## ROWAN UNIVERSITY CURRICULUM PROPOSAL

**PROPOSAL TITLE:** DIGITAL II: MICROPROCESSORS

**CHECK APPROPRIATE:**
- [x] UNDERGRADUATE
- [ ] GRADUATE
- [ ] 2 SEMESTER HOURS

**SPONSOR(S):**
- J. SCHNALLER

**DEPARTMENT/TELEPHONE #:** X4629

**CHECK ONE:**
- [x] COURSE
- [ ] MINOR PROGRAM
- [ ] CONCENTRATION
- [ ] SPECIALIZATION
- [ ] ACHIEVEMENT CERTIFICATE
- [ ] CERTIFICATION PROGRAM
- [ ] MAJOR PROGRAM

### Step #1 (Department)
- **200599** Approved (Date)
- Not Approved (Date)

### Step #2 (Receipt)
- **SCC# 97-98-183**
- **10-24-97**
- Date Received Senate

### Step #3 (School)
- **22 OCT 97**
- Reviewed (Date)
- Recommended to Approved
- Recommend NOT to Approve
- Forward for Open Hearing:
  - WITHOUT Reservations
  - WITH Reservations:
  - Comments:
  - Robert Hakeeth
  - School Committee Chair

### Step #4 (Academic Dean)
- [ ] Recommended
- NOT Recommended
- Conditionally Recommended (See Comments)

### Dean Signature/Date
- [J. Hakeeth] 10/28/97

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

### Step #6 (Senate)
- Date announced/voted on at Senate: 12/17/97
- If voted on: [ ] Approved
- NOT Approved

### Date forwarded to Executive Vice President/Provost
- Senate Curriculum Committee chair Signature/Date: [J. Hakeeth] 1/27/98
Step #7 (Executive Vice President/Provost): Date Received: 2-6-13

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: 2-7-13

Regis Taxonomy and Course Number Assigned: C409124-2

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
   h) Resources: One section

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:


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
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.
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,

Don C. Stone
October 20, 1997

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