

PROCESS A NON-GENERAL EDUCATION ~ CURRICULUM PROPOSAL

SCC #03-04-

102 [®]

LIBRARY RESOURCE FORM REQUIRED

OFFICE OF THE PROVOST

Deadlines

October 3, 2003 to be implemented Fall 2004 ~ February 13, 2004 to be implemented Spring 2005

APR 1 2004
PROPOSAL TITLE:

New Non Gen Ed Course: Distributed Systems

SPONSOR(S):

Dr. Crichton
Computer Science Department

E-Mail: crichton@rowan.edu Ext: 3278

E-Mail: _____ Ext: _____

DEPARTMENT: Computer Science

COLLEGE: Liberal Arts and Sciences

If Liberal Arts & Sciences CHECK : History/Humanities Math/Sciences Social/Behavioral Sciences

UNDERGRADUATE GRADUATE

THE ATTACHED **NON-GEN-ED** PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED

New non-gen-ed course

_____ Minor curricular changes (fewer than three) to:

_____ Short-term non-gen-ed course

_____ Existing non-gen-ed course

_____ Non-gen-ed degree requirements

_____ Major

_____ Minor, specialization, concentration, track, certificate program

RECEIVED BY:

SEP 3 2003

LIBERAL ARTS & SCIENCES THE FOLLOWING SIGNATURES REPRESENT APPROVAL

Department Chair: _____

Date: 9/29/03

Department Curriculum Chair: _____

Date: 29 September 2003

Academic Dean: _____

Date: 9-30-03

COLLEGE CURRICULUM COMMITTEE

OPEN HEARING Date: 12/4/03 Approved Not Approved _____

COLLEGE CURRICULUM CHAIR: _____

Senate Curriculum Chair Signature: Shelly A. Lewis Date: Senate Announcement 3-31-2004

Comments: _____

EXECUTIVE VICE PRESIDENT/PROVOST Signature: _____ Date: 4/25/04

Approved Not Approved

REGISTRAR

Date: 5/10/04 Course Description Received & Approved ~ Hegis Taxonomy & Course #: 0704394

Registrar Signature: _____

NOTIFICATION FORWARD

- SCC Chair
 - Academic Dean
 - Department Chair
 - Registrar
 - IR
 - CAP
 - VP Student Affairs
 - Others
- 12/21/04

Rowan University
**CURRICULUM PROPOSAL
LIBRARY RESOURCE FORM**

The purpose of this form is to provide a channel of communication between the library and faculty changing and designing new courses/programs. The information will be used to assess the resources available in the library, and to identify resources the library should acquire to support the course/program. The information will also provide rationale for institutional support for library acquisitions

This form should be completed in a coordinated effort between the course sponsor(s) and the academic department liaison librarian. **THIS FORM MUST BE COMPLETED FOR ALL CURRICULUM PROPOSALS.**

- The sponsor(s) complete parts A & B
If assistance is required to complete parts A & B, please notify the liaison librarian.
- Forward this form to the librarian who will complete parts C, D & E

This form must be completed and attached to the original curriculum proposal before being approved by the Senate Curriculum Committee

A. College Liberal Arts & Sciences Department COMPUTER SCIENCE
 Proposed by: Joel M. Crichtow Date: 9/29/03
 Course Title: DISTRIBUTED SYSTEMS
 Anticipated Date for Course/Program Offering: FALL 2004

B. List specific resources that should be acquired to support this course.
Books, journal, e electronic databases on the subject of Distributed Computing Systems

C. Describe the resources available in the library to support this course/program, including reference, monographic, electronic databases, audio-visual materials, etc. A summary statement is sufficient.
There are many up to date texts on this subject. The library subscribes to several key distributed computing journals, and the ACM digital library

D. List key periodicals available in the library to support this course/program.
IEEE transactions on parallel and distributed systems
 IEEE Internet Computing
 IEEE Pervasive Computing

E. Librarian comments and recommendations:
The current collection will provide for this course.

Name: LIBRARIAN LIAISON John Mellens Librarian Signature: [Signature]

Rowan University
Computer Science Department
New Course Proposal – Distributed Systems

1. Details

a. Course Title:

Distributed Systems

b. Sponsor:

Joel M. Crichlow, Computer Science Department, Rowan University.

c. Credit Hours:

3 semester hours

d. Course Level:

Junior

e. Curricular Effect

This course will expose the students to fundamental principles in software design for computer networks. This is a vibrant technology area; therefore a Distributed systems course will enhance the curriculum in the department.

No class will be dropped as a result of this course. It was offered previously as a Selected Topics course. It will therefore not be offered again as a Selected Topic. No changes in faculty load are anticipated. The enrollments in other advanced electives may decrease as a result of adding this course, however, this is outweighed by the advantages of having a wider and more diverse selection of electives.

This course will also be added to the Networking and Operating Systems specialization.

f. Prerequisites:

Computer Organization 0706.205 or Digital II 0909.242, and Data Structures and Algorithms 0704.222 or Data Structures for Engineers 0704.225.

g. Time and scale of implementation:

This course is to be offered once per year beginning in **Fall 2004**.

h. Adequacy of present staff and resources:

This course was well supported while offered as a Selected Topic. It will benefit from expected, periodic upgrades to our Distributed System Laboratory.

i. Recommended Library Resources:

Current library resources are adequate. A Library Resource Form is attached.

j. Short-term Evaluations:

The Department Curriculum Committee routinely evaluates all courses to ensure that they meet the standards of the Department, the College of Liberal Arts and Sciences, and the University.

