Georgia Institute of Technology
2013-2014 Annual Report
Institute Graduate Curriculum Committee

Tuesday, October 21, 2014
3-5:00 p.m.
Student Center Theater
Fall Meeting of the Faculty, Faculty Senate, & Academic Faculty Senate

Members: Baabak Ashuri (CoA-BC), Sasha Boldyreva (CoC-CS), Victor Breedveld (ChBE), Susan Cozzens (VP-Graduate Education & Faculty Affairs), Rob Dickson (CHEM & BIOCHEM), Bonnie Ferri (ECE), Benjamin Flowers (ARCH), Jim Foley (CoC-IC), Jeff Jagoda (AE), Sundaresan Jayaraman (MSE), Paul Kvam (ISyE), Kristie Macrakis (HTS), Paul Neitzel (ME), Reta Pikowsky (Registrar), Christine Ries (ECON), Vinod Singhal (BUS), David Sluss (BUS), Francesca Storici (BIOL), May Wang (BME), Yogi Patel (Grad Student), Cam Tyson (Exec. Board Liaison)

Meetings: The Graduate Committee met 9 times during the 2013-2014 year. Dr. Jeff Jagoda served as Chair of the Committee. Dr. Benjamin Flowers served as Vice Chair of the Committee. Reta Pikowsky served as Secretary of the Committee. The business of the Committee is related to curriculum proposals and student petitions.

Curriculum Items: Over the 2013-2014 academic year, the GCC approved several modifications and additions to Georgia Tech's degrees, clarifications on policy, new courses, changes to courses, student petitions, and review of academic policies.

Informational/Discussion Items:
- The Committee received an update from the College of Computing on implementation of the online MS in Computer Science.
- The Committee was asked to review a request from the Board of Regents regarding degree programs that appear to be "unproductive." The review was completed and certain programs were identified as those that could be either deactivated or terminated. That process is on-going. There were other programs where the numbers of degrees produced do not necessarily indicate a lack of productivity in that area. There were comments in this regard delivered with the results of the review.
- The Committee discussed setting up an exploratory group to look at various policies. This work is ongoing.
- A guest speaker from Space Planning provided some updates to the Committee on the Resource Learning in the 21st Century initiative and asked for feedback on classrooms. A follow-up visit occurred at the January meeting in the Spring to discuss changes in classroom assignments and related issues.

- A presentation was made by the College of Computing concerning a future proposal to modify the Doctor of Philosophy with a major in Computer Science. The proposal is to turn the CS Ph.D. program into a multidisciplinary program with home units corresponding to the three schools that operate the program:
    - School of Interactive Computing,
    - School of Computational Science and Engineering
    - School of Computer Science
- There was more discussion about the Responsible Conduct of Research requirements, particularly in regard to MS students.
- There was discussion on the French Cotutelle Agreements.
- The staff of Graduate Studies shared with the Committee sample application qualifications from recent applicants that did not meet the precise definition of an "undergraduate degree" that is required at the Institute level for graduation admission. The Office of Graduate Studies sought some counsel from the Committee as to what are the appropriate steps for review of these cases when the minimum degree equivalent is not apparent. The question ranges from applicants who hold a Master's degree from an accredited institution, but who do not hold a Bachelor's degree, to those who hold 3-year degrees that are not considered equivalent to a U.S. Bachelor's degree, to applicants whose credentials are even more unusual.

Award of a Posthumous Degree:
- A degree was awarded posthumously to a student in the Scheller College of Business
- A degree was awarded posthumously to a doctoral student in the College of Computing

Responsible Conduct of Research Requirement:
- The responsible conduct of research (RCR) is an increasingly significant component of the education and training of researchers. In 2011, the Georgia Institute of Technology implemented the RCR Academic Policy for Doctoral Students which requires all doctoral students admitted Fall 2011 or later to complete RCR training. The Policy contained a stipulation that such training would extend to the Master's student population by Fall 2012. A deferral for the MS initiative was requested until Fall 2014 due to the broad diversity of MS programs on campus and the logistics of serving a significantly larger graduate student population to implement the requirement. IGCC approved the deferral on September 13, 2012.

    Proposal
    Beginning Fall 2014, all master's students who register for thesis hours (courses numbered 7000) will be required to complete responsible conduct of research (RCR) education. Applicable students must select at least one of the following options:

    First Option - Complete an online CITI RCR course.
    OR

Second Option - Successfully complete an RCR course that has already been approved to satisfy the in-person RCR training requirement for doctoral students.
OR
Third Option - Receive at least 4 contact hours of RCR education during a course that is a required part of the curriculum for the particular type of master's degree (see approval process below).

