Georgia Institute of Technology
Graduate Curriculum Committee
Minutes
April 11, 2013

Present: Jagoda (AE), Pikowsky (Registrar), Sharp (Grad Studies), Ladshaw (Student Rep), Neitzel (ME), Ferri (ECE), Jayaraman (MSE), Kvam (ISyE), Boldyreva (CoC-CS), Breedveld (ChBE), Foley (Coc-IC), Storici (BIOL)

Visitors: Laros (REG), Merkousko (REG), Tucker (ARCH), Webster (CEE), White (CoC), Krige (HTS), Castro (BC), Gamble (ARCH), Williams (ECE), Pereira (ARCH), Muhlstein (MSE)

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 approve a request from the School of History, Technology, and Society for a degree modification and a course deactivation. The motion was seconded and approved.

Degree Modification – Approved
Master of Science in History and Sociology of Technology and Science

We are proposing to de-activate HTS 8002 Social and Cultural Perspectives on Science and Technology and replace it with HTS 6743 STS Core Seminar. The new course will remain as a requirement for both the History and Sociology tracks as well as the new STS certificate. There are no changes to the total number of credit hours within the History and Sociology tracks.

Required by the STS certificate convener, Professor Anne Pollock, and accepted unanimously by the HTS faculty.

Also, included is the HSTS elective page with 3 additional elective courses.

Currently Approved vs. Proposed Program Curriculum
The following tables describe the current and revised curricula.

CURRENT

<table>
<thead>
<tr>
<th>MSHSTS PROGRAM CURRICULUM</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total Program Hours Required for degree awarded:</td>
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</tr>
<tr>
<td>Program-Required Course Hours:</td>
<td>6</td>
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<td>Track-Required Hours:</td>
<td>9</td>
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<tr>
<td>----------------------</td>
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<tr>
<td>Elective Hours</td>
<td>15</td>
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### REQUIRED COURSES (All Students)

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Notes</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>HTS 6001</td>
<td>Social Theory</td>
<td>Required</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6002</td>
<td>History of Technology</td>
<td>Required</td>
<td>3</td>
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**Total Major-Required 6**

### HISTORY TRACK

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS 6101</td>
<td>Social and Political History of the U.S.</td>
<td>Take one of these 3, If others taken, may count as an Elective for History Track only.</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6102</td>
<td>Social and Political History of Europe</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HTS 6103</td>
<td>Social and Political History of Non-Western World</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HTS 7001</td>
<td>Foundations of Socio-Historical Analysis</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HTS 8002</td>
<td>Social and Cultural Perspectives on Science and Technology</td>
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<td>3</td>
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</tbody>
</table>

**Total History Track-Required 9**

### SOCIOLOGY TRACK

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS 7001</td>
<td>Foundations of Socio-Historical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>HTS 8002</td>
<td>Social and Cultural Perspectives on Science and Technology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Sociology Track-Required 9**

### PROPOSED

**MSHSTS PROGRAM**

| Total Program Hours Required for degree awarded: | 30 |
| Program-Required Course Hours:                  | 6  |
| Track-Required Hours:                           | 9  |

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1 Students may fulfill this required course by selecting from “Advance Sociological Methods” courses available in other GT major degree programs. One example is: PUBB 8530, Advance Science & Tech Policy. The selected course must be first approved by the student’s program advisor.
## Elective Hours

<table>
<thead>
<tr>
<th>Required Courses (All Students)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course #</td>
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<tr>
<td>HTS 6001</td>
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<tr>
<td>HTS 6002</td>
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**Total Major-Required 6**

### HISTORY TRACK

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<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Notes</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS 6101</td>
<td>Social and Political History of the U.S.</td>
<td>Take one of these 3.</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6102</td>
<td>Social and Political History of Europe</td>
<td>If others taken, may count as an Elective for History Track only.</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6103</td>
<td>Social and Political History of Non-Western World</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HTS 7001</td>
<td>Foundations of Socio-Historical Analysis</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HTS 6743</td>
<td>STS Core Seminar</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Total History Track-Required 9**

