



FORM A

College of Arts and Sciences

Revised 7/23/07

PROPOSAL SUMMARY AND ROUTING FORM

CPSC-190
CPSC-390

Proposal Title: Computer Science Fall 2009 Special Topic Courses

Initiating Unit or Individual: Mathematics Department Computer Science Division

Contact Person's Name: Dr. J.F. Nystrom e-mail: nystroj@ferris.edu phone: x5864

Date or Term of Proposal Implementation: _____

- Group I - A – New degree/major or major, redirection of a current offering, or elimination of a degree, major or minor
- Group I - B – New minors or concentrations
- Group II - A – Minor curriculum clean-up and course changes
- Group II - B – New Course
- Group III - Certificates
- Group IV – Off-Campus Programs

Group/Individual	Signature	Date	Vote/Action *
Program or Academic Unit Faculty	<i>J. Nystrom</i>	12/5/08	4 Support 0 Support with Concerns 0 Not Support
Department Faculty	<i>Robert McCallan</i>	12/5/08	✓ Support ___ Support with Concerns ___ Not Support
Department Head	<i>John E. Giddell</i>	12/5/08	___ Support ___ Support with Concerns ___ Not Support
College Curriculum Committee			___ Support ___ Support with Concerns ___ Not Support
Dean	<i>Matthew G. Pfeiffer</i>	2/4/09	✗ Support ___ Support with Concerns ___ Not Support
University Curriculum Committee			___ Support ___ Support with Concerns ___ Not Support
Senate			___ Support ___ Support with Concerns ___ Not Support
Academic Affairs	<i>Donald Blum</i>	2/5/09	✓ Support ___ Support with Concerns ___ Not Support

* Support with Concerns or Not Support must include a list of specific concerns. Votes must be shown for faculty groups. Administrators check appropriate action taken.

To be completed by Academic Affairs

President (Date Approved)

Board of Trustees (Date Approved)

President's Council (Date Approved)

REC'D FEB 05 2009

1. Proposal Summary

(Summary is generally less than one page. Briefly: state what is proposed with a summary of rationale and highlights. Additional rationale may be attached.)

We propose to offer two Special Topics courses in Fall 2009 in place of two new courses in Computer Science that we are updating in a separate curriculum update proposal. The course, CPSC 190 - Programing and Problem Solving, is a beginning programming course (numbered CPSC 130 in the separate proposal), and CPSC 390 - Parallel Programming, is an upper division course (numbered CPSC 330 in the separate proposal) that will be included in the updated core requirements for Computer Science Concentration Majors in the Applied Mathematics Program.

2. Summary of All Course Action Required*

a. Newly Created Courses to FSU:

Prefix	Number	Title
CPSC	190	Programming and Problem Solving
CPSC	390	Parallel Programming

b. Courses to be Deleted From FSU Catalog:

Prefix	Number	Title
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c. Existing Course(s) to be Modified:

Prefix	Number	Title
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d. Addition of existing FSU courses to program

Prefix	Number	Title
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e. Removal of existing FSU courses from program

Prefix	Number	Title
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*Contact Senate Secretary or UCC Chair if spaces for additional courses are needed.

NEW COURSE INFORMATION FORM

Course Identification:

Prefix:	Number	Title
CPSC	190	Programming and Problem Solving

Course Description:

An introduction to programming and problem solving for students with little or no programming background. Topics include problem specification and algorithm design, and fundamental procedural programming concepts (including variables, assignment, conditional and iterative control structures, arrays or lists, and functions).

Course Outcomes and Assessment Plan:

A student succeeding in this course should be able to:

1. Read a description of a problem, and (a) develop an algorithm to solve the problem, (b) utilize functions, decision structures and loops to implement the algorithm in a computer program, and (c) develop a reasonable suite of examples on which to test the program.
2. Read a simple or moderately complex computer program and trace the overall execution path of the program given different sets of program data; thus demonstrating knowledge of how various programming language constructs (e.g., functions, and conditional and iterative control statements) operate.
3. Identify various issues involved in the solution of problems on a computer; including some hardware issues, issues related to data types (for computing with numbers and strings), and issues related to program execution time.

The course grade is based on Midterm Examinations, Programming Assignments and Homework, and a Comprehensive Final Exam.

(FORM E: CPSC 190 Continued)

Course Outline including Time Allocation:

- I. Computers and Programs (4 hours)
 - Introduction and History of Computing

- II. Beginning Programming (16 Hours)
 - Writing Simple Programs
 - Algorithms and the Problem Solving Process
 - Computing with Numbers and Strings
 - Testing Programs

- III. Intermediate Programming (16 hours)
 - Objects and Graphics
 - Writing Functions
 - Decision Structures
 - Loop Structures and Booleans

- IV. Advanced Programming (9 hours)
 - Simulation and Design
 - Lists and Objects
 - Algorithm Design and Recursion

NEW COURSE INFORMATION FORM

Course Identification:

Prefix:	Number	Title
CPSC	390	Parallel Programming

Course Description:

Introduction to the parallel computing landscape and a parallel programming language. Overview of processes, synchronization, and the use and implementation of semaphores. Introduction to distributed programming techniques (including message passing, RPC and rendezvous), process interaction paradigms and scientific computing (including heartbeat algorithms, pipeline algorithms, broadcast algorithms, grid computations and particle computations).