New Program Prospectus:
- Master of Science in Analytics (College of Engineering, College of Computing, and Scheller College of Business)
- Professional Master's in Manufacturing Leadership (Scheller College of Business, College of Engineering, School of Chemical and Biomolecular Engineering, School of Industrial and Systems Engineering, and the Department of Professional Education)

New Degree:
- Master of Science in Analytics (College of Engineering, College of Computing, and Scheller College of Business)

Deactivation/Termination of Degrees:
- Degrees that were deactivated locally several years ago were put on a list for termination.
- Several of the undesignated MS degrees were put on a list for deactivation. Not all were because this degree format has been used differently by the academic units and some will need to be transitioned to the regular "MS in _____" format. The work is ongoing to take this action.

New Dual or Joint Degrees or Academic Agreements:
- The "cotutelle agreement" is a formal program of the French Ministry of Higher Education that aims at strengthening research collaborations between US (or other) universities and French universities through co-advising of doctoral theses. Several GT faculty have expressed strong interest in the program, so we are seeking input from IGCC.

  The cotutelle agreement is essentially a dual doctoral program, whereby qualified students can earn a Ph.D. from Georgia Tech and a Doctorate from the French partner university, with a *single* thesis based on co-advising of the doctoral research. All requirements for the Ph.D. are met, with complete control of the quality of the Ph.D. remaining with GT.

Doctoral Minor Field of Study:
- The doctoral minor was discussed due to concerns about the language in the current policy and whether some units were inconsistent in following the spirit of the policy which is to encourage the doctoral minor to be *outside* the primary area of study.

  The Minor Field of Study – New Language for the *Catalog*

In addition to an adequate knowledge of the major field of intended research, the student must demonstrate mastery of another ==complementary body of knowledge—the minor field—outside the student's area of specialization and preferably outside the school.== The purpose of the minor is to encourage a wider interest on the part of the student and to provide a broader basis for the evaluation of the student's capabilities.

Online and International Delivery Formats:

- The Registrar's Office brought to the Committee's attention a need to clarify the impact of online and international delivery of academic content. Although there is a common understanding of consistency across delivery options, there is, at present no statement to that effect. It is proposed that a clarifying statement be made to the "academics" section of the *Catalog.*

A motion was made to add the following language to the *Catalog*. The motion was seconded and approved.

New Language for the Catalog

Academic content delivered through distance learning is in accordance with the course descriptions as approved by the Institute Curriculum Committee. All courses require approval by the Institute Curriculum Committee and the Academic Senate regardless of the format in which they are offered. All offerings for academic credit delivered through the Division of Professional Education have been approved in this manner.

Academic content delivered at our international sites, such as GT-Lorraine and GT-Shenzhen, is in accordance with the course descriptions as approved by the Institute Curriculum Committee. All courses require approval by the Institute Curriculum Committee and the Academic Senate regardless of where or how they are delivered. All study abroad programs are approved on a yearly basis by the Institute Undergraduate Curriculum Committee as recommended by the Study Abroad Subcommittee.

Degree/Program Modifications:

- **Master of Science in Nuclear Engineering**
  Members of the faculties at the Georgia Institute of Technology (Georgia Tech) propose to establish a new concentration called "Nuclear Enterprise Management" in the Nuclear and Radiological Engineering (NRE) Program of the Woodruff School of Mechanical Engineering at Georgia Tech. The NRE Program of the Woodruff School will administer the new concentration.

The proposed concentration requires 12 credit hours of coursework. The concentration is designed to fit within the 30 credit hour M.S. curriculum in a seamless manner for the non-thesis option. Thesis M.S. students must take an additional 6 credit hours of course work from the NEM identified courses. It is expected that 30%-40% of the graduate students will choose this concentration. The new concentration will only require the creation of one new 3-credit hour NRE course; this course can be taught by at least three NRE faculty, or adjunct faculty in the Atlanta region.

- **Doctor of Philosophy with a major in Nuclear and Radiological Engineering**
  Adding Nuclear Enterprise Management (NEM) Specialization – The Committee voted to approve this addition as a "specialization" rather than a "concentration" as was originally proposed. Specializations allow the academic unit to keep track of a student's research interest. They do not appear on the transcript or on the diploma. "Concentrations" do appear on the transcript. At the doctoral level, all that currently appears on the diploma is the title of the degree "Doctor of Philosophy". The Committee concluded that it would not be appropriate, and might, in fact, be confusing to attach a "concentration" onto a doctoral program that already requires completion of a minor.

