GRADUATE COMMITTEE

AGENDA

September 10, 2009, 9:00 A.M.
Veazey Hall, Room 2001C

I. CALL TO ORDER

II. APPROVAL OF AGENDA

III. SHAREPOINT PRESENTATION (TBA)

IV. NEW BUSINESS

A. College of Information Technology

New Program:
Master of Science in Computer Science

V. A. OLD BUSINESS:

i. Dual Listed Courses (see attachment)

B. SUBCOMMITTEE REPORTS & UPDATES:

i. Vision For Graduate Education (BluePrint Ad Hoc Committee)

VI. OTHER BUSINESS

VII. ADJOURNMENT

Georgia Southern University

Proposed New or Revised Programs

To: ☐ **Undergraduate Committee** ☒ **Graduate Committee**

(Date Format: 99/99/99) **UC/GC Meeting Date:** 9/11/09
(Date Format: 99/99/99) **Date Submitted:** 9/10/09
(Term Format: 200608) **Proposed Effective Term:** 201008
CIP Code: 110700

College Code: 19 - CIT **Department Code:** 1902 **Department:** Computer Sciences

Current Name of Program (*ex., B.S. Mathematics)***:**

Proposed New or Revised Name of Program (*ex., B.S. Mathematics)***:** Master of Science in Computer Science

(Regents' format can be found at: http://www.usg.edu/academics/handbook/section2/2.03/2.03.02.phtml)

1. **Consistent with goals of: (check all that apply)**
   ☒Accreditation ☒College ☒Department ☒State/Regional Needs
   ☒University Strategic Plan

2. **Type:** ☐ New Preliminary Proposal (Attach in Regents' required format)
   OR
   ☒ Formal Proposal (Attach in Regents' required format)
   OR
   ☐ Revision to Existing Program (Attach in Regents' required format)
   OR
   ☐ Other Program Proposals or Revisions that do not require Regents' approval

3. **Proposal for:** Graduate Major **Other:**

4. **Degree:** MS **Other:**

5. **Total Credit Hours Required:** 30

6. **Is this a change in credits (for Revisions only)?** ☐ **Yes** ☐ **No**

7. **Target Group of Students:** Graduate Students

8. **Additional Resources Needed: (check all that apply)**
   ☐Computer Needs ☒Distributed Learning Support ☐Equipment ☐Facilities
   ☒Faculty ☐Library Resources ☐Staff Support
   ☐Other

9. **A New or Revised Catalog Program Page must be attached.**
   NOTE: For Revised Catalog Program Pages:
   - Refer to *Sample Program Revisions* for layout format.
   - Deletions should be in ***BOLD*** with a **strikethrough**.
   - Additions should be in ***BOLD ITALICS***.

10. **Provide the Justification/Rationale for New or Revised Programs.**
    Despite the current economy, the outlook for software professional is quite good. According to the U.S. Department of Labor (http://www.bls.gov/oco/ocos267.htm) "Computer software engineers are one of the occupations projected to grow the fastest and add the most new jobs over the 2006-16 decade" Money magazine's top 10 jobs of 2008 are (in order):

    1. Software Engineer
    2. College professor
    3. Financial adviser
    4. Human Resources Manager
    5. Physician assistant

6. Market research analyst
7. Computer IT analyst
8. Real Estate Appraiser
9. Pharmacist
10. Psychologist

Also according to the U.S. Department of Labor (http://www.bls.gov/oco/ocos042.htm), “The rapid and widespread use of computers and information technology has generated a need for highly trained workers proficient in various job functions. These computer specialists include computer scientists, database administrators, and network systems and data communication analysts. Job tasks and occupational titles used to describe these workers evolve rapidly and continually, reflecting new areas of specialization or changes in technology, as well as the preferences and practices of employers.”

Finally, according to the Georgia Tech Research News (April 2005, http://gtresearchnews.gatech.edu/newsrelease/occupations.htm) “Though Georgia’s technology industry has been in a downturn since 2001, the number of state residents employed in high tech occupations – paying high wages has actually grown during that time, a Georgia Institute of Technology analysis of employment and wage data shows. Computer systems and software specialists are enabling a lot of different industries, not just information technology services firms, said Jan Youtie, a principal research associate in Georgia Tech’s Economic Development Institute. Analyzing data from both federal and state sources, Youtie and collaborators Philip Shapira and Jue Wang found that jobs requiring high levels of education grew 12 percent in Georgia from 2001 to 2003. While these high tech occupations added approximately 9,000 jobs to the state’s economy, employment in the rest of the state’s occupations declined by two percent.” In fact, according to Youtie, Shapira, and Wang, the number of computer systems and software specialists grew 26% over that period of time.

M.S. COMPUTER SCIENCE 30 HOURS

Advising: College of Information Technology, Department of Computer Sciences, Dr. James Harris Georgia Southern University, P.O. Box 7997, Statesboro, GA 30460, (912) 478-7394, E-mail: jkharris@georgiasouthern.edu.

Admission Requirements

Regular Admission

Domestic Candidates: (Choose Option A or Option B)

Option A

1. Bachelor of Science in Computer Science or in a related field (Computer Engineering, Information Technology, Information Systems, Software Engineering, etc.) from an accredited program.
2. Have a cumulative GPA of 3.0/4.0 or its equivalent.
3. Submit a General GRE score.

Option B

1. Bachelor of Science in Computer Science or in a related field (Computer Engineering, Information Technology, Information Systems, Software Engineering, etc.).
2. Have a cumulative GPA of 2.4/4.0 or its equivalent.
3. Have at least two years of relevant professional experience (employment) in computing.
4. Submit a General GRE score.

International Candidates:

1. Bachelor of Science in Computer Science or in a related field (for example, Computer Engineering, Information Technology, Information Systems, Software Engineering, etc.)
2. Have a cumulative GPA of 3.0/4.0 or its equivalent.
3. Submit a General GRE score.
4. Submit a minimum TOEFL score of 550 (paper-based), 213 (computer-based), or 80 (internet-based) The TOEFL will be waived for international applicants who have graduated from a U.S. College or University.

Provisional Admission

Applicants who meet most (but not all) of the Regular admission requirements may be admitted on a Provisional basis. Applicants granted Provisional admission must earn grades of "B" or higher in the courses taken under the Provisional admission status. Any other conditions of Provisional admission will be stated in the admission letter. Applicants with such admission status may take graduate-level courses counting toward the M.S. degree requirements. It is every student's responsibility to satisfy his or her conditions of admission as soon as possible after acceptance. Prerequisites for provisionally admitted students consist of online versions of the following undergraduate courses:

CSCI 3230 - Data Structure (3)
CSCI 3232 - Systems Software (3)

Non-Degree

Applicants who have a high number of deficiencies may be granted Non-Degree admission to the College of Graduate Studies to take a limited number of graduate level courses.

