

**Georgia Institute of Technology**  
**Graduate Curriculum Committee**  
**Minutes**  
**September 11, 2014**

**Present:** Breedveld (ChBE), Cozzens (Vice Provost), Dickson (CHEM), Jagoda (AE), Jayarman (MSE), Neitzel (ME), Pikowsky (Registrar), Ceccagnoli (CoB), Schmidt-Krey (BIOL), Koh (Student Representative), Flowers (ARCH)

**Visitors:** Laros (Registrar), Merkousko (Registrar), Hodges (Registrar), Parker (BC), Bamburowski (Grad. Studies), Gallego (ECON), Laband (ECON), Barker (BMED), White (CoC), Castro (BC), Gilbert (CoC), Webster (CEE), Ghosal (ECON), Bruckman (IC)

**Note:** All action items in these minutes require approval by the Academic Senate. In some instances, items may require further approval by the Board of Regents or the University System of Georgia. If the Regents' approval is required, the change is not official until notification is received from the Board to that effect. Academic units should take no action on these items until USG and/or BOR approval is secured. In addition, units should take no action on any of the items below until these minutes have been approved by the Academic Senate or the Executive Board.

**Academic Matters**

1. A motion was made to *table* a request from the School of Economics for a degree modification. The motion was seconded and approved.

**Degree Modification – *Tabled***

**Master of Science in Economics**

Change name from undesignated Master of Science with a major in Economics to designated and update curriculum. New curriculum will not have a thesis option.

Comments from Committee members focused mainly on confusion in the following section of the proposal. The information in this section seems inconsistent and perhaps contradictory.

There was also concern about the number of hours that would be allowed in 4000-level courses. This may not be a concern, but it was not clear in the proposal.

The internship that is part of the 18-hours wasn't clearly described. It could be paid or unpaid, but would also carry credit. This was confusing to Committee members.

There was also concern that other units on campus such as ISyE and Public Policy teach economics-related courses and students should perhaps have options that are not restricted to those taught by the School of Economics. A list of those courses that could also be used in this program would be helpful.

This section of the proposal will need to be edited and clarified in the revised proposal.

**Proposed Restructured program**

- a) The student must take at least 30 hours of coursework.
- b) Within those 30 hours, at least 18 hours must be in courses addressing the subject of economics.
- c) Within those 30 hours, at least 15 hours must be at the 6000 level.
- d) Within those 30 hours, the student must complete 18 hours in courses taught by the School of Economics which must include ECON 6105 Macroeconomics, 6106 Microeconomic Analysis, ECON 6140 Probability and Statistics, and ECON 6160 Econometric Analysis. These four courses amount to 12 credit hours, implying that the students must take at least an additional 6 credit hours in courses taught in the School of Economics.
- e) The student must complete either: (i) An approved internship with at most 3 hours credit, (ii) at least two electives offered by the School of Economics.

The student must obtain approval of the Director of Graduate Programs, School of Economics, to apply for any courses outside of the 18 hours of courses required to be taught by the School of Economics, as well as approval for internship related credits.

2. A motion was made to *approve* a request from the School of Building Construction for a degree modification. The motion was seconded and approved.

**Degree Modification – Add a new Track - *Approved***  
**Master of Science in Building Construction and Facility Management**  
**Program Management Track**

This is a request to add an additional track to the Master of Science in Building Construction and Facility Management. There are currently three tracks in this program, each of which has several core courses that are unique to that track. One additional course is common to all tracks. The current tracks are 1.) Integrated Facility Management (the original track in this Master's program); 2.) Integrated Project Delivery 3.) Residential Development and Construction. The first track focuses on the management of buildings after they have been completed and occupied. The second track focuses on the construction process from the general contractor's perspective. The third track focuses on development, including finance and construction, of residential buildings. The proposed fourth track

focuses on the project acquisition process from pre-design through construction, and emphasizes the management of this total process from the owner's perspective (as opposed that of the designer, the constructor, or the facility manager).