- **Doctor of Philosophy with a major in Industrial Engineering**
  The EDA (Economic Decision Analysis) Specialization is one of four specializations under PHD Industrial Engineering at The School of Industrial & Systems Engineering. The curriculum for the EDA specialization has become outdated over the course of ten years, and proposed changes were addressed in open discussion with the faculty and later with a committee of faculty involved with EDA classes. The changes in the EDA curriculum were voted on by the ISyE faculty on September 27.

  The previous curriculum that it replaces is in the ISyE Graduate Handbook (see page 19). It is limited to simple course replacements (including courses that no longer exist) and incipient changes to comprehensive exam topics. There is no change in staff, number of ISyE course offerings, leadership, space requirements, or course delivery method.

- **Doctor of Philosophy with a major in Digital Media**
  The School of LMC in the Ivan Allen College has offered this Ph.D. degree since 2004 in addition to its Digital Media MS program. The current proposal reflects changes to the Ph.D. degree requirements that adjust the curriculum to reflect the changes made to MS program (approved in 2012) and to improve the flexibility for incoming students.

  The changes were submitted and approved last year to implement them May 2014 but errors were made in listing the current and proposed curriculum. The main mistake was that one course (LCC 6800) was not listed in the proposal and this made the current and modified curriculum

appear as 30 hours instead of 36 Thus, this proposal is to rectify those errors prior to the new curriculum being implemented. Apart from error correction, no substantial new change is proposed.

These changes were already submitted and accepted by the committee but the proposal contained errors: one course was not listed (LCC 6800) and two courses were partially wrong labeled (LCC 8000 and LCC 8001). This new proposal is meant to correct these errors. It does not add any other changes.

- **Doctor of Philosophy with a major in Psychology**
  Three major changes:
    o requiring three core courses instead of four, and adding new courses to the list of core classes
    o changes in the requirements of individual areas
    o deletion of the two courses falling under the previous rubric of professional requirements

  These changes have three goals:
    o Requiring three core courses instead of four and deletion of the two courses falling under the previous rubric of professional requirements reduces the course load for graduate students, thus freeing more time for research-based activities and potentially improving speed of graduation.
    o Changes under (b) reflect changes in the respective fields.
    o Adding new core courses offers students more flexibility in optimizing their own curriculum.

  Reducing course load was a recommendation of the external APR review, as well as an internal review by the curriculum committee.

- **Master of Science in Psychology**
  No actual change is requested – the proposal simply lists the requirements as currently codified in the School of Psychology's Graduate Handbook. These requirements never made it into the Catalog. The School notes that this version differs from the last version on record in the Registrar's office (*Minutes of the Graduate Curriculum Committee, February 19, 1998*). It is unclear to the current Graduate Coordinator and Chair why the newer version was apparently never submitted.

- **Doctor of Philosophy with a major in Electrical and Computer Engineering**
  The School of Electrical and Computer Engineering (ECE) is requesting the elimination of the ECE 8010 Research Seminar (1-0-1) requirement for Ph.D. students. The seminar has existed since the early 1980s and has historically been used as a way for faculty members to present their research activities to graduate students and potentially find new students for their research groups. Since the School's website has information on the

School's technical interest groups, detailed faculty profiles, and pages for faculty labs and research centers, a required seminar has become unnecessary. Additionally, an increasing percentage of students taking ECE 8010 have already found a research advisor.

- **BS/MS in International Affairs**
  A 5-year combined BS/MS program in INTA would address a number of challenges faced by INTA. For example it would...

  - ...better serve our students by providing a MS degree to highly-qualified INTA undergrads in half the time of our standard program (and therefore at half the cost). It would enable students who otherwise might not get a Master's degree to compete better on the job market. It would also get those who would pursue a MS degree into the job market a year earlier, reducing their opportunity costs.
  - ...improve the quality and increase the quantity of the MSIA candidate pool. Note also that, with increased student quality comes better job placement, more loyal alumni, and a better network for career/internship placement and policy-linkages.
  - ...meet increasingly vocal demand for 5-yr MS programs from INTA undergrads. The UG Director and Assistant Director report that interest in a 5yr BS/MS degree program is rising amongst INTA undergrads and could possibly extend to applicants to our UG program.

