ROWAN UNIVERSITY CURRICULUM PROPOSAL

PROPOSAL TITLE: System Programming and Operating System Internals

CHECK APPROPRIATE: ✓ UNDERGRADUATE __ GRADUATE 3 SEMESTER HOURS

SPONSOR(S): Jianning Xu

DEPARTMENT/TELEPHONE # Computer Science / 3984

CHECK ONE: __COURSE __MINOR PROGRAM __CONCENTRATION __SPECIALIZATION

__ACHIEVEMENT CERTIFICATE __CERTIFICATION PROGRAM __MAJOR PROGRAM

Step #1 (Department)

✓ Approved (Date) 10/24/97

___ Not Approved (Date)

Dept. Curriculum Chr.

10/24/97
Reviewed (Date)

Dept. Chr.

Step #2 (Receipt)

SCC# 97-98-96

10-24-97
Date Received Senate

Senate Curriculum Chr.

Step #3 (School)

Reviewed Date: 11/7/97

X Recommend to Approved

___ Recommend NOT to Approve

Forward for Open Hearing:

X WITHOUT Reservations

___WITH Reservations:

Comments:

School Committee Chr.

Step #4 (Academic Dean): ✓ Recommended ___ NOT Recommended ___ Conditionally Recommended (See Comments)

Comments:

Dean Signature/Date

Step #5 (Senate Curriculum Committee): Open Hearing Date 2/20/98 Approved by Curriculum Committee Date_____

Returned to Sponsor(s) for the following reason:

Step # 6 (Senate) Date announced/voted on at Senate 2/24/98 voted on: ✓ Approved ___NOT Approved

Be forwarded to Executive Vice President/Provost _____

Senate Curriculum Committee chair Signature/Date: 2/25/98

Step #7 (Executive Vice President/Provost): Date Received [illegible] 1998

___ Approved

___ NOT Approved If no, reasons are as follows:

Student Credit Hours _____

Faculty Load Hours _____

Equalized Credit Hours _____

Official Copy & Approval Sheet Filed (Date) 2/26/98

Executive Vice President/Provost Signature [signature]

Registrar

Date Approved Course Description Received _____

Hegis Taxonomy and Course Number Assigned 0704-392

Date/Signature of Registrar E.C. Eglet 3/2/98

Notification Forward:

✓ Senate Curriculum Committee Chairperson

✓ Department Chairpersons

✓ Academic Dean(s)

✓ Registrar

✓ Sponsor(s)

Rowan University
Department of Computer Science

Course Proposal

System Programming and Operating System Internals

1. Details

a.	Course Title:	System Programming and Operating System Internals
b.	Sponsor:	Jianning Xu, Computer Science Department
c.	Credit Hours:	3
d.	Course Level:	Junior/Senior
e.	Curricular Effect:	Major restricted elective
f.	Prerequisites:	Operating Systems (0704.390) and Computer Lab. Techniques (0701.205)
g.	Suggested Time:	One section each year.
h.	Resources:	Faculty and lab facilities are adequate.

2. Rationale

This course covers the internal structures and algorithms of the system kernel of a modern operating system as well as the system call interface to the kernel. Currently in the Computer Science program, we have a required course titled Operating Systems that addresses the concepts of operating system design and functions. This new course will be offered as a restricted elective that will provide students with reenforcement of basic operating system concepts, concrete examples of actual system structures and design, and the useful experiences of system level programming which deals with such important concepts as interprocess communications, concurrency, and multithreading. This course can help students better understand the relationships between user programs, system software, and machine hardware.

3. Essence of the course

a. Objectives in relation to student outcomes

Student will learn the basic system structures and functions of a modern operating system. They will be exposed to the major functional components of the system kernel and the algorithms and data structures used in the implementations of these components. Students will gain hand-on experience in system level programming in a modern operating system environment. They will learn how to use various system calls for basic file operations, I/O operations, and process control operations. The emphasis will be on interprocess communications and concurrency.

b. Topic outline

Introduction to kernel
The file structure and implementation
System calls for the file system
The process structure and process scheduling
System calls for process control
Memory management policies
The I/O subsystem
Primitive interprocess communication
Advanced interprocess communication

c. Evaluation and grading procedure of students

Students will be evaluated based on homework, programming assignments, one or more in-term examinations, and a final examination.

d. Course evaluation

This course will be evaluated by the department curriculum committee.

4. Results of consultation

The consultation is internal to the Computer Science Department.

5. Catalog Description:

0704.3## System Programming and Operating System Internals 3 s.h.
(Prerequisites: 0704.390 Operating Systems and 0701.205 Computer Lab. Techniques)

This course examines the system kernel of a modern operating system including the file structure and implementation, the process structure and process scheduling, memory management policies, and the I/O subsystem. This course also covers the system call interface to the system kernel and various interprocess communication schemes.