**The proposed new track is intended to focus on the management of the capital project delivery process from the beginning (pre-design) to completion (occupancy) from the owner's perspective.**

Of the five new core courses, four concentrate on project delivery from the owner's perspective in a sequential approach. The first core course is BC 6185, Introduction to Program Management, an introductory course covering the full spectrum of program management at a high level. The second, BC 6285, deals with management of the pre-design process. The third, BC 6385, deals with management of the design process. The fourth, BC 6400, is a core course common to all tracks that focuses on project management and benchmarking. BC 6585 focuses on management of the construction process (but from the Owner's perspective as opposed to the General Contractor's perspective). BC 6685 teaches leadership and communication, which is integral to the process of program management from the perspective of the owner.

This proposed track requires the same number of hours, the same number of core courses (six), and the same number of approved electives as the existing three tracks. This new track is different from existing tracks primarily because it concentrates on the management of the design and construction process from the owner's point of view whereas the others do not. We are not aware of another program that takes this approach. Also, five of the six required core courses have been developed specifically for this track. The other three tracks have core courses specific to the focus of those tracks. Each of the tracks requires thirty-six semester hours, half of which are electives. The same electives are available to all tracks.

## **MASTER OF SCIENCE IN BUILDING CONSTRUCTION AND FACILITY MANAGEMENT**

The Master of Science in Building Construction and Facility Management is the single master's degree offered by the School of Building Construction (a Ph.D. is also offered). It focuses on management-based education for industry professionals seeking executive leadership positions in the industry. The program offers a holistic approach to business processes, integrating coursework, seminars, and hands-on learning to equip today's industry professionals with the resources they need to excel in their professional careers. The graduate program currently consists of three tracks:

1. Integrated Facility Management
2. Integrated Project Delivery Systems
3. Residential Construction Development

Students can complete either a thesis or non-thesis option for the degree. Students in the program come from a variety of backgrounds, often with experience in facility management, construction, architecture, engineering, city planning, management, or business. The program is tailored to meet the needs of professionals by offering evening classes, giving students the flexibility of continuing to work while taking courses.

**The minimum requirements for a graduate degree in building construction are:**

**Thesis Option:**

The curriculum for graduate study with the Thesis Option consists of the following 36 semester hours:

<b>Courses</b>	<b>Hours</b>
Core courses	18
Approved Professional Electives	6
Master's Thesis	12
<b>Total</b>	<b>36</b>

**Non-Thesis Option:**

The curriculum for graduate study with the Non-Thesis Option substitutes twelve semester hours of coursework for the thesis and consists of the following 36 semester hours:

<b>Courses</b>	<b>Hours</b>
Core courses	18
Approved Professional Electives	18
<b>Total</b>	<b>36</b>

The Graduate Record Exam (GRE) or Graduate Management Admission Test (GMAT) is required for all students. The application can be completed online at [www.grad.gatech.edu/admissions](http://www.grad.gatech.edu/admissions). Many applicants will also submit a resume of professional accomplishments.

International applicants must also submit a minimum TOEFL score of 79 (internet-based) or 213 (computer-based) and financial documentation of support. A description of and course requirements for the three existing tracks follows:

**INTEGRATED FACILITY MANAGEMENT TRACK:**

The graduate track in Integrated Facility and Property Management offers a clear understanding of this complex field and its theoretical concepts. It focuses on developing and fine-tuning the management skills necessary for success in the

facility and property management industry. Courses explore the many facets of integrated facility management including asset management, project management, facility operations and maintenance, energy management, workplace design and consulting, facility technology integration, design and construction, and real estate development. The program is accredited by the International Facility Management Association (IFMA) Foundation; Georgia Tech is one of three universities in the country to hold this prestigious designation.