Program of study

The graduate student and the graduate advisor shall develop a Program of Study that consists of 30 hours of graduate course work, including 9 hours of core courses, 9 hours in a concentration area and either 9 hours of elective classes at the 7000 (or two 7000 and one 5000) level with 3 hours of CSCI 7899 (project option) or 6 hours of elective classes at the 7000 (or one 7000 and one 5000) level with 6 hours of CSCI 7999 (thesis option).

General Requirements

Core Requirements.....9 Hours

CSCI 5430G - Artificial Intelligence (3)
CSCI 5432G - Database Systems (3)
CSCI 5436G - Distributed Web System Design (3)

Area of Concentration.....9 Hours

Database and Knowledge Systems
CSCI 7431 - Distributed Database Systems (3)
CSCI 7434 - Data Mining (3)
CSCI 7435 - Data Warehousing (3)

Electives ……6 or 9 Hours

CSCI 5xxxG - (3) (by approval)
CSCI 7090 - Selected Topics in Computer Science (3) **OR** any CIT 7xxx courses from the IS, IT or CS Departments (by approval) (3)

Project Option (during the last semester).....3 Hours

CSCI 7899 - Research Project in Computer Science (3)

Thesis Option (not in the same semester) .....6 Hours

CSCI 7999 - Thesis (6)
Students with GPA over 3.8 are encouraged to take the Masters Thesis option.

Program Approval Signature Form

New/Revised Program

Current Program Title *(ex., B.S. Mathematics)*: ___
Proposed Program Title *(ex., B.S. Mathematics)*: Master of Science in Computer Science

Approval Signatures

☐ Recommend
☐ Not Recommend — Chairperson, Department Curriculum Committee *(If Applicable)* — Date

☐ Recommend
☐ Not Recommend — Department/School Chairperson — Date

☐ TEC Review Not Required _____ *(Initials of Dept./School Chair or TEC Chair)*
☐ Review Only *(no action needed)*
☐ Recommend
☐ Not Recommend — Chairperson, TEC Executive Committee *(If Applicable)* — Date

☐ Recommend
☐ Not Recommend — Director of University Honors Program *(If Applicable)* — Date

☐ Recommend
☐ Not Recommend — Chairperson, College Curriculum Committee *(If Applicable)* — Date

☐ Recommend
☐ Not Recommend — Dean of the College — Date

☐ Recommend
☐ Not Recommend — Dean of the Graduate College *(If Applicable)* — Date

☐ Recommend
☐ Not Recommend — Chairperson, Senate Undergraduate/Graduate Committee — Date

☐ Recommend
☐ Not Recommend — Provost/Vice President for Academic Affairs *(Final sign-off)* — Date

*Consultation between appropriate chairpersons and deans must occur if this item impacts another unit before final approval.

Computer Sciences master's degrees
FORMAL PROPOSAL

Institution: Georgia Southern University

Institutional Contact (President or Vice President for Academic Affairs): Gary Means

Date: 9/1/2009

School/Division: Information Technology

Department: Computer Sciences

Name of Proposed Program: Master of Computer Science

Degree: Master of Science

Major: Computer Science

Degree Inscription: Master of Science in Computer Science

CIP Code: 110700 Anticipated Starting Date: August 2010

Program Classification:

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1. Curriculum: List the entire course of study required and recommended to complete the degree program. Provide a sample program of study that might be followed by a representative student.

Coursework:

Core Requirements……..…..9 Hours

CSCI 5432G - Database Systems (3)
Prerequisites - A minimum grade of "C" in CSCI 3230 Data Structures

CSCI 5436G - Distributed Web Systems Design (3)
Prerequisites - A minimum grade of "C" in CSCI 5432 Database Systems

CSCI 5430G - Artificial Intelligence (3)
Prerequisites - A minimum grade of "C" in CSCI 3230 Data Structures and CSCI 5330 Algorithmic Design and Analysis or permission of the instructor

Area of Concentration……....……12 Hours

Database and Knowledge Systems
CSCI 7434 - Data Mining (3)
Prerequisites - A minimum grade of "B" in CSCI 5432 Database Systems and CSCI 5330 Algorithmic Design and Analysis

CSCI 7435 - Data Warehousing (3)
Prerequisites - CSCI 5432 Database Systems

CSCI 7431 - Distributed Database Systems
Prerequisites - A minimum grade of "C" in CSCI 5332 Data Communications and CSCI 5432 Database Systems or permission of the instructor

Choose one of the following:

Project Option (during the last semester)……..12 Hours
CSCI 7899 – Research Project in Computer Science (3)
CSCI 7000 level graduate electives (9)

or

Thesis Option (not in the same semester)……...12 Hours
CSCI 7999 - Thesis (6)
CSCI 7000 level graduate electives (6)

Students with a GPA over 3.8 are encouraged to take the Master's Thesis option.

Note: Defense of both project and Thesis will be preceded by a required oral exam on the same day. This requirement is necessary for assuring the quality of our program and adequate capabilities of its graduates.

Sample program of study (intensive variant assumes six consecutive semesters of online study, including summer semesters)

For a Thesis option

Semester 1:
CSCI 5432G Database Systems
CSCI 5430G Artificial Intelligence

Semester 2:
CSCI 5436G Distributed Web System Design
5000G/7000 level CS elective

Semester 3:
CSCI 7435 Data Warehousing
CSCI 7434 Data Mining

Semester 4:

CSCI 7431 Distributed Databases
7000 level CS elective

Semester 5
CSCI 7999 Masters Thesis –first 3 credits

Semester 6:
CSCI 7999 Masters Thesis second 3 credits

For a Project option

Semester 1:
CSCI 5432/G Database Systems
CSCI 5430G Artificial Intelligence

Semester 2:
CSCI 5436G Distributed Web System Design
5000G/7000 level CS elective

Semester 3:
CSCI 7435 Data Warehousing
CSCI 7434 Data Mining

Semester 4:
CSCI 7431 Distributed Databases
5000G/7000 level CS elective

Semester 5:
5000G/7000 level CS elective
7000 level CS elective

Semester 6:
7000 level elective
CSCI 7899 Research Project in Computer Science

Each semester at least one 5000/7000 course/electives will be offered, and all (9h core and 12h specialization focus) generally required courses will be offered once in two years.

a. Clearly differentiate which courses are existing and which are newly developed courses. Include the course titles as well as acronyms and credit hour requirements associated with each course.

All required computer sciences courses currently exist in the Georgia Southern catalog. Online versions of the required courses are currently being developed.

b. Append course descriptions for all courses (existing and new courses).

Please see Appendix I

c. When describing required or elective courses, list all course prerequisites.

Given in "1. Curriculum".

d. Provide documentation that all courses in the proposed curriculum have met all institutional requirements for approval.

Currently, all courses involved in the proposed program are in the current Georgia Southern University

Catalog. See Appendix I for course catalog descriptions.

e. Append materials available from national accrediting agencies or professional organizations as they relate to curriculum standards for the proposed program.

