

ROWAN UNIVERSITY CURRICULUM PROPOSAL

(R)

PROPOSAL TITLE: DIGITAL II : MICROPROCESSORS 0404.242-

CHECK APPROPRIATE: UNDERGRADUATE GRADUATE 2 SEMESTER HOURS

SPONSOR(S): J. SCHMALZEL

DEPARTMENT/TELEPHONE # X 4629

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

<p>Step #1 (Department)</p> <p><u>22 Oct 97</u> Approved (Date) <input type="checkbox"/> Not Approved (Date)</p> <p><u>John Suff</u> Dept. Curriculum Chr.</p> <p><u>22 Oct 97</u> Reviewed (Date)</p> <p><u>John Suff</u> Dept. Chr.</p>	<p>Step #2 (Receipt)</p> <p>SCC# <u>97-98-183</u></p> <p><u>10-24-97</u> Date Received Senate</p> <p>_____ Senate Curriculum Chr.</p>	<p>Step #3 (School)</p> <p>Reviewed Date: <u>22 Oct 97</u></p> <p><input checked="" type="checkbox"/> Recommend to Approved <input type="checkbox"/> Recommend NOT to Approve</p> <p>Forward for Open Hearing: <input checked="" type="checkbox"/> WITHOUT Reservations <input type="checkbox"/> WITH Reservations:</p> <p>Comments:</p> <p><u>Robert P. Heskeith</u> School Committee Chr.</p>
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Step #4 (Academic Dean): Recommended NOT Recommended Conditionally Recommended (See Comments)

Comments:

Dean Signature/Date: [Signature] 10/28/97

Step #5 (Senate Curriculum Committee): Open Hearing Date: 11-19-97 Approved by Curriculum Committee Date 11-19-97

Returned to Sponsor(s) for the following reason:

Step #6 (Senate) Date announced/voted on at Senate 11/27/98 If voted on: Approved NOT Approved

Date forwarded to Executive Vice President/Provost _____

Senate Curriculum Committee chair Signature/Date: [Signature] 1/27/98

Step #7 (Executive Vice President/Provost): Date Received Jan 26 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) _____

Executive Vice President/Provost Signature

[Signature]

Registrar

Date Approved Course Description Received

2-9-98

Regis Taxonomy and Course Number Assigned

09090242

Date/Signature of Registrar

[Signature]

Notification Forward:

_____ Senate Curriculum Committee Chairperson

_____ Department Chairpersons

_____ Academic Dean(s)

_____ Registrar

_____ Sponsor(s)

Course Proposal

1. Details:

- | | |
|---|--|
| a) Course Title: | Digital II: Microprocessors (0909.242) |
| b) Sponsor: | Dr. John L. Schmalzel, Electrical Engineering and Electrical Engineering Curriculum Committee |
| c) Credit Hours: | 2 credit hours |
| d) Course Level: | Sophomore |
| e) Curricular Effect: | Required course for electrical engineering majors |
| f) Prerequisites: | Digital I or permission of instructor |
| g) Suggested Time/
Scale of Implementation | Fall 1998
One section |
| h) Resources | Faculty will be hired and laboratory equipment obtained consistent with College of Engineering multi-year budget. Library acquisitions will be required. |

2. Rationale:

The proposed course is a revision to part of the Engineering Curriculum Proposal 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.

A foundation element of modern electrical engineering (EE) is digital systems theory. This underpins a substantial portion of the total technology that is dependent on bi-logic digital and computer systems. The major application of digital systems is in microcomputer and microprocessor based design. Students need a firm foundation in the basics of computer systems so that they can build on this knowledge in later coursework.

3. Essence of the Course:

a) Objectives:

The proposed course has a number of objectives:

- (i) Provide an overview of the basics of computer system architecture.

- (ii) Provide a working knowledge of classical (Von Neumann, Harvard) architectures, CISC, and RISC. Provide an overview of modern architectures including: parallel, superscalar, distributed, systolic, MIMD, etc.
- (iii) Provide a working knowledge of basic elements required for designing and implementing computer systems.
- (iv) Develop working knowledge of assembly language and high-level language programming in a microprocessor environment.

b) Topical Outline:

- Microprocessor hardware: ALU, memory, I/O; registers, control unit, single and multiple processors, bit-slice processors.
- Memory systems. Physical memory; virtual memory. Cache.
- I/O systems. Physical, mapped I/O spaces. I/O processors. Interrupts, DMA.
- Software: Machine language, assembly language, compilers, cross-assemblers, linkers in a model microcontroller environment (e.g., 68HC11).
- Applications: Interfaces, converters, protocols.

c) Evaluation and Grading Procedures:

Student grades will be based on projects, examinations, homework, and written and oral technical communication.

d) Course Evaluation:

The proposed course will be evaluated based on student evaluations and critical review by engineering faculty.

e) Texts:

E. Karalis, *Digital Design Principles and Computer Architecture*. Prentice-Hall: New Jersey, 1997.

M.M. Mano, C.R. Kime, *Logic and Computer Design Fundamentals*. Prentice-Hall: New Jersey, 1997.

F.J. Hill and G.R. Peterson, *Digital Logic and Microprocessors*. J. Wiley & Sons: New York, 1984.

4. Results of Consultations:

a) Consulted Departments: Computer Science

b) Consultants and Consultant Statements: (See attached.)

c) Written Consultations: (See attached.)

5. Additional Supporting Information: N/A

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6. Catalog Description:

The second course in digital systems covers principles of computer systems design including hardware and software. The course also treats applications of computer design.

Prerequisite of Digital I required or consent of instructor.



ROWAN

Don C. Stone, Chair
Department of Computer Science
(609) 256-4806
stone@rowan.edu

October 20, 1997

Dr. John Schmalzel
Electrical Engineering
Rowan University
Glassboro, NJ 08028

Dear Dr. Schmalzel:

I have reviewed the proposals for Digital I and Digital II. These are certainly important areas for modern electrical engineering as well as computer science. Your list of topics for each course seems to be quite appropriate and comprehensive.

Your proposals have my strong support.

Computer Science and Electrical Engineering have had an excellent working relationship on this campus, and there are possibilities in this digital area for further cooperation and collaboration – e.g., in courseware, experiments/projects, equipment, software, and lab space. I look forward to exploring these possibilities with you.

Yours truly,

A handwritten signature in cursive script that reads "Don C. Stone".

Don C. Stone



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