

IGMCS GENERAL DESCRIPTION (Draft 3/13/06)

INTRODUCTION

The Interdisciplinary Graduate Minor in Computational Science (IGMCS) is an interdisciplinary, University of Tennessee academic program established to recognize graduate students for completing the requirements of a minor in Computational Science at either the Masters or PhD level. The Program enables a student to obtain a minor in Computational Science simultaneously with a graduate degree in a participating department.

Computational Science is an emerging field of study that is truly interdisciplinary, with participating faculty from Mathematics, Computer/Information Science, and many “Domain Sciences” across the curriculum that have embraced computationally intensive methods. Since Computational Science demands some basic level of understanding and skill in all three of these discipline clusters, the IGMCS program is designed to provide students seeking an advanced degree in one of these three areas with the knowledge and experience in the other two that is necessary to round out their education. Course options consist of courses in Mathematics, Computer/Information Science, and other participating departments selected according to a plan approved by the respective home departments, which then must be approved by the IGMCS Program Committee.

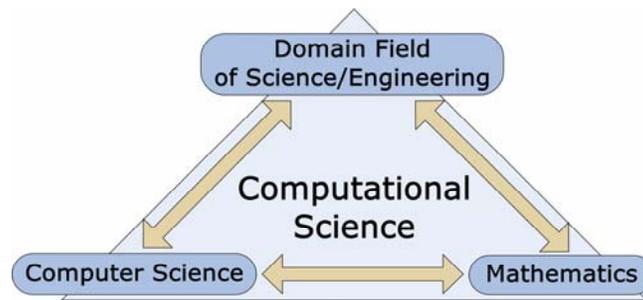


Figure 1. Conceptual diagram of the three discipline groups that converge in Computational Science

The Program is administered by a Program Committee with advisory input from the Program Faculty and is open to graduate students in departments that offer a minor through their graduate program.

Successful completion of the minor at either the Masters or PhD level is recognized by appropriate documentation on the student's transcript. Students who do not complete all requirements for the minor will still receive academic credit for all approved Computational Science courses they have successfully completed.

I. STUDENT REQUIREMENTS FOR ADMISSION AND COMPLETION OF THE PROGRAM

1. The student's home department (i.e. the department in which the student is currently pursuing an advanced degree) must have an approved degree program with the IGMCS Program

Committee. That program will specify the sequences of Computational Science courses chosen from the IGMCS approved list that are considered appropriate by the student's home department.

2. The student's Admission to Candidacy form must contain all courses required for the chosen Computational Science degree program set off in a group and labeled as "Courses Required for the Minor in Computational Science." It may be that a student does not decide to apply for participation in the Program until he/she has already completed one or two approved Computational Science courses. In that case, the student's major professor should file a program change with the cooperating departments and assist the student in obtaining a IGMCS program faculty member to serve on the student's committee.

3. The student's graduate committee must include one member of the IGMCS program faculty.

II. PROGRAM REQUIREMENTS

Program requirements are specified in terms of completion of course options for both Masters level and PhD level. Options consist of courses from the three different but complementary disciplines; Computer Science/Information Science, Applied Mathematics, and a domain science (eg., Physics, Chemistry, Engineering, etc.). The courses chosen must be reviewed and approved by the Program Committee. Specific program requirements for a given academic unit are available from the College Representative or the Chair of the Program Committee.

- At the Masters level, a minor in Computational Science will require 9 hours total (3 courses) with 3 hours (1 course) from each of the two non-home Program disciplines listed above. For example, a student whose home discipline is Computer Science must complete 9 hours of approved Program courses with a minimum of 3 hours (1 course) from each of the other two discipline groups (Applied Mathematics and domain science/engineering).

- At the Doctoral level a minor in Computational Science will require 15 hours total (5 courses) from the three disciplines.
 - At least 9 hours (3 courses) must be taken outside the student's home discipline.
 - Students must take at least 3 hours (1 course) from each of the two non-home disciplines.