2. Rationale

An integral part of the mission of the Computer Science Department at Rowan University is “to provide high-quality educational programs in the theory and practice of Computer Science ... (to produce) future Computer Science leaders and innovators”. Distributed Systems reflect current, state-of-the-art practice in the computing field, therefore, a rigorous course in this area will help the department to achieve its mission.

The proposed course will strengthen the department’s current offering of advanced, restricted electives. The department offers at present two very important related courses: 0704.305 Web Programming, and 0706.410 Data Communications and Networking. The proposed course Distributed Systems is related to these in that each course deals with computer networks. However, Web Programming is essentially about tools for Web design; Data Communications and Networking is essentially about network architecture and protocols; whereas Distributed Systems is about the design of algorithms, protocols and processes that help software systems to run efficiently over networks. These courses will be complementary but distinct in their essential parts.

3. Essence of the Course

a. Objectives of the course in relation to student outcomes:

At the end of the course students will have gained an understanding of what distributed systems are, and what are the issues and challenges involved in their design and implementation. Students will also have acquired the skills necessary to

- make recommendations on the acquisition of distributed system tools and applications, and
- participate in project teams involved in distributed system design and development.

b. Topical Outline/Content:

Introduction: The Computer Network, Distributed System Services, Issues, User-System Interface.

Major Application Areas for Distributed Systems: Distributed File systems, Distributed Database Systems, Distributed Real time Systems, Distributed Multimedia Systems, Distributed Operating Systems.

Architecture for Distributed Systems: Software architecture, Network architecture.

Managing Distributed Resources: Naming and addressing, Sharing, Availability and reliability, Replication, Privacy and security.

Accessing Distributed Resources: Communication, Concurrency, Time, Failure.

Special Issues in Resource Use: Distributed Shared Memory, Transactions.

c. Evaluation of students and grading procedure:

These will include

- In-class and take-home assignments (research papers and/or programming; design; and/or group projects)
- Quizzes
- Mid-term examination
- Final examination

d. Course Evaluation:

This will include

- Student Instructional Review
- Departmental Curriculum Review
- External Program Review for accreditation

4. Results of Consultations

This proposal is supported strongly by the curriculum committee of the Computer Science Department.

Other departments interested in this course are Electrical and Computer Engineering and Management and Information systems. Attached are Letters of consultation, expressing support, from:

Dr. Linda Head, Acting Chair, Electrical and Computer Engineering.

Dr. Dianne Hamilton, Professor of MIS

Dr. Daniel McFarland, Associate Professor MIS

Catalog Description

0704. 3xx 3 s.h.
Distributed systems

Prerequisites: 0706.205 or 0909.242; and 0704.222 or 0704.225

This course will introduce students to the Distributed System - a network of (possibly autonomous) computers that cooperatively solve single problems or facilitate parallel execution of related tasks. Key topics of study include Distributed Systems Architecture, Distributed Resource Management and Accessing Distributed Resources. Students will participate in algorithm, process and system design for distributed systems.



MEMORANDUM

DATE: 9/24/2003

TO: Joel M. Crichlow
Computer Science Department

FROM: Linda M. Head, Acting Chair
Electrical and Computer Engineering

RE: New Course Proposal – Distributed Systems

I am pleased to be able to support the New Course Proposal for the course titled Distributed Systems submitted by Prof. Joel M. Crichlow. This course appears to be a natural extension of the existing track in networked systems that exists in the Computer Science (CS) Program.

Electrical and Computer Engineering (ECE) is always interested in having our students who have particular interest in Computer Engineering and Software Development take CS courses as electives in their senior year. This course would be ideal for this purpose and we would like to request that ECE students who have taken our course Digital II be allowed to substitute that course for the prerequisite, Computer Organization. However, our support for this course is in no way contingent upon this request.

Dr. Gina Tang has also read your proposal and would like to add the following comments:

I think it is a fun course that definitely will benefit CS and ECE students. I also have the following suggestions:

1. In the "Architecture for Distributed Systems" topic, I suggest you introduce not only the architectural model of distributed systems, but also the fundamental model of distributed systems, which shows the characteristics affecting the dependability of distributed systems. The design requirements for distributed

systems are worth being addressed in this course, which should include some performance analysis.

2. If a real case study would be used across the course, students will have better understanding what a distributed system is and how to design it.

Best of luck to you with this course!

From: Diane Hamilton
To: crichlow@groupwise.rowan.edu
Date: 9/23/03 1:01PM
Subject: Re: Curriculum Proposal

Dear Joel,

I have no problems with the proposal, personally. I have forwarded it to the other MIS faculty for their review. If you don't hear from anyone else, assume the MIS faculty are insupport.

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Diane Hamilton, Ph.D.  
Professor of MIS  
856-256-4760 (phone)  
856-256-4439 (fax)

>>> Joel McLaren Crichlow 09/22/03 18:17 PM >>>

Dr. Hamilton,

I am kindly requesting letters of consultation from your department on the new course proposal "Distributed Systems", which is attached. The deadline for submission is Oct 3. I shall be most grateful for responses to facilitate timely submission. Thanks!

Joel

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Dr. Joel M. Crichlow, Assoc. Professor  
Computer Science Dept.  
Rowan University  
Glassboro, NJ 08028  
Voice: 856 256 4500 Ext 3278  
Fax: 856 256 4741  
Email: crichlow@rowan.edu

**CC:** mcfarland