Core courses are:

BC 6100	Professional Trends in Facility Management
BC 6200	Maintenance Management of Built Assets
BC 6300	Safety and Environmental Issues
BC 6400	Facility Planning, Project Management and Benchmarking
BC 6500	Real Estate Asset and Income Property Management
BC 6600	Facility Management Financial Analysis

### **THE BUILDING CONSTRUCTION INTEGRATED PROJECT DELIVERY SYSTEMS TRACK**

The Integrated Project Delivery Systems track educates students to understand, analyze, select, and manage the most appropriate and effective project delivery systems for constructing a facility. The curriculum emphasizes integrated problem-solving through state-of-the-art technical and management techniques. A variety of project delivery systems, that can be used independently or integrated, are examined. The delivery methods explored include the design-build system, the construction management/agent method, the hybrid bridging and partnering system; the negotiated select team method, as well as the traditional delivery method.

Core Courses are:

BC 6150	Integrated Project Delivery Systems
BC 6250	Value Management for Integrated Facility Design and Construction
BC 6350	Design and Construction Law
BC 6400	Facility Planning, Project Management and Benchmarking
BC 6550	Design and Construction Processes
BC 6650	Advanced Project Management

### **THE BUILDING CONSTRUCTION RESIDENTIAL CONSTRUCTION DEVELOPMENT TRACK:**

The graduate track in Residential Construction Development focuses on the largest and fastest growing area of the construction industry. Students are exposed to the complexities and challenges associated with Residential Construction and Development. All segments of the housing industry are studied, including single family, multi-family, mixed-use, affordable, senior, and renovation. Students are provided with a comprehensive view of relevant public policy, development, design, and construction issues, and gain a realistic understanding of the current business environment and prospects for the future

Core Courses are:

BC 6175	Real Estate Development & Construction
BC 6275	Community Design & Construction <i>or</i> Livable Communities: Design and Implementation
BC 6375	Trends and Policies for Residential Development
BC 6400	Facility Planning, Project Management & Benchmarking
BC 6575	Business & Finance in Residential Construction
BC 6675	Residential Design and Construction

In addition to the above, approved electives include:

BC 6100	Professional Trends in Facility Management
BC 6125	Professional Internship
BC 6200	Maintenance Management of Built Assets
BC 7100	Quantitative Methods for Construction Research

To show the currently approved program—use the GT Catalog and include the Web link.

CATALOG LINK: <http://www.catalog.gatech.edu/colleges/coa/bc/grad/bc.php>

Next, highlight additions and show deletions to the program

The proposal is to add a fourth track, as described below:

**THE PROGRAM MANAGEMENT TRACK: (NEW)**

This track is designed to educate students to manage projects from inception (programming and pre-design) and through the entire project acquisition process to occupancy by the user. Students are taught to manage pre-design activities, design procurement and management, construction procurement and management, and the overall management of the building acquisition process from the owner's (rather than the designer's or builder's) perspective. Graduates are prepared to work in program management positions for consulting firms or organizations who build often and must manage complex, often multi-building programs.

Core Courses (proposed; all of which are approved as permanent courses):

BC 6185	Introduction to Program Management
BC 6285	Management of the Pre-Design Process
BC 6385	Management of the Design Phase
BC 6400	Facility Planning, Project Management and Benchmarking
BC 6585	Management of Construction as an Owner
BC 6685	Leadership and Communication in Design and Construction

3. A motion was made to *table* a request from the Department of Biomedical Engineering for degree modifications. The motion was seconded and approved.

**Degree Modification - Tabled**

Doctor of Philosophy with a major in Biomedical Engineering  
(Joint Degree with Emory)

**Degree Modification - Tabled**

Master of Science in Biomedical Engineering  
(Joint Degree with Emory)

Changes to fulfill the Responsible Conduct of Research (RCR) requirements at both GT and Emory University:

- Remove PHIL6010 from the degree requirements
- Insert RCR training covered in PHIL6010 within already established coursework within the major, including the following courses:
  - o BMED 7002 (Teaching Practicum I): Eight hours of the course will be dedicated to in-person RCR training in required topics, including authorship and publication, collaborative research, conflict of interest, data acquisition/management/ownership/sharing, peer review, policies regarding the use of human subjects and vertebrate animals in research, and the responsibilities of mentors and mentees.
  - o BMED 7011/7012/7013 (Integrative Core Courses): For each course, 1.5 hours will be dedicated to in-person RCR training in the topic of science and engineering in society. Students must take two of these courses for a total of 3 hours of in-person RCR training.

