

**Rowan University
Computer Science Department**

Proposal for Specializations

**Stephen J. Hartley
Curriculum Committee**

Abstract

In order to give our majors the opportunity to concentrate, we propose adding optional specializations to the computer science major at Rowan University. A specialization will be composed of four or more specified courses in computer science and other related disciplines that provide a solid foundation in some fundamental area of computer science. We have identified the following areas of specialization: software engineering, networking and operating systems, information technology, programming languages and compilers, artificial intelligence, and numerical and scientific computation.

The specializations will be in effect for the fall 2002 semester. No resources are required.

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Computer Science Department**

Proposal for Specializations

2. Details

a. Proposal Title

A proposal to add specializations to the computer science major at Rowan University.

b. Sponsor

Stephen J. Hartley and the Computer Science Department Curriculum Committee.

c. Scope and Size

We currently propose seven specializations. To obtain one of the specializations, a student must take four or more courses from the list associated with that specialization.

d. Relationship to Curriculum

No other departments will be affected; the specializations will apply only to computer science majors. The total number of credit hours required for the computer science major will not change.

e. Eligibility

Any student majoring in computer science will have the option to select one or more specializations. Students are not required to select any specializations.

f. Implementation Time Scale

Effective Fall 2002 for all computer science majors.

g. Resource Requirements

None.

h. Recommended Library Resources

None.

3. Rationale

Rowan's computer science majors will be more competitive in the job market and more attractive to employers when they graduate if they are able to document their skills in particular areas of computer science, such as software engineering, networking and operating systems, information technology, numerical and scientific computation.

4. Essence of the Specializations

a. Major Goals

In order to give our majors the opportunity to concentrate, we propose adding optional specializations to the computer science major at Rowan University.

b. Specific Objectives

Specializations will make our graduating students more competitive in the job market since employers will be able to identify areas of expertise.

c. Structure

A specialization will be composed of four or more specified courses in computer science and other related disciplines that provide a solid foundation in some fundamental area of computer science. We have identified the following areas of specialization: software engineering, networking and operating systems, information technology, programming languages and compilers, artificial intelligence, and numerical and scientific computation.

The following table specifies the courses making up each specialization. To obtain one of these specializations, a student must take four or more courses from the specialization's list.

software engineering	Programming Languages, 0704.315 Design and Analysis of Algorithms, 0707.340 Principles of Software Engineering, 0707.321 Software Engineering Practicum, 0707.322 Object Oriented Design, 0704.380
networking and operating systems	Operating Systems, 0704.390 Data Communications and Networking, 0706.410 System Programming and Operating System Internals, 0704.392 Advanced Computer Architecture, 0706.412 Principles of Digital Computers, 0706.310
information technology	Computer Laboratory Techniques, 0701.205 Web Programming, 0704.305 Principles Software Engineering, 0707.321 Operating Systems, 0704.390 Data Communications and Networking, 0706.410
programming languages and compilers	Programming Languages, 0704.315 Object Oriented Design, 0704.380 Foundations of Computer Science, 0707.210 Compiler Design, 0704.410 Principles Software Engineering, 0707.321
artificial intelligence	Introduction to Probability and Statistics I, 1702.360 Foundations of Computer Science, 0707.210 Introduction to Symbolic Logic, 1509.130 Artificial Intelligence, 0707.450 Programming Languages, 0704.315 Robotics: Software and Mobility, 0707.310; or Computer Vision, 0707.xxx
numerical and scientific computation	Design and Analysis of Algorithms, 0707.340 Linear Algebra, 1701.210 Ordinary Differential Equations, 1701.231 Numerical Analysis, 1701.332 Calculus III, 1701.230

d. Administration

Clerical duties only.

5. Results of Consultation

We solicited letters of consultation from Management Information Systems and Electrical/Computer Engineering. Those letters are attached.

6. New Courses

No new courses are being proposed; only existing courses in computer science and related departments will be required in the specializations.