The accrediting agency for computing (ABET) accredits only undergraduate programs. The ABET accrediting standards for undergraduate programs are listed in Appendix II. ABET does not accredit graduate programs in the computing sciences. The Georgia Southern University Computer Sciences undergraduate program is ABET accredited according to these standards

f. Indicate ways in which the proposed program is consistent with national standards

ABET is the national accrediting agency for computer science. ABET only accredits undergraduate Computer Science programs. ABET has general accrediting standards (i.e. the non-curriculum standards) and specific (i.e. curriculum) standards. We plan to apply the same evaluation instruments to our graduate program with regard to the general ABET accrediting standards as we do in our undergraduate program. An evaluation form is to be filled out by the thesis committee for the students' capstone project / thesis presentation. Student evaluations in individual courses will be given every semester. The CIT Advisory Board will conduct periodic reviews.

Instrument	Purpose	Frequency
Faculty Survey	To document faculty satisfaction with students and program	Yearly
Oral Presentation Evaluations	Faculty and peer assessment of quality	Semester
Graduating Student Surveys	To document student satisfaction with faculty, fellow students and the program	Yearly
Alumni Survey/Interview	To document student satisfaction with the program	Every two years after the start of the program beginning with the first graduate
Employer Survey	To document employer satisfaction with the graduates and the program	Every two years after the first graduate

Table 1: Periodic Program Review

g. If internships or field experiences are required as part of the program, provide information documenting internship availability as well as how students will be assigned and supervised.

Our proposed program has no internship or field experience.

h. Indicate the adequacy of core offerings to support the new program.

The core offerings will be provided according to the schedule(s) listed in Table 4 and Table 5.

2. Admissions criteria:

Admission Requirements

1. Regular Admission

Domestic Candidates:

A)

1. Bachelor of Science in Computer Science or in a related field (Computer Engineering, Information Technology, Information Systems, Software Engineering, etc.) from a regionally accredited program.
2. Have a cumulative GPA of 3.0/4.0 or its equivalent.
3. Submit a General GRE score.

OR

B)

1. Bachelor of Science in Computer Science or in a related field (Computer Engineering, Information Technology, Information Systems, Software Engineering, etc.).
2. Have a cumulative GPA of 2.4/4.0 or its equivalent.
3. Have at least two years of relevant professional experience (employment) in computing.
4. Submit a General GRE score.

International Candidates

1. Bachelor of Science in Computer Science or in a related field (for example, Computer Engineering, Information Technology, Information Systems, Software Engineering, etc.)
2. Have a cumulative GPA of 3.0/4.0 or its equivalent.
3. Submit a General GRE score.
4. Submit a minimum TOEFL score of 550 (paper-based), 213 (computer-based), or 80 (Internet-based). The TOEFL will be waived for international applicants who have graduated from a U.S. College or University.

2. Provisional Admission

Applicants who meet most (but not all) of the Regular admission requirements may be admitted on a Provisional basis. Any other conditions of Provisional admission will be stated in the admission letter. Applicants with such admission status may take graduate-level courses counting toward the M.S. degree requirements. It is every student's responsibility to satisfy his or her conditions of admission as soon as possible after acceptance. Prerequisites for provisionally admitted students consist of online versions of the following undergraduate courses. A “B” or better must be earned in both.

- CSCI 3230 Data Structure (3)
- CSCI 3232 Systems Software (3)

International applicants may not be admitted provisionally.

Non-Degree

Applicants who have a high number of deficiencies may be granted Non-Degree admission to the College of Graduate Studies to take a limited number of graduate level courses.

Application Deadlines

The application deadlines for both admissions and financial aid decisions are:

Semester	Domestic	International
Fall	March 1 Priority July 1 Final	March 1 Priority June 1 Final
Spring	October 1	October 1
Summer	April 1	February 1

Table 2: Application Deadlines

The applications available on those dates will be processed as promptly as possible, within one month of the closing date. Admission decisions will be based on the space available and the criteria and preferences explained elsewhere. Applications received after the deadline will be considered if space is available, but such applications will normally not be considered until the next appropriate application deadline.

3. Availability of assistantships:

Since this is an online program, there will be no assistantships available. There will be a graduate assistant provided for the program to help faculty and staff administer the program.

4. Student Learning Outcomes and other outcomes of the proposed program:

The student outcomes for our program are:

- An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
- An ability to function effectively on teams to accomplish a common goal;
- An ability to use current techniques, skills, and tools necessary for computing practice;
- An ability to effectively research a topic in Computer Science and produce a significant work as either a written paper or a software project.

5. Administration of the program:

a. Indicate where the program will be housed within the academic units of the institution

The program will be housed within the College of Information technology building.

b. Describe the administration of the program inclusive of coordination and

responsibility.

The program will be coordinated by a graduate director. The graduate director will be a full time tenured faculty member. The graduate director will be the chair of the Computer Sciences graduate committee. The graduate committee will be responsible for determining acceptance of graduates into the program and for directing administrative and curriculum changes to the program. The graduate committee will consist of three tenured or tenure track graduate faculty members (including the chair).

6. Waiver to Degree-Credit Hour (if applicable): If the program exceeds the maximum credit hour requirement for associate degrees, then provide an explanation supporting the increase in hours.

Not applicable

7. Accreditation: Describe disciplinary accreditation requirements associated with the program (if applicable).

Not applicable

8. Projected enrollment for the program.

We estimate an initial enrollment of 20, 10 in the fall 2010 cohort and 10 in the spring 2011 cohort. It is anticipated that 20% will drop from the program each year. The number of students in each cohort will rise two per year until the fourth year. The number of students was estimated by a conservative review of current market conditions. The student demand at Georgia Southern University is demonstrated by the results of a survey of upper-class undergraduate CIT students and alumni given in the Fall of 2008. Strong interest in the proposed computer sciences masters' degree was expressed by over 80% of surveyed students with over 60% of the aforementioned being qualified for admission. We anticipate that the initial enrollment in 2010/2011 will be largely drawn from existing and former CS and IT students and alumni and information technology professionals upgrading their skills and/or waiting for better economic conditions. We anticipate the demand for the program to rise as our advertising market increases.