Revisions to the BMED RCR training are proposed to reduce the total number of hours of in-person RCR training from 40 to 19 total hours, while still satisfying the scholarly integrity and responsible conduct of research training requirements for Emory, GT, the National Science Foundation, and the National Institutes of Health. Previously the delivery of RCR training was via a single 2-unit (30 hour) course PHIL6010 Biomedical Ethics (see prior proposal) taught by two BMED faculty members, and via two Emory PSI courses (PSI600 and PSI610, now JPE 600 and JPE 610). The 30 contact hours of PHIL6010 was found to be overly burdensome for both students and faculty, and greatly exceeded required training levels. The new proposal delivers most of the PHIL6010 content via addition to the BMED courses listed above. Not only are RCR topics embedded within courses covering biomedical topics, but the training will be spread over multiple semesters with multiple BMED faculty members. The Emory PSI courses (JPE600 and JPE610) will remain degree requirements.

**NOTE: These two Degree Modifications were tabled until clarification can be made concerning BMED 7002.** This course is changing with these new requirements and a discussion concerning if these changes were such that a new course number be proposed.

BMED is following up with new courses numbers for 7002 and 7003.

4. A motion was made to *approve* a request from the School of Civil and Environmental Engineering to terminate a joint degree program. The motion was seconded and approved.

**Terminate a Joint Degree Program – Approved**

Master of Science in Civil Engineering with University of Pretoria (South Africa)

The joint M.S. program in Civil Engineering with the University of Pretoria was approved in 2008. The program was not funded and the program did not activate. To date, zero students have enrolled in the program. There are no graduates or current students.

5. A motion was made to *approve* a request from the School of Interactive Computing for a new course and a degree modification. The motion was seconded and approved.

**New Course – Approved**

CS 6474: Social Computing 3-0-3

(NOTE: This course will be all grade modes at catalog level.)

**Degree Modification – Approved**

**Master of Science in Computer Science**

**(Concentration in Social Computing)**

**Course option:** This option requires the student to complete 36 hours of coursework. Total Course Credit Hours 36 Minimum Credit Hours in CS 24 Minimum Credit Hours (6000/8000 Level) in CS 18 Minimum Credit Hours (6000/8000 Level) 24

**Project option:** This option requires the student to complete 27 hours of coursework and a 9 hour project. The project requires approval by a faculty advisor and the MS program coordinator in the semester prior to its inception.

Total Credit Hours 36 MS Project Hours 9 Total Course Credit Hours 27 Minimum Credit Hours in CS 24\* Minimum Credit Hours (6000/8000 Level) in CS 18\*

**Thesis option:** This option requires the student to complete twenty-four hours of coursework and a 12 hour thesis. The thesis process is defined elsewhere in this catalog. Total Credit Hours 36 MS Thesis Hours 12 hour Total Course Credit Hours 24 Minimum Credit Hours in CS 24\* Minimum Credit Hours (6000/8000 Level) in CS 18\*

\*May not include MS project or thesis hours.

## Concentration in Social Computing:

<p><b>Core Courses</b></p> <p><b>(9 hours)</b></p>	<ul style="list-style-type: none"> <li>• <del>CS 6465 Computational Journalism</del></li> <li>• CS 6470 Design of Online Communities</li> <li>• CS 6474 Social Computing (Proposal 4515)</li> </ul> <p>And pick one (1) of:</p> <ul style="list-style-type: none"> <li>• <del>CS 6675 Advanced Internet Computing Systems and Applications</del></li> <li>• <del>CS 7270 Networked Applications and Services</del></li> <li>• <del>CS 8803 SOC Special Topics: Social Computing</del></li> <li>• CS 8803 CSS Computational Social Science</li> <li>• CS 6465 Computational Journalism</li> <li>• CS 7460 Collaborative Computing</li> </ul>
<p><b>Electives</b></p> <p><b>(6 hours)</b></p>	<p>Pick <b>two (2)</b> more classes including additional classes from the above and:</p> <ul style="list-style-type: none"> <li>• CS 6238 Secure Computer Systems</li> <li>• CS 6250 Computer Networks</li> <li>• CS 6456 Principles of User Interface Software</li> <li>• CS 6675 Advanced Internet Computing Systems and Applications</li> <li>• CS 6505 Computability, Algorithms, and Complexity</li> <li>• CS 6750 Human-Computer Interaction</li> <li>• CS 7210 Distributed Computing</li> <li>• CS 7270 Networked Applications and Services</li> <li>• CS 7450 Information Visualization</li> <li>• CS 7467 Computer-Supported Collaborative Learning</li> <li>• CS 8893 Special Topics in Cognitive Science: Cognition and Culture</li> </ul>