- **Doctor of Philosophy with a major in Mathematics**
  We propose to change:
  - The course requirements for a PhD with a major Mathematics from 51 hours (including 36 hours of 6000 level math courses and the 9 hour minor requirement) to 30 hours of 6000 level or above math courses plus 9 hours for the minor requirement.
  - The written comprehensive exams will be changed so that instead of taking 2 fixed exams students will choose to take 2 of 7 exams.
  - We will also institute a new "breadth requirement" to ensure that students have exposure to several areas of mathematics.

We wish to institute these changes to increase the breadth of mathematical education of our PhD students and move them towards research quicker in hopes of reducing the time to degree. In our current set up it is possible for a PhD student in Mathematics to not qualify to apply for a Masters in Mathematics due to a lack in breadth. Under the new guidelines the course requirements for a PhD with a major in Mathematics would be stronger than for a Master's degree. In addition with the flexibility of the new comprehensive exams a student will be able to focus on areas of mathematics most relevant to his or her planned area of study. Finally, the new guidelines are more in line with other mathematics graduate programs around the country and should make us more competitive for new graduate students.

New Certificates:
- Certificate in Geographic Information Systems

New Subject Code:

- All the LCC courses are changing to a new subject code of LMC (School changed its name from Literature, Culture, and Communication to Literature, Media, and Communication)

New Courses:

- MGT 6663: Technology Strategy 3-0-3
- EAS 6370: Physics of Planets 3-0-3
- EAS 6670: Atmospheric Dynamics II 3-0-3
- MSE 6750: Preparation & Reactions of Polymers 3-0-3
- CS 6475: Computational Photography 3-0-3
- CEE 6345: Sustainable Engineering   3-0-3
- CEE 6528: Introduction to Bridge Engineering 3-0-3
- CEE 6590: Durability of Cement-based Materials 3-0-3
- CEE 6512: Advanced Dynamics and Smart Structures 3-0-3
- PUBP 8101: WOPR I   1-0-1
- PUBP 8102: WOPR II 1-0-1
  These courses will be restricted to Doctoral level students and to PUBP majors. The abbreviation for the transcript in item #4 was changed to read "WORKSHOP ON PUB POL RES I" from "WOPR I".
- BC 6575: Real Estate Production Finance 3-0-3
- CSE 6010: Computational Prob Solv 2-3-3
- CSE 6040: Computing for Data Analy 3-0-3
- CSE 6141: Massive Graph Analysis 3-0-3
- CSE 6243: Adv Top Machine Learning 3-0-3
- EAS 6305: Physical and Chemical Oceanography 3-0-3
- CS 7492: Simulation of Biology 3-0-3
- CS 7499: 3D Reconstruction 3-0-3
- CS 7632: Game AI 3-0-3
- PSYC 6043: Engineering Psychology Research Seminar 1-0-1
- ME 6720: Biotransport 3-0-3
- ECE 6122: Advanced programming Techniques 2-3-3
- ECE 6461: Carbon and Molecular Nanoelectronics 3-0-3
- ECE 6515: Nanophotonics 3-0-3
- ECE 6562: Autonomous Control of Robotics Systems 3-0-3
- ECE 6563: Networked Control and Multiagent Systems 3-0-3
- ECE 6616: Cognitive Radio Networks 3-0-3
- PUBP 6350: Energy Policy and Markets 3-0-3

Deactivated Courses:

- PTFE 6750: Preparation & Reactions of Polymers 3-0-3

Course Prerequisite Modifications:
- MGT 6057 - Business Process Analysis
- MGT 6780 - Knowledge Management

The Scheller College faculty has voted to deactivate MGT 6050 Information Technology Management. As part of this deactivation, we would like to eliminate MGT 6050 Information Technology Management as a prerequisite for MGT 6057 Business Process Analysis and Design and for MGT 6780 Knowledge Management. These courses have evolved and no longer require a prerequisite course.

Course Restriction Changes:
- BIOL 7000 - Master's Thesis
- BIOL 8997 - Teaching Assistantship
- BIOL 8998 - Research Assistantship
- BIOL 9000 - Doctoral Thesis

See January 16, 2014 Minutes for details.

Student Petitions and Appeals:

The Graduate Committee acted on 288 student petitions. Of these, 246 were handled administratively in areas where the Committee had delegated responsibility to the subcommittee and/or the Registrar. There were zero written appeals that were acted on in 2013-2014.

In academic year 2012-2013, the Committee acted on 198 petitions.

Submitted by:

Dr. Jeff Jagoda, Aerospace Engineering
Chair, GCC, 2013-2014