9. Faculty

a. Provide an inventory of faculty directly involved with the administration of the program. For each faculty member, provide the following information:

Faculty Name	Rank	Highest Degree	Degrees Earned	Academic Discipline	Current Workload
Debopam Acharya	Assistant Professor	PhD	BS MS	Computer Science	13 Hours
James Bradford	Professor	PhD	BS MS	Computer Science/Human-Computer Interaction	12 Hours
Robert P. Cook	Professor	PhD	BS MS	Computer Science	3 Hours
Ardian Greca	Associate Professor	PhD	BS	Systems and Information Engineering	6 Hours

James Harris	Associate Professor	PhD	BS MS	Computer Science	1 Hour
Vladan Jovanovic	Professor	PhD	B.Eng M. Sci	Software Engineering	9 Hours
Lixin Li	Associate Professor	PhD	BS MS	Computer Science	10 Hours
Youming Li	Associate Professor	PhD	BS MS	Computer Science	9 Hours
Kera Bell Watkins	Assistant Professor	PhD	BS MS	Computer Science/Software Engineering	10 Hours
Wen-Ran Zhang	Professor	PhD	BS MS	Computer Engineering	9 Hours

Table 3: Faculty Qualifications and Workload

Explanation of how workload will be impacted by the new program

Table 4 below shows the courses needed for relatively independent cohorts. It would be necessary to be able to support two courses the first semester, four courses the second semester, six courses each fall and spring afterwards, and four courses each summer. The only overlap of cohorts is in the 7000 level elective courses in the spring and summer. The courses for the first year would be covered by current faculty. This would require offering several undergraduate classes on a rotational basis instead of offering them each semester resulting in larger undergraduate class sizes. A new CS instructor is to be hired before the start of the fall 2011 semester. This instructor would teach four lower level CS courses freeing current CS faculty to teach four graduate courses. The two remaining graduate courses would be covered by rotating undergraduate offerings.

Semester	Courses Offered	Cohort I	Cohort II
Fall 2010	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence	
Spring 2011	• CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective • CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence	• CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence
Summer 2011	• CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective • CSCI 7431 Distributed	• CSCI 7431 Distributed Database Systems • CSCI 7000 elective	• CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective

	Database Systems • CSCI 7000 elective		
Fall 2011 (New instructor)	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence • CSCI 7434 Data Mining • CSCI 7435 Data Warehousing • CSCI 7431 Distributed Database Systems • CSCI 7000 elective	• CSCI 7434 Data Mining • CSCI 7435 Data Warehousing	• CSCI 7431 Distributed Database Systems • CSCI 7000 elective
Spring 2012	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence • CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective • CSCI 7000 elective • CSCI 7431 Distributed Database Systems	• CSCI 7999 Thesis • CSCI 7999 Thesis • Or • CSCI 7000 elective • CSCI 7899 Research Project	• CSCI 7000 elective • CSCI 7431 Distributed Database Systems
Summer 2012	Same as Summer 2011		• CSCI 7999 Thesis • CSCI 7999 Thesis • Or • CSCI 7000 elective • CSCI 7899 Research Project
Fall 2012	Same as Fall 2011		
Spring 20113	Same as Spring 2012		

Table 4: Independent Cohorts

Table 5 below shows a schedule for relatively dependent cohorts. This schedule requires only two courses be taught in the fall and spring semesters of the first year. From that point on, four courses are taught each semester. Again, the courses for the first year would be covered by rotating undergraduate course offerings. As with the previous schedule, support from a new instructor would occur in the fall of the second year. With the instructors support for this schedule, it would not be necessary to permanently rotate undergraduate offerings and they would go back to their old schedule at the end of the first year.

Semester	Courses Offered	Cohort I	Cohort II
Fall 2010	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence	
Spring 2011	• CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective	• CSCI 5436G Distributed Web Systems Design • CSCI 7000 elective	• CSCI 5436G Distributed Web Systems Design • CSCI 7000 elective
Summer 2011	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence • CSCI 7431 Distributed Database Systems • CSCI 7000 elective	• CSCI 7431 Distributed Database Systems • CSCI 7000 elective	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence
Fall 2011 (New instructor)	• CSCI 5432G Database Systems • CSCI 5430G Artificial Intelligence • CSCI 7434 Data Mining • CSCI 7435 Data Warehousing	• CSCI 7434 Data Mining • CSCI 7435 Data Warehousing	• CSCI 7434 Data Mining • CSCI 7435 Data Warehousing
Spring 2012	• CSCI 5436G Distributed Web Systems Design • CSCI 5000G/7000 elective • CSCI 7000 elective • CSCI 7431 Distributed Database Systems	• CSCI 7999 Thesis • CSCI 7999 Thesis • Or • CSCI 7000 elective • CSCI 7899 Research Project	• CSCI 7000 elective • CSCI 7431 Distributed Database Systems
Summer 2012	Same as Summer 2011		• CSCI 7999 Thesis • CSCI 7999 Thesis • Or • CSCI 7000 elective • CSCI 7899 Research Project
Fall 2012	Same as Fall 2011		
Spring 20113	Same as Spring 2012		

Table 5: Dependent Cohorts

Expected responsibilities in the program:

Total Number of Faculty: _____9_____

b. If it will be necessary to add faculty in order to begin the program, give the desired qualifications of the persons to be added, with a timetable for adding new faculty and plan for funding new positions.

The courses for the first year would be covered by current faculty. This would require offering several undergraduate classes on a rotational basis instead of offering them each semester resulting in larger undergraduate class sizes. A new CS instructor is to be hired before the start of the Fall 2011 semester. This instructor would teach four lower level CS courses freeing current CS faculty to teach four graduate courses.

11. Fiscal, Facilities, Enrollment Impact, and Estimated Budget

a. Provide a narrative that explains how current institutional resources will be expended specifically for this program. Provide a narrative that explains how the institution will fiscally support the establishment of the new program through the redirection of new resources. Indicate whether the institution will submit a request for new funds as part of its budget request. The narrative also needs to explain the basis of the institution's projections with regard to anticipated EFT, head count student enrollment, estimated expenditures, and projected revenues.

The first year, it will only be necessary to provide a graduate assistant, a modest supply budget, and training for CS faculty in online course development. In the second year, a lecturer will be hired to cover lower level CS classes, freeing up CS faculty to teach graduate level classes. The enrollments are based on two cohorts, a fall and spring cohort. In the first year, each cohort is projected to have 10 students. In the second year, 80% of the previous year's cohort will continue and it is projected to have 12 student in each new cohort. This continues into the third and fourth years with 14 and 16 new students in each of the 3rd and 4th year's cohorts respectively. The new tuition field is based on the

number of students per semesters * 6 * $350/credit hr

This is dollar amount summed up over the year (3 semesters).