We are proposing to change the core requirement from six hours to nine hours and the elective requirement from nine hours to six hours. Also, we are moving some of the previous Core pick classes from core to electives and adding two new courses to the Core pick.

**NOTE: The GCC Committee requests that the proposal form be more fully completed to answer all the questions on the form.**

### 6. Administrative Items:

- a. Based on existing written agreements and past practices in reviewing applicants for Georgia Tech - Lorraine (GTL), the Office of Graduate Studies approves qualified applicants for full-standing, degree-seeking admission in the case where a student has completed two years of the *lycées* plus at least two of the three years of the *Grandes Écoles* program. Students at this level are determined to be bachelor's degree equivalent.

The Office of Graduate Studies requests the same admission process and full-standing, degree-seeking admission offered for all approved and

qualified applicants with similar backgrounds (having completed two years of the *Lycées* plus at least two of the three years of the *Grandes Écoles* program), regardless of campus. That is, both GTL and non-GTL applicants may be admitted under such guidelines.

A motion was made to **approve** this request. The motion was seconded and approved.

- b. Clarification of catalog language for graduate courses options and BS/MS programs.

### **Graduate Course Option**

Students completing both the bachelor's and master's in the same discipline at Georgia Tech may use **up to twelve (12) hours of courses taken as an undergraduate toward the master's degree. Under the Graduate Course Option the student may count up to six (6) of the twelve (12) up to 6** credit hours of graduate-level coursework in the major discipline for both degrees. Recognizing that some master's degree programs do not have a unique undergraduate counterpart program, and that some master's programs are offered by several schools, the term "discipline" in the prior sentence will be broadly interpreted in such cases. To qualify for this option, students must complete the undergraduate degree with a cumulative grade-point average of 3.5 or higher **and must complete all of the remaining credits of the master's degree as an accepted graduate student** within a two-year period from the award date of the bachelor's degree.  
<http://www.catalog.gatech.edu/students/grad/masters/gradcourse.php>

### **BS/MS Degree Programs**

Many schools at Georgia Tech offer BS/MS degree programs that, like the Graduate Course Option, allow eligible students to use up to 6 credit hours of graduate-level coursework in the major discipline for both degrees. **They may also use toward the MS degree and up to 6 hours of graduate-level coursework taken as an undergraduate student but not used toward the BS degree toward the MS degree. All of the remaining credit for the MS degree must be taken as a graduate student.** The BS/MS programs typically include research and mentoring components and have their own GPA requirements.

<http://www.catalog.gatech.edu/specialacademic/fiveyear.php>

## **IX. Scheduling**

### **E. Undergraduate Students Taking Graduate Courses**

Seniors with a grade-point average of at least 2.7 may schedule graduate courses. In order to do so, the student must obtain permission from the school or department offering the course.

1. Credit toward the master's degree for up to twelve (12) hours of courses taken as an undergraduate may be received under the following conditions.  
**All remaining courses for the master's degree must be taken as a graduate student.**
  1. The student was in residence at Georgia Tech for at least two semesters before registering for the course(s).
  2. The student did not apply credit for the course toward the baccalaureate degree. (See Graduate Course Option for special exceptions in certain schools.)

<http://www.catalog.gatech.edu/rules/9e.php>

**A motion was made to approve this request. The motion was seconded and approved.**

Adjourned,

Reta Pikowsky  
Registrar