### SOCIOLOGY TRACK

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS 7001</td>
<td>Foundations of Socio-Historical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6743</td>
<td>STS Core Seminar</td>
<td>3</td>
</tr>
<tr>
<td>AAA###</td>
<td>Advanced Sociological Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Sociology Track-Required 9**

### MSHSTS - Electives for either the History or Sociology Track

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS 6106</td>
<td>Business Organizations and Political Economy</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6110</td>
<td>Gender, Science, and Technology</td>
<td>3</td>
</tr>
</tbody>
</table>

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2 Students may fulfill this required course by selecting from “Advance Sociological Methods” courses available in other GT major degree programs. One example is: PUBP 8350, Advance Science & Tech Policy. The selected course must be first approved by the student’s program advisor.
### Course Deactivation

#### HTS 8002 (replaced with HTS 6743)

1. Course renamed and renumbered. Formerly on list as HTS 6104

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS 6111</td>
<td>Technology and Modern Culture</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6112</td>
<td>Studies in Science and Engineering</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6113</td>
<td>Development, Science, and Technology</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6114</td>
<td>Topics in the History of Science</td>
<td>3</td>
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<tr>
<td>HTS 6115</td>
<td>Sociology of Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6116</td>
<td>The Environment in World History</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6117</td>
<td>Urbanization</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6118</td>
<td>Science, Technology, and the Economy</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6119</td>
<td>Race and Ethnicity</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6120</td>
<td>Inequality, Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6121</td>
<td>Science, Technology and Security</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6122</td>
<td>History of Medicine</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6123</td>
<td>Social and Cultural Studies of Biomedicine</td>
<td>3</td>
</tr>
<tr>
<td>HTS 6124*</td>
<td>Science and Technology Beyond Borders</td>
<td>3</td>
</tr>
<tr>
<td>HTS 8803</td>
<td>Special Topics</td>
<td>3</td>
</tr>
<tr>
<td>HTS 8901</td>
<td>Special Problems - Research Paper</td>
<td>3</td>
</tr>
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*Course renamed and renumbered. Formerly on list as HTS 6104*

**Course Deactivation - Approved**

2. A motion was made to approve a request from the School of Electrical and Computer Engineering for a new degree program prospectus to be submitted to the Board of Regents for review. The motion was seconded and approved.
Prospectus for a New Academic Program – Approved
Professional Master’s in Sustainable Electrical Energy

A Professional Master’s in Sustainable Electrical Energy (PMSEE) would be targeted to working engineers in the electrical energy and power industry. Professional Master’s degrees, in general, are designed to be terminal degrees that provide applied, practical training for industry professionals with a focus on projects, teamwork, and leadership. A Master of Science degree, by comparison, typically has a research focus and serves as a gateway to a PhD program.

The PMSEE program would be structured to bring in students in specific cohorts. The degree would feature six required courses, including a culminating capstone project course, and four elective courses taken by all students in a given cohort and chosen from a selection of ten or more elective courses. Courses would be organized in a sequential manner to cover in a comprehensive way the engineering content and industry emerging technologies in sustainable electrical energy. The required core for the PMSEE would include courses on power system operation and control, renewable energy sources, power systems economics, power system planning and reliability, and a capstone project course. Elective courses would be chosen from subjects such as power system protection, power electronics, wind energy, smart grids, high voltage engineering, computational intelligence in power, solar energy, nuclear engineering and reactor engineering, fuel cell systems, and energy engineering economics and risk management.

Upon completion of the PMSEE degree program, graduates would be:
   a) Fully informed on the state-of-the-art in sustainable electricity systems
   b) Equipped with a wealth of critical knowledge and skills
   c) Able to immediately apply this new knowledge and skills to real-world problems in their engineering or management activities, and
   d) Capable of facing the complex emerging challenges of the industry.

Demand for the degree: Initially, Saudi Aramco, the world’s largest oil company, would supply students for the PMSEE in yearly cohorts of 20. Over the past five years, the power systems division of Aramco has grown from 500 staff to more than 750 with plans to expand to 900. Saudi Aramco would pay for the development and delivery of the degree to their employees, including the expenses for remote delivery of courses and periodic travel to Saudi Arabia by participating faculty members.