Course Outcomes and Assessment Plan:

A student succeeding in this course should be able to:

1. Enumerate and describe the concepts involved in the construction of parallel and distributed systems, including how deadlock, livelock, and incorrect results may arise from uncontrolled parallel execution of programs accessing shared resources and/or cooperating to accomplish a scientific computation.
2. Understand how parallel processes can synchronize through use of semaphores, message passing, RPC and rendezvous techniques.
3. Understand and implement various process interaction paradigms, including heartbeat algorithms, pipeline algorithms, broadcast algorithms, grid computations and particle computations.

The course grade is based on Midterm Examinations, Programming Assignments and Homework, and a Comprehensive Final Exam.

(FORM E: CPSC 390 Continued)

Course Outline including Time Allocation:

- I. The Parallel Computing Landscape (5 hours)
 - Hardware and Software for Parallel Computing
 - Parallel Matrix Multiplication
 - Producers and Consumers, Clients and Servers

- II. Processes and Synchronization (8 Hours)
 - States, Actions and Parallelization
 - Atomicity and Await
 - Safety and Liveness Properties
 - Barrier Synchronization

- III. Semaphores (8 hours)
 - Syntax, Semantics and Implementation
 - Basic Problems: Barriers, Producers and Consumers, Bounded Buffers
 - Readers/Writers and the Technique of Passing the Baton

- IV. Message Passing (8 hours)
 - Asynchronous Message Passing
 - Filters, Clients and Servers, Interacting Peers
 - Synchronous Message Passing

- V. RPC and Rendezvous (4 hours)
 - Remote Procedure Call
 - Rendezvous, Applications
 - Case Study: SR Language

- VI. Process Interaction Paradigms (8 hours)
 - Heartbeat Algorithms
 - Pipeline Algorithms
 - Broadcast Algorithms
 - Grid Computations
 - Particle Computations

- VII. Languages, Compilers, Libraries and Tools (4 hours)
 - Pthreads, MPI
 - Parallelizing Compilers

CREATE NEW COURSE
Course Data Entry Form

FORM F

Create New Course
Rev. 07/23/07

I. ACTION TO BE TAKEN: CREATE A NEW COURSE

Notes

1. Complete each item in Section I and Section II.
2. If this course is to be used as a prerequisite for other university courses, Form Fs that reflect the prerequisite change must be submitted for those courses as well.

Term Effective (6 digit code only): Examples: 200801(Spring), 200805(Summer), 200808(Fall)
Note: The first four digits indicate year, the next two digits indicate month in which term begins.

II. PROPOSED FOR NEW COURSE: Complete all sections a through r, See manual for clarification.

a. Course Prefix b. Number c. Enter Contact Hours per week in boxes.
LECTure LAB INDEpendent Study – Check (x)

Practicum: Seminar:

d. Course Title: (Limit to 30 characters/spaces.)

e. College Code: f. Department Code:

Credit Hours: Check (x) type and enter maximum and minimum hours in boxes.

g. Type: Variable Fixed h. Minimum Credit Hours i. Maximum Credit Hours

j. May Be Repeated for Added Credit: Check (x) Yes No

k. Levels: Check (x) Undergraduate Graduate Professional

l. Grade Method: Check (x) Normal Grading Credit/No Credit only (Pass/Fail)

m. Does proposed new course replace an equivalent course? Check (x) Yes No

n. Equivalent course: Prefix Number See instructions on Replacement courses.

o. CATALOG DESCRIPTION – Limit to 75 words – PLEASE BE CONCISE.

p. Term(s) Offered: (See instructions for listing.) q. Max. Section Enrollment:

r. Prerequisites/Co-requisites/Restrictions: (If none, leave blank.) Limited to 100 spaces.

UCC Chair Signature/Date: _____ / /

Academic Affairs Approval Signature/Date:

 2/5/09

To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS) General Education (GE) Occupational Education (OC) G.E. Codes

Office of the Registrar use ONLY

Date Rec'd: _____ Date Completed: _____ Entered: SCACRSE __ SCADETL __ SCARRES __ SCAPREQ __

CREATE NEW COURSE
Course Data Entry Form

FORM F

Create New Course
Rev. 07/23/07

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Notes

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d. Course Title: (Limit to 30 characters/spaces.)

e. College Code: f. Department Code:

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g. Type: Variable Fixed h. Minimum Credit Hours i. Maximum Credit Hours

j. May Be Repeated for Added Credit: Check (x) Yes No

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UCC Chair Signature/Date: _____

Academic Affairs Approval Signature/Date: _____

 2/15/07

To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS) General Education (GE) Occupational Education (OC) G.E. Codes

Office of the Registrar use ONLY

Date Rec'd: _____ Date Completed: _____ Entered: SCACRSE __ SCADTL __ SCARRES __ SCAPREQ __

College of Arts and Sciences

February 4, 2009

**TO: Daniel Burcham, Interim Vice President of Academic Affairs
Meral Topcu, Chair, College Curriculum Committee**

FR: Matthew A. Klein, Dean *MAK*

RE: Computer Science Fall 2009 Special Topic Courses – CPSC 190 and CPSC 390

Enclosed for your information is the proposal for CPSC 190 – Programming and Problem Solving and CPSC 390 – Parallel Programming which I have approved to be offered Fall 2009 by the Mathematics Department.

Thank you.

**Cc: Kirk Weller
Valerie Greenfield**

REC'D FEB 05 2009