	First Year FY 2010	Second Year FY 2011	Third Year FY 2012	Fourth Year FY 2013
I. ENROLLMENT PROJECTIONS				
Student Majors				
Shifted from other programs	0	0	0	0
New to the institution	20	24	26	28
Total Majors	20	42	50	52
Course Sections Satisfying Program Requirements				
Previously existing	0	10	16	16
New	10	6	0	0
Total Program Course Sections				
Credit Hours Generated by Those Courses				

Existing enrollments	0	288	390	456
New enrollments	300	360	420	480
Total Credit Hours				
DEGREES AWARDED	12	16	18	20
	Year 2	*Year 3*	*Year 4*	*Year 5*
II. EXPENDITURES	EFT Dollars	EFT Dollars	EFT Dollars	EFT Dollars
Personnel – reassigned or existing positions				
Faculty				
Part-time Faculty				
Graduate Assistants				
Administrators				
Support Staff				
Fringe Benefits				
Other Personnel Costs				
Total Existing Personnel Costs	$0	$0	$0	$0

EXPENDITURES (Continued)				
Personnel – new positions				
Faculty - Lecturer	$0	$50,000	$50,000	$50,000
Part-time Faculty				
Graduate Assistants	$7200	$7200	$7200	$7200
Administrators				
Support Staff				
Fringe Benefits	$0	$9300	$9300	$9300
Other personnel costs				
Total New Personnel Costs	$7200	$66,500	$66,500	$66,500
Start-up Costs (one-time expenses)				
Library/learning resources				
Equipment				
Other (Online preps)	$9000	$9000	$0	$0
Physical Facilities: construction or major renovation				
Total One-time Costs				
Operating Costs (recurring costs – base budget)				
Supplies/Expenses	$500	$500	$500	$500
Travel	$500	$500	$500	$500
Equipment				
Library/learning resources				
Other				
Total Recurring Costs	$1,000	$1,000	$1,000	$1,000
GRAND TOTAL COSTS	$17,200	$76,500	$67,500	$67,500
III. REVENUE SOURCES				
Source of Funds				
Reallocation of existing funds				
New student workload				
New Tuition	$226,800	$283,500	$327,600	$354,900
Federal funds				
Other grants				

Student fees	$1,024	$2,048	$5,120	$6,200
Other				
New state allocation requested for budget hearing				
Nature of Funds				
Base budget	$8200	$67,500	$67,500	$67,500
One-time funds (Online preps)	$9000	$9000	$0	$0
GRAND TOTAL REVENUES	$245,024	$362,048	$400,220	$428,600

Facilities Information for New Academic Programs

Proposed Location for the Program: ___Online_____

Floor area required for the program (gross and net square feet):_____0_____

Type of spaces required:

- ***No. of classrooms*** _____0_____
- ***No. of labs*** _____0_____
- ***No. of offices*** _____0_____
- ***Other spaces*** _____0_____

Place an "X" beside the appropriate selection:

____X___ ***Existing facility will be used as is (Area s.f.):***

_____ ***Existing facility will require modification (Area s.f.):***

Projected renovation cost:
Estimated relocation cost:
Total funding required:
Source of Funding:

_____ ***Construction of new facilities will be required (Area s.f.):***

Estimated construction cost:
Estimated total project cost:
Proposed source of funding:

List any infrastructure impacts that the program will have (i.e., parking, power, HVAC, etc.) and indicated estimated cost and source of funding.

None

Other comments:

The proposed Master of Computer Science degree program with a concentration in data and knowledge systems will be the only such degree concentration offered in Georgia and one of only a handful across the country. The area of data and knowledge systems covers areas such as speech and vision recognition

systems, expert systems, data storage systems, and information retrieval systems, such as online search engines. According to the U.S. Department of Labor (http://www.bls.gov/oco/ocos042.htm), "The rapid and widespread use of computers and information technology has generated a need for highly trained workers proficient in various job functions. These computer specialists include computer scientists, **database administrators**, and network systems and data communication analysts. Job tasks and occupational titles used to describe these workers evolve rapidly and continually, reflecting new areas of specialization or changes in technology, as well as the preferences and practices of employers."

Note: A system Facilities Project Manager may contact you with further questions separate from the review of the new academic program.

Appendix I: Course Descriptions

Computer Sciences (CIT)

CSCI 1230-Introduction to BASIC Programming 3-0-3
Basic concepts, logic and syntax of the BASIC programming language. Elementary programming techniques and algorithms. Topics include: variables, arithmetic operations, input/output, strings, GUI design, IF blocks, loop structures, subprograms, one- and two-dimensional arrays, file processing and applications. Prerequisites: Three hours of mathematics.

CSCI 1232-Introduction to FORTRAN Programming 3-0-3
Basic concepts, logic and syntax of the FORTRAN programming language. Elementary programming techniques and algorithms. Topics include: arithmetic operations, input/output, IF blocks, loop structures, subprograms, one- and two-dimensional arrays, file processing and applications. Prerequisites: Three hours of mathematics.

CSCI 1236-Introduction to Java Programming 3-0-3
Basic concepts, logic and syntax of the Java programming language. Elementary programming techniques and algorithms. Topics include: arithmetic operations, input/output, data types, variables, selection and control statements, applications, applets, strings and event-driven programming. Prerequisites: a minimum grade of "C" in MATH 1111 or equivalent.

CSCI 1301-Programming Principles I 3-2-4
Provides a fundamental understanding of the development of computer solutions to solve problems with emphasis on structured, top-down development and testing. Concepts include the following: an overview of computer system design, problem solving and procedural abstraction design of computer solutions, algorithm development using simple data types and control structures, implementation and testing of programmed problem solutions, design modularization using subprograms and structured and user-defined data types. Prerequisites: MATH 1111 or higher and a minimum grade of "C" in CSCI 12XX language or ENGR 1631.

CSCI 1302-Programming Principles II 3-0-3
A continuation of CSCI 1301. Emphasis is on advanced programming techniques such as recursion, data and responsibility driven design and implementation, GUI, and file processing techniques. Prerequisites: A minimum grade of "C" in CSCI 1301.

CSCI 2120-Computers, Ethics and Society 2-0-2
An investigation of issues related to the use of computers and computer technology including the following: computer ethics, professional standards, and social impact of computer applications. Some topics to be researched include: philosophical ethics, the application of ethical theory to situations involving computer technology, codes of conduct, privacy, data protection, employee privacy, data regulation, artificial intelligence, copyright/patent issues, computer malfunction liability, computer crime and responsibilities of computer users. Prerequisites: A minimum grade of "C" in CSCI 1301.

CSCI 2230-C++ Programming 3-0-3
Basic concepts, logic and syntax of the C++ programming language. Elementary programming techniques and algorithms, debugging. Topics include: arithmetic operations, input/output, data types, variables, functions, selection and repetition statements, arrays, strings and elementary file processing. Prerequisites: a minimum grade of "C" in MATH 1111 or equivalent.

CSCI 3230-Data Structures 3-0-3
Introduction to abstract data types such as lists, stacks, queues, and trees, and algorithm analysis. Prerequisites: Minimum grade of "C" in both CSCI 1302 and MATH 2130.

CSCI 3231-Logic Circuits & Microprocessors 2-2-3
Digital system and Logic Circuits Design. Topics include the study of the Logic gate, Boolean Functions representation and Minimization Combinational and Sequential logic circuits, Programmable Logic Arrays, Data Representation, RAM, ROM, and Cache Memories, Register Transfer Language and micro-operations, Hardware Description Language (VHDL), Microprocessor Organization and Design,

Assembly Language, Computer Aided Design Tools and Field Programmable Gate Arrays. Corequisites: CSCI 1302.

CSCI 3232-Systems Software 3-0-3

Basic concepts of computer software systems, including operating systems, language translators, utilities, linkers and loaders. System component interfaces. User-level view of operating systems. Diverse programming language concepts and interfaces. Prerequisites: A minimum grade of "C" in CSCI 1302. Corequisites: CSCI 3230.