III. PROGRAM OPTIONS

Students may satisfy three hours of the Program requirement by successfully completing a one semester Internship outside of the student's major. The internship may be taken offsite, e.g. Oak Ridge National Laboratory (ORNL), or on campus by working with a faculty member in a department other than the student's home department. Students should work with the chair or other member of their graduate committee to put together an appropriate internship. The internship is strongly encouraged and must have the approval of the IGMCS Program Committee prior to the start of the internship period

IV. PROGRAM ADDITIONS AND MODIFICATIONS

Academic departments with existing or planned graduate degree programs are invited to submit requests for participation to the Program Committee. Applications should indicate which degree program options (eg., Masters and/or PhD) are to be included and which courses are to be accepted for each of the options. It is expected that courses will generally be equivalent to existing graduate level courses in the participating departments. The Program Committee representative (College Representative) from the applicant's college may assist in developing the application.

Suggested program modifications that have been approved by the faculty of the participating academic unit should be sent to the College Representative, who in turn will bring them to the attention of the Program Committee for final approval.

The policies and operational guidelines approved by the Faculty Senate for the Interdisciplinary Graduate Minor in Computational Science are flexible so that approval for new programs or modification of existing ones can be given with a minimum of delay. Interested students can be admitted provisionally to the Program at the same time that the sponsoring department is applying for approval of its degree program.

V. PROGRAM ADMINISTRATION

The Program Faculty is composed of members of participating IGMCS departments and other individuals with relevant expertise who have been nominated for membership by their respective department heads and approved by the Program Committee. The Program Committee, a subset of the Program Faculty, is responsible for making administrative decisions and for formulation and implementation of Program policies.

The structure and responsibilities of the Program Faculty and the Program Committee are outlined below.

VI. PROGRAM FACULTY

Membership

- a. All members of the participating departments, with rank of assistant professor or above, who teach courses that are part of the IGMCS Program, and other departmental members approved by the IGMCS Program Committee
- b. Any faculty member with rank of assistant professor or above nominated for membership by the respective department head and formally approved for membership by the Program Committee. The IGMCS Program Committee may also review an applicant's resume with respect to the person's professional training, interests and activities in research and/or graduate level teaching. The applicant must submit evidence of research which includes significant development of theory or applications within their discipline. The applicant may also be requested to submit evidence of graduate courses taught which he or she deems relevant and appropriate for the Program.

Responsibilities

- a. To teach courses approved for the Program. These courses may or may not be in the instructor's assigned department. All teaching across departmental lines will be funded by the department offering the courses. Teaching across departmental lines will be encouraged.
- b. To direct graduate student research as required

- c. To serve on graduate committees of students

VII. PROGRAM COMMITTEE

Membership

- a. Program Committee members must be IGMCS Faculty members
- b. Chairperson
- c. 1-2 representatives from each of the colleges involved, appointed by the Dean of that college
- d. All appointments will be for renewable two-year terms

Responsibilities of the Chairperson

- a. To implement the decisions of the Program Committee
- b. To call meetings, when appropriate, to ensure the well-being of the Program
- c. To present an annual report to the Dean of the Graduate School
- d. To respond to requests for program review from either the Program Committee or the Graduate School

Responsibilities of the Program Committee

- a. To determine minimum requirements for Program minors
- b. To approve degree programs and courses nominated for inclusion in the Program
- c. To maintain a procedure and criteria for approving nominated faculty for membership in the Program Faculty
- d. To maintain a system for evaluating courses nominated for inclusion in the Program and for evaluating approved Program courses periodically
- e. To work with heads of participating departments in scheduling courses to allow for timely completion of course sequences
- f. To work with heads of participating departments in developing course titles which reflect appropriate content
- g. To maintain a procedure by which unresolved differences among members of the Program Committee or petitioners can be forwarded to the respective Deans and the Dean of the Graduate School