR SIGNATURE/DATE *[Signature]* 3/21/97

STEP #7 (EXECUTIVE VICE PRESIDENT/PROVOST)

DATE RECEIVED 6/2/97

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 428.422

DATE/SIGNATURE OF REGISTRAR *[Signature]*

NOTIFICATION FORWARD:

 SENATE CURRICULUM COMMITTEE CHAIRPERSON

 DEPARTMENT CHAIRPERSON(S)

 ACADEMIC DEAN(S)

 REGISTRAR

 SPONSOR(S)

Course Proposal:

1. Details:

- a) Course Title: Advanced Wastewater Treatment for Seniors
- b) Sponsor: Dr. Ralph Alan Dusseau and the School of Engineering Curriculum Committee
- c) Credit Hours: 3 credit hours
- d) Course Level: Seniors (0908.422)
- e) Curricular Effect: Elective course for civil engineering students in the environmental emphasis
- f) Prerequisites: Wastewater Treatment
- g) Suggested Time/
Scale of Implementation: One section every other 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 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 "Advanced Environmental Engineering" 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 fundamental theme of the course is the study of advanced

topics in biological processes in wastewater 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 principles in several advanced areas of biological treatment of wastewater including:

Process kinetics

Theory, design and operation of fixed film and suspended growth aerobic, anaerobic and anoxic processes

Biological nutrient removal methods

Develop mathematical models of biological processes.

b) Topical Outline:

The instructor will supply the students with a syllabus during 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 Microbiology:

The Microorganism

Nutrition and Growth Conditions

Cell Growth Kinetics and Models

Metabolic Classification of Microorganisms

Metabolism-Aerobic, Anaerobic

Introduction to Biological Processes:

Aerobic and Anaerobic Processes:

Fixed Film versus Suspended Growth Processes

Process Kinetics

Theory, Design and Operation

Mathematical Models

Biological Nutrient Removal:

Nitrification and Denitrification

Phosphorus Removal

Combined Nitrogen and Phosphorus Removal

Mathematical Models

Sludge Digestion:

Aerobic and Anaerobic processes

Biological Treatment for Small Wastewater Treatment Systems:

Pre-Engineered (Package) Treatment Systems

Ponds for Waste Stabilization

Septage Disposal

New and Innovative Biological Processes

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:

Advanced Wastewater Treatment for Seniors (0908.422)

(Prerequisites: Wastewater Treatment)

The course deals with advanced topics in biological processes for wastewater treatment including process kinetics, theory, design and operation of process components. The course also focuses on the principles of microbiology essential in understanding biological treatment processes. 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