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University Council

April 20, 2018

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Dear Colleagues:

The attached proposal from the Franklin College of Arts and Sciences to offer the existing major in Computer Science (M.S.) with a Non-Thesis option will be an agenda item for the April 27, 2018, Full University Curriculum Committee meeting.

Sincerely,

Alison Alexander

Alison F. Alexander, Chair
University Curriculum Committee

cc: Provost Pamela S. Whitten
Dr. Rahul Shrivastav

Proposal to Add a Non-Thesis Option to the Computer Science (M.S.)
Department of Computer Science

Institution: University of Georgia **Date:** February 28, 2018

College/School/Division: Franklin College of Arts and Sciences

Department: Computer Science

Program: Computer Science (M.S., Non-Thesis)

CIP Code: 11070100

Proposed Start Date: Fall 2018

Program Description

The Department of Computer Science is requesting a Non-Thesis option for Computer Science (M.S.) designed for graduate students seeking careers in industry or government after graduation. The track taken is similar to the one taken by current Computer Science (M.S.) students that requires a master's thesis to be written. The time and effort now devoted to CSCI 7300, Master's Thesis, and CSCI 8990, Research Seminar, will be replaced with four credit hours of CSCI 7200, Master's Project, under the non-thesis option. The project will be directed by a Computer Science graduate faculty professor. Optionally, CSCI 7200, Master's Project, may be replaced with four additional credit hours of CSCI coursework at the 6000/8000-level. In lieu of a thesis (CSCI 7300) or project (CSCI 7200), the student is required to pass a written exam administered by members of the graduate faculty.

Summary of Basic Degree Requirements

Primary Focus

The primary focus consists of at least 32 semester hours of resident graduate coursework. This includes:

1. At least 12 credit hours of Core CSCI graduate-level coursework (see core curriculum below).
2. At least 16 credit hours of additional CSCI graduate-level (6000/8000-level coursework), with 12 hours of graduate student only coursework, as per Graduate School policy (see additional coursework below).
3. At least 4 credit hours of Project coursework or an additional 4 credit hours of CSCI coursework at the 6000/8000 level.

Typically, full-time students will take 9 to 15 hours per semester. See the CSCI section of the University of Georgia Bulletin for course descriptions. A program of study should be a coherent and logical whole; it requires the approval of the departmental graduate coordinator. Note: no course with a grade of C+ or lower may be included on the student's Program of Study (see the Graduate Bulletin for other GPA constraints).

Core Curriculum (Primary Focus Item #1)

At least one course from each of the following three groups must be taken:

Group 1: Theory

CSCI 6470, Algorithms (4 hours)
CSCI 6480, Approximation Algorithms (4 hours)
CSCI 6610, Automata and Formal Languages (4 hours)

Group 2: Software Design

CSCI 6050, Software Engineering (4 hours)
CSCI 6370, Database Management (4 hours)
CSCI 6570, Compilers (4 hours)

Group 3: System Design

CSCI 6720, Computer Systems Architecture (4 hours)
CSCI 6730, Operating Systems (4 hours)
CSCI 6760, Computer Networks (4 hours)
CSCI 6780, Distributed Computing Systems (4 hours)

The core curriculum consists of a total of 12 semester hours. Core competency is certified by the Graduate Coordinator. Students are expected to meet the core competency requirement by the end of their second enrolled academic semester. Note: a course used to fulfill part of the core requirement (Item #1) may not be used to also fulfill part of the additional coursework requirement (Item #2). A student may fulfill their core requirement (12 core hours) and then take another (different) graduate-student-only course from the core list to count toward their additional coursework requirement. In no case shall a course used to fulfill part of the core course requirement count toward the core requirement AND the additional coursework requirement.

Additional Coursework (Primary Focus Item #2)

Students must take at least 16 semester hours of additional graduate-level coursework, with at least 12 semester hours at the 8000 level (thus fulfilling the Graduate School requirement of at least 12 hours of graduate-only coursework). In no case shall a 6000-level course used to fulfill part of the additional coursework requirement count toward the additional coursework requirement AND the core curriculum requirement.

Masters Project (Primary Focus Item #3)

The Non-Thesis option focuses on professional development by having the student enroll either in CSCI 7200, Master's Project, under the supervision of a Computer Science graduate faculty member, or enroll in an additional four credit hours of CSCI coursework at the 6000/8000 level.

Non-Departmental Requirements

Non-departmental requirements are set forth by the Graduate School (see the Graduate Bulletin). They concern residence, time limits, programs of study, acceptance of transfer credits, and minimum GPAs.