CSCI 3236-Theoretical Foundations 3-0-3

A study of languages, formal grammars, and abstract representations of computation. Prerequisites: A minimum grade of "C" in both MATH 2130 and CSCI 1302. Corequisites: CSCI 3230.

CSCI 4790-Special Problems/CO-OP (1 to 3)-0-(1 to 3)

Work experience in computer science through the CO-OP program. A student may enroll in this course more than once, but cumulative credit may not exceed three credit hours. Prerequisite: Acceptance as a CO-OP student in the area of computer science.

CSCI 4890-Directed Study in Computer Sciences (1 to 3)-0-(1 to 3)

Directed study under faculty supervision. Seminar, at least one hour to be used as student engagement in service work. Prerequisites: Permission of instructor and department chair.

CSCI 5090/5090G-Selected Topics in Computer Sciences (1 to 3)-(0 to 2)-(1 to 3)

Specialized study in a selected area of Computer Science. Prerequisite: Permission of instructor.

CSCI 5130/5130G-Data Management for Math and the Sciences 3-0-3

Topics in data management, including operating systems, word processing, spreadsheets, and database management and their applications to mathematics education. Intended primarily for those majoring in Mathematics and Mathematics Education. For those majoring or minoring in Computer Sciences, this course may not be used as an upper level Computer Science elective. Prerequisite: CSCI 1230 or permission of instructor.

CSCI 5230/5230G- Discrete Simulation 3-0-3

Introduction to discrete simulation models and their implementation on computers. Topics include modeling techniques, experiment design, analysis and validation of results. Students will be exposed to one or more computer simulation languages. Prerequisites: minimum grade of "C" in CSCI 3230 and STAT 2231 or permission of instructor.

CSCI 5232/5232G- Operating Systems 3-0-3

A study of functions and structures of operating systems. Emphasis will be placed on the management of files, processes, memory, and input/output devices of the Unix operating system. Prerequisite: minimum grade of "C" in both CSCI 3230 and 3232 or permission of instructor.

CSCI 5234/5234G-Parallel Processing 3-0-3

Fundamental concepts of parallel/distributed computing including architectures of parallel/distributed computing systems, as well as languages, algorithms, performance, and programming practice issues. Prerequisites: minimum grade of "C" in both CSCI 3230 and CSCI 3231 or permission of instructor.

CSCI 5330/5330G- Algorithm Design and Analysis 3-0-3

An in-depth study of the design, implementation, testing, and analysis of algorithms. Prerequisites: CSCI 3236 and MATH 2242.

CSCI 5331G- Computer Architecture 2-2-3

Topics include the study of the Microprocessor Organization and Bus Structures, Complex Instruction Set Computer (CISC) Systems, Reduced Instruction Set, Computer (RISC) Systems, Micro-programmed Control and Controller Design, Concepts and Application of Embedded Systems, Pipeline and Vector processing, Input-Output Organization, Memory Organization, Parallel processor Architecture. Advanced topics related to Hardware-Software Co-design. Prerequisite: a minimum grade of "C" in CSCI 3231 or permission of instructor. Corequisites: CSCI 3230.

CSCI 5332/5332G- Data Communications and Networking 3-0-3

Fundamental concepts of data communications including architecture models, protocol suites, network programming, signal and data transmissions, error detection, and performance analysis. Prerequisites: minimum grade of "C" in CSCI 3232, CSCI 5331 and STAT 2231 or permission of instructor.

CSCI 5335/5335G- Object-Oriented Design 3-0-3
Introduction to concepts, methods, and current practice of object oriented design and analysis. Topics include the study of the Unified Modeling Language (UML), which has become an industry standard notation. UML topics will include use cases, diagramming notation (class, object, sequence and object state diagrams, etc.). Students will use UML to design and implement individual and small group projects. Additional topics include understanding design patterns in building applications. Prerequisites: minimum grade of "C" in CSCI 3230.

CSCI 5430/5430G- Artificial Intelligence 3-0-3
Introduction to different paradigms for creating software that can reason, access a knowledge base, handle uncertainty, learn, communicate, perceive and act. Prerequisites: minimum grade of "C" in both CSCI 3230 and CSCI 5330 or permission of instructor.

CSCI 5432/5432G- Database Systems 3-0-3
The fundamental concepts of database management systems (DBMS) including logical and physical database organization, date models and design issues. Emphasis will be placed upon the relational data model including design and implementation using commercial database systems. Prerequisites: a minimum grade of "C" in CSCI 3230 or permission of instructor.

CSCI 5434/5434G-Theory of Programming Languages 3-0-3
A study of the formal description, the abstraction and the features of modern programming languages. Various computational paradigms and corresponding languages are introduced. Prerequisites: a minimum grade of "C" in both CSCI 3230 and CSCI 3236 or permission of instructor.

CSCI 5436/5436G- Distributed Web Systems Design 3-0-3
This course involves programming methodologies for the World Wide Web. Topics include: Client-side programming, distributed transactions, remote procedure calls, component objects, server side programming and network load balancing. Prerequisites: A grade of "C" or better in CSCI 5432 or permission of instructor.

CSCI 5530/5530G-Software Engineering 3-0-3
The course serves as a major integrative, capstone experience for students and requires teamwork. A study of the development and management of software; strategies and techniques of design, testing, documentation and maintenance. Prerequisites: a minimum grade of "C" in CSCI 5432, CSCI 5335 and CSCI 5330 or permission of instructor.

CSCI 7090-Selected Topics in Computer Science (1 to 3)-(0 to 2)-(1 to 3)
Specialized study in a selected area of Computer Science. Prerequisites: Permission of Instructor.

CSCI 7140-Software Development and Machine Architecture 4-0-4
Software and hardware topics that include an object oriented language, web page construction, electric circuits, architecture, language translation, operating systems and networks. Primarily intended for those that are beginning a Masters Degree in Technology. Cannot be taken for credit by those earning a Masters Degree in Mathematics. Prerequisites: Enrollment in the Master of Technology degree program or permission of instructor.

CSCI 7230- Advanced Computer Architecture 3-0-3
Comparing different modern computer systems architecture and investigating their performances. Topics include: parallel computer systems, pipelining techniques, vector processor arrays, multiprocessor systems, data flow machines and fault-tolerant computer systems. Prerequisite: CSCI 5331 or permission of instructor.

CSCI 7232-Switching Theory 3-0-3
Introduction to sets, relations, lattices, and switching algebra. Minimization techniques. Special switching functions. Multivalue logics. Finite state automata. Hazard analysis, fault detection and correction. Testing and testability. Prerequisite: CSCI 5331 or permission of instructor.

CSCI 7330-Advanced Operating Systems 3-0-3
A study of functions and structures of distributed operating systems: communication, synchronization, file system, processes and memory management. Prerequisite: CSCI 5232 or permission of instructor.