Graduation Requirements

A student admitted to the Computer Science (M.S., Non-Thesis) program will be advised by the graduate coordinator. Before the end of the second semester in residence, a student must submit to the Graduate School, through the graduate coordinator, the Program of Study Form. The Program of Study Form indicates how and when degree requirements will be met and must be approved by the Graduate Coordinator. An Application for Graduation Form must also be submitted directly to the Graduate School.

Master's Project and Report and a Written Exam

To satisfy this requirement, four hours of CSCI 7200, Master's Project, must be taken, typically spread over the student's final two semesters. The CSCI 7200, Master's Project, involves an applied research project under the direction of a Computer Science graduate faculty member. As part of the requirements, a comprehensive report must be prepared detailing the student's procedures and findings regarding the completed project work. Optionally, if the student prefers, four additional hours of CSCI coursework at the 6000/8000 level (excluding CSCI 6950 and CSCI 8990) may substitute for CSCI 7200, Master's Project. A student selecting this non-project option is also required to pass a written exam administered by members of the graduate faculty.

Faculty Vote

The graduate faculty of the Department of Computer Science voted in favor of the proposed Computer Science (M.S., Non-Thesis) option. The faculty vote, taken during the third week of January, 2018, was 16 Yes, 0 No, 1 Abstention. Two eligible faculty did not vote.

Justification for the Proposed Non-Thesis M.S. Option

The Computer Science (M.S., Non-Thesis) program will benefit students by utilizing projects and/or additional courses to be more oriented toward professional practice than the individualized research leading to a thesis degree. Having Computer Science (M.S., Non-Thesis) students take the CSCI 7200, Master's Project, will maintain writing as an integral part of their education without the overhead of writing a thesis. In today's competitive research environment, it is difficult for a student to engage in individualized or innovative research. Recognizing this, many institutions, including peer and aspirational ones, do offer non-thesis or project-oriented degree options. The project emphasis maintains an important component of the current Computer Science (M.S.) degree, that of faculty and students working together. This benefits both, enabling faculty to write more detailed and relevant reference letters, as well as providing a more direct transfer of knowledge that is typically out of reach in a classroom setting. Optionally, if the student prefers, four additional hours of CSCI coursework at the 6000/8000 level (excluding CSCI 6950, Directed Study in Computer Science, and CSCI 8990, Research Seminar) may substitute for CSCI 7200, Master's Project. This option will give students more breadth in their study.

Admission Procedure

The admissions standards will be the same for both the Thesis and the Non-Thesis (M.S.) options:
1. A bachelor's degree from a regionally accredited institution is required, preferably with a major in Computer Science or an allied discipline. Students with insufficient background in Computer Science

must take undergraduate Computer Science courses to remedy any deficiencies in addition to their graduate program. A sufficient background in Computer Science must include at least the following courses (or equivalents): MATH 2250, Calculus I; CSCI 1301, Introduction to Computing and Programming; CSCI 1302, Software Development; CSCI 1730, Systems Programming; CSCI 2610, Discrete Mathematics for Computer Science; CSCI, 2670 Introduction to Theory of Computing; and CSCI 2720, Data Structures.

2. Admission to this program is selective; students with a record of academic excellence have a better chance of acceptance. Students with exceptionally strong undergraduate records may apply for admission to the graduate program prior to fulfilling all of the above requirements.

3. Graduate Record Examination (GRE) test scores are required for admission consideration.

4. Three letters of recommendation are required, preferably written by university professors familiar with the student's academic work and potential. If the student has work experience, one letter may be from his/her supervisor. Letters should be sent directly from the letter writer to the Computer Science Department Graduate Coordinator.

5. A one- or two-page personal statement outlining the student's background, achievements, and future goals is required.

6. A student may include a recent copy of his/her resume as part of the application packet; however, this is not required.

Impact on Current Students

We do not anticipate any adverse impact on current Computer Science (M.S.) students. All M.S. students will start on the same track. During the advisement period in their second semester, the students must choose between the two options, with the choice recorded in their file. Existing thesis students already past this point in their graduate program will be unaffected by the new Non-Thesis option.

Financial Impact

The Non-Thesis program option will be at least as cost-effective as the current program, so no additional resources or funds will be required to implement this Non-Thesis option for the Computer Science (M.S.).

Approvals on File

Proposal: Offer the existing major in Computer Science (M.S.) with a Non-Thesis Option

College: Franklin College of Arts and Sciences

Proposed Effective Term: Fall 2018

Department:

- Computer Science Department Head, Dr. Thiab Taha, 1/26/2018

School/College:

- Franklin College of Arts and Sciences Associate Dean, Dr. Jean Martin-Williams, 2/7/2018

Graduate School:

- Graduate School Dean, Dr. Suzanne Barbour, 3/30/2018