CSCI 7332- Parallel Algorithms Design and Analysis 3-0-3

A study of parallel constructs for providing experiences in designing and analyzing parallel algorithms. Prerequisite: CSCI 5330 or permission of instructor.

CSCI 7334- Unix Network Programming 3-0-3

A study of UNIX interprocess communication protocols and how they can be used in programs. Prerequisite: CSCI 3232 or permission of instructor.

CSCI 7336-Broadband Communications 3-0-3

An in-depth study of the structures and principles of broadband networks. Major concepts and principles are explained along with their mathematical analysis. Prerequisite: CSCI 5332 and STAT 2231 or permission of instructor.

CSCI 7337- Optical Networks 3-0-3

An introduction to optical networks, their principles and systems, an understanding of the construction and organization of optical networks along
with an in-depth study of the structures and requirements of lightwave-coherent systems. Major concepts and principles are covered along with their
mathematical analysis. Prerequisites: CSCI 5332 and STAT 2231 or permission of instructor.

CSCI 7430- Advanced System Modeling and Simulation 3-0-3

Advanced study directed toward system and modeling theory, analysis, validation, verification techniques, simulation languages
to model and analyze real systems. Prerequisite: CSCI 5230 or permission of instructor.

CSCI 7431-Distributed Database Systems 3-0-3

A study of distributed database architectures and system design, semantic data control, query processing, transaction management, concurrency control, distributed DBMS reliability, parallel DB systems, distributed object DB management systems, and database interoperability. Prerequisites: CSCI 5332 and CSCI 5432 or permission of instructor.

CSCI 7432-Algorithm Analysis and Data Structures 3-0-3

Advanced topics in algorithm design and analysis and data structures for implementing these algorithms. Problems considered from areas of information storage and retrieval, graph theory, cryptology and parallel processing. Prerequisites: CSCI 5330 or permission of instructor.

CSCI 7434- Data Mining 3-0-3

The application of concepts and techniques from information science, statistics, visualization, artificial intelligence, and machine learning for the purpose of extracting, integrating, and visualizing information and knowledge from large databases. Prerequisite: CSCI 5432 and CSCI 5330 or permission of instructor.

CSCI 7435- Data Warehousing 3-0-3

Data warehousing design principles and technical problems inherent in complex industrial implementations using commercial software. Possible topics include: an introduction to data warehousing, multidimensional data modeling, data warehouse architectures, data warehouse design and implementations, development of data cube technology, organizing data warehousing projects, from data warehousing to data mining.
Prerequisite: CSCI 5432 or permission of instructor.

CSCI 7436- Internet Programming 3-0-3

Advanced design and implementations of large- scale Internet applications through the use of high and low level programming constructs. Possible topics include: client side scripting languages, middle – tier programming languages, middle-tier transaction servers, server-side data access, server-side scripting/programming, integrating applications within a network cluster, internet protocols and socket programming. Prerequisite: CSCI 5332 and CSCI 5432 or permission of instructor.

CSCI 7532- Advanced Software Engineering 3-0-3

The focus is the specification, modeling and prototyping of critical software systems/components. Topics selected from formal specification using Z and VDL, specifications using UML with OCL for real- time systems. Structure, dynamic and constraint modeling, constraint/ performance [rate monotonic] analysis, concurrency, re-configuration and distribution, prototyping, reuse and integration issues, and component implementation using advanced tools with implementations styles such as Generic and Meta-Programming. Prerequisite: CSCI 5530 or permission of instructor.

CSCI 7533- Requirements and Architecture 3-0-3
Software requirements and architecture evaluation using examples of complex software intensive systems. Product-line approach and the use of industry standards. Functional and object oriented approaches in complex domains
such as avionics, ground vehicles, medical devices, telecommunications. Students are expected to critically evaluate and develop architecture and requirements for sizable systems, functioning as lead architecture and requirements management. Prerequisite: CSCI 5530 or permission of instructor.

CSCI 7534- Testing and Measurement 3-0-3
Testing and Quantitative evaluation of software products an processes. Topics include: models, methods, standards and tools for testing, measurement and evaluation, test (defect) catalog and coverage testing of units, components, and subsystems. Integration, system acceptance testing and evaluations, test suits, regression testing and test automation. Prerequisite: CSCI 5530 or permission of instructor.

CSCI 7890- Directed Study in Computer Sciences (1 to 3)-(0 to 2)-(1 to 3)
Directed study under faculty supervision. Prerequisite: Permission of instructor and department chair.

CSCI 7899 – Research Project in Computer Sciences (1 to 6)-(0 to 4)-(1 to 6)
Research project addressed toward a real world problem. Prerequisite: Permission of project advisor and permission of department chair.

CSCI 7999 – Thesis (1 to 6)-0-(1 to 6)
Research project addressed toward a real world problem. Prerequisite: Permission of Graduate Program Director

Appendix II: ABET Criteria for Accrediting Computer Science Programs

I. Objectives and Assessments

Intent

The program has documented, measurable objectives, including expected outcomes for graduates. The program regularly assesses its progress against its objectives and uses the results of the assessments to identify program improvements and to modify the program's objectives.

Standards

I-1. The program must have documented measurable objectives.

I-2. The program's objectives must include expected outcomes for graduating students.

I-3. Data relative to the objectives must be routinely collected and documented and used in program assessments.

I-4. The extent to which each program objective is being met must be periodically assessed.

I-5. The results of the program's periodic assessments must be used to help identify opportunities for program improvement.

I-6. The results of the program's assessments and the actions taken based on the results must be documented.

II. Student Support

Intent

Students can complete the program in a reasonable amount of time. Students have ample opportunity to interact with their instructors. Students are offered timely guidance and advice about the program's requirements and their career alternatives. Students who graduate the program meet all program requirements.

Standards

II-1. Courses must be offered with sufficient frequency for students to complete the program in a timely manner.

II-2. Computer science courses must be structured to ensure effective interaction between faculty/teaching assistants and students in lower division courses and between faculty and students in upper division courses.

II-3. Guidance on how to complete the program must be available to all students.

II-4. Students must have access to qualified advising when they need to make course decisions and career choices.

II-5. There must be established standards and procedures to ensure that graduates meet the requirements of the program.

III. Faculty

Intent

Faculty members are current and active in the discipline and have the necessary technical breadth and depth to support a modern computer science program. There are enough faculty members to provide

continuity and stability, to cover the curriculum reasonably, and to allow an appropriate mix of teaching and scholarly activity.

Standards

III-1. There must be enough full-time faculty members with primary commitment to the program to provide continuity and stability.

III-2. Full-time faculty members must oversee all course work.

III-3. Full-time faculty members must cover most of the total classroom instruction.

III-4. The interests and qualifications of the faculty members must be sufficient to teach the courses and to plan and modify the courses and curriculum.

III-5. All faculty members must remain current in the discipline.

III-6. All faculty members must have a level of competence that would normally be obtained through graduate work in computer science.

III-7. Some full-time faculty members must have a Ph.D. in computer science.

III-8. All full-time faculty members must have sufficient time for scholarly activities and professional development.

III-9. Advising duties must be a recognized part of faculty members' workloads.

IV. Curriculum

Intent

The curriculum is consistent with the program's documented objectives. It combines technical requirements with general education requirements and electives to prepare students for a professional career in the computer field, for further study in computer science, and for functioning in modern society. The technical requirements include up-to-date coverage of basic and advanced topics in computer science as well as an emphasis on science and mathematics.

Criteria for Accrediting Computer Science Programs

Standards

Curriculum standards are specified in terms of semester hours of study. Thirty semester hours generally constitutes one year of full-time study and is equivalent to 45 quarter hours. A course or a specific part of a course can only be applied toward one standard.

General

IV-1. The curriculum must include at least 40 semester hours of up-to-date study in computer science topics.

IV-2. The curriculum must contain at least 30 semester hours of study in mathematics and science as specified below under Mathematics and Science.

IV-3. The curriculum must include at least 30 semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student.

IV-4. The curriculum must be consistent with the documented objectives of the program.

Computer Science

IV-5. All students must take a broad-based core of fundamental computer science material consisting of at least 16 semester hours.

IV-6. The core materials must provide basic coverage of algorithms, data structures, software design, concepts of programming languages, and computer organization and architecture.

IV-7. Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials.

IV-8. Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language.

IV-9. All students must take at least 16 semester hours of advanced course work in computer science that provides breadth and builds on the core to provide depth.

Mathematics and Science

IV-10. The curriculum must include at least 15 semester hours of mathematics.

IV-11. Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.

IV-12. The curriculum must include at least 12 semester hours of science.

IV-13. Course work in science must include the equivalent of a two-semester sequence in a laboratory science for science or engineering majors.

IV-14. Science course work additional to that specified in Standard IV-13 must be in science courses or courses that enhance the student's ability to apply the scientific method.

Additional Areas of Study

IV-15. The oral communications skills of the student must be developed and applied in the program.

IV-16. The written communications skills of the student must be developed and applied in the program.

IV-17. There must be sufficient coverage of social and ethical implications of computing to give students an understanding of a broad range of issues in this area.

V. Laboratories and Computing Facilities

Intent

Laboratories and computing facilities are available, accessible, and adequately supported to enable students to complete their course work and to support faculty teaching needs and scholarly activities.

Standards

V-1. Each student must have adequate and reasonable access to the systems needed for each course.

V-2. Documentation for hardware and software must be readily accessible to faculty and students.

V-3. All faculty members must have access to adequate computing facilities for class preparation and for scholarly activities.

V-4. There must be adequate support personnel to install and maintain the laboratories and computing facilities.

V-5. Instructional assistance must be provided for the laboratories and computing facilities.

VI. Institutional Support and Financial Resources

Intent

The institution's support for the program and the financial resources available to the program are sufficient to provide an environment in which the program can achieve its objectives. Support and resources are sufficient to provide assurance that the program will retain its strength throughout the period of accreditation.

Standards

VI-1. Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.

VI-2. There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.

VI-3. There must be support and recognition of scholarly activities.

VI-4. There must be office support consistent with the type of program, level of scholarly activity, and needs of the faculty members.

VI-5. Adequate time must be assigned for the administration of the program.

VI-6. Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.

VI-7. Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.

VI-8. Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.

VI-9. There must be evidence that the institutional support and financial resources will remain in place throughout the period of accreditation.

VII. Institutional Facilities

Intent

Institutional facilities including the library, other electronic information retrieval systems, computer networks, classrooms, and offices are adequate to support the objectives of the program.

Standards

VII-1. The library that serves the computer science program must be adequately staffed with professional librarians and support personnel.

VII-2. The library's technical collection must include up-to-date textbooks, reference works, and publications of professional and research organizations such as the ACM and the IEEE Computer Society.

VII-3. Systems for locating and obtaining electronic information must be available.

VII-4. Classrooms must be adequately equipped for the courses taught.

VII-5. Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional needs.

Draft

9/3/2009

Policy on Dual-Listed Undergraduate-Graduate Courses

Policy Statement: (Proposed Catalog Copy)

The Board of Regents Academic Affairs Handbook, (Section 203.02, New Academic Program, part IV.4.d) states that if courses in a proposed masters program are cross-listed as undergraduate courses it must be indicated what safeguards are employed to ensure that courses taken as undergraduates are not repeated or that requirements are significantly different for graduate students and undergraduates enrolled in the same course. Therefore, it is the policy of Georgia Southern University that new course curriculum forms and syllabi for dual-listed courses at the undergraduate and graduate levels (courses in which both graduate and undergraduate students attend the same class but receive credit under different course numbers) clearly specify how the nature of the work expected of the students and the criteria for evaluation of the work produced be appropriate with the degree level[1]. A proposed dual-listed course (numbered 5000 – 5999 with a "G" suffix) will also include the reason(s) the course is considered as sufficiently rigorous and of such an advanced nature to challenge graduate students. It will be the responsibility of the department to determine the number of dual-listed courses or credits to meet the requirements for an advanced degree providing the number does not exceed 50 percent of the degree requirements. Academic units heads (department chairs and/or program directors will be responsible for assuring that course syllabi within their unit satisfy this policy through timely syllabi audits. The College of Graduate Studies will be responsible for ensuring that graduate degree students comply with the number or percentage of dual-listed courses or credits that are permitted to be counted toward degree requirements.

Justification:

Currently, dual listed courses are only required to include a statement that graduate students will be required to do extra work to receive graduate credit. However, there is no current formal institutional policy on dual-listed courses that specifies that requirements be commensurate with degree level. SACS Accreditation Standard 3.4.6 requires that, "The institution employs sound and acceptable practices for determining the amount and level of credit awarded for courses, regardless of format or mode of delivery". Therefore, the policy will address the SACS accreditation standards and provide direction on dual-listed course expectations.

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[1]The nature of work and work products may vary by quality and/or quantity. The differential expectations of additional work for graduate students compared to undergraduate students should be described not in abstract terms (such as "more in-depth participation) but in terms of concrete measurable out-comes of other tangible evidence. This may include specific examples of the additional assignments with details about paper length; the number of additional readings; the length and frequency of oral presentations; portfolio expectations; studio presentations; indications of how these graduate requirements are weighted in the course grade; comparisons with undergraduate expectations. Graduate level work products may also be required to show a greater degree of analysis, synthesis or evaluation of knowledge. The quantity of graduate work may be differentiated by requiring more work products (i.e., additional assignments, projects or examination) at the graduate level compared to the undergraduate level.

Implementation:

Modify #5 (Student Assessment Procedures: Briefly describe how student learning will be assessed) on the curriculum amendment New Course Form to:

5. Student Assessment Procedures:

   (a) Briefly describe how student learning will be assessed.

   (b) If a dual-listed course, differentiate expectations for graduate students and undergraduate students in terms of concrete measurable outcomes.