Once established, the PMSEE degree would be offered on the Georgia Tech campus to energy professionals from across Georgia and the Southeast. Georgia Tech’s distance learning program would further allow this degree to be offered both nationally and internationally. A comparable degree program at the University of Waterloo admits ~40 students per year, primarily from Ontario.

Some of the largest employers in Georgia hire engineers in the electrical energy sector, including the Southern Company and its largest subsidiary Georgia Power, GE Energy, and Southwire. In 2011, the Center for Energy Workforce Development (CEWD, www.cewd.org), a non-profit consortium of energy utilities and associations, noted that,
despite a weak economy, employment of engineers in this industry grew by 3.9% from 2009 to 2011. Furthermore, this is an aging workforce, and 52% of the engineers in the electric utility industry may need to be replaced by 2020.

Because of their impact on public safety and welfare, engineers working in the electrical energy industry are often required to be licensed professional engineers. In fact, a majority of the electrical engineering positions that require licensure are in this industry. Currently, a four-year accredited engineering degree is required to be eligible to apply for licensure. With a phase-in period running from 2015 to 2020, the National Council of Examiners for Engineering and Surveying is expecting states to change their licensing requirements to require that candidates have a BS plus either a Master’s degree or 30 additional credit hours prior to sitting for the Professional Engineering exam. The PMSEE would be an ideal fit for engineers seeking to meet these new requirements.

**Related existing USG programs:** There are no other professional master’s degrees in the state in the area of sustainable electrical energy systems or within the broader area of electrical engineering. The most closely related degree at Georgia Tech is the MS in Electrical and Computer Engineering that serves a different population of students as described above. The University of Georgia offers a broader, research-based MS in Engineering, which also is not designed for practicing engineers.

3. A motion was made to approve a request from the Schools of Mechanical, Aerospace, and Materials Science and Engineering for a certificate modification. The motion was seconded and approved.

**Certification Modification and Renaming - Approved**

Certificate in Mechanical Properties of Materials

Rationale for changing the approved program:

(1) Change name of certificate from **Certificate in Mechanical Properties of Solids** (Multidisciplinary) to **Certificate in Mechanical Properties of Materials** (Multidisciplinary) to better reflect current terminology commonly used in this field of research.

(2) Change the allowed degree level from only Ph.D. to both M.S. and Ph.D. In the past decade, we have allowed M.S. students to obtain this certificate and in general, M.S. students get more benefit from obtaining this certificate. I do not think we were even aware that it was set up for only Ph.D. (at least on the COE website).

(3) Update the Program of Study requirements to reflect changes that have occurred in course offerings since the last update. In addition, a few more courses with heavy emphasis on mechanical properties have been added to the list of acceptable courses.
Currently Approved vs. Proposed Program Curriculum

Graduate students conducting research within the Mechanical Properties Research Laboratory (MPRL) are strongly encouraged to pursue the multidisciplinary certificate in Mechanical Properties of Materials, administered through the College of Engineering. This certificate is awarded along with the graduate degree, and denotes a specialty in mechanical properties and affiliation with the MPRL that may be useful in seeking future employment opportunities in addition to providing a well-balanced educational program.

**Description:** A multidisciplinary certificate program consisting of 12 semester units in which graduate students from participating Schools in the College of Engineering may participate to obtain an in-depth understanding of mechanical behavior and properties. The program is entitled "A Certificate in Mechanical Properties of Materials" and is administered through the Mechanical Properties Research Laboratory (MPRL) to graduate students in participating Schools in the College of Engineering.

**Character and Objectives of Program:** The courses in the certificate program provide students with fundamentals of mechanical behavior as well as with advanced practical information on design and materials selection. As such, it supports their research programs in the MPRL and various academic units. This certificate program also meets the needs of industry for high-level practitioners for which materials/mechanics considerations are primary design obstacles.

**Mode of Operation:** This multidisciplinary certificate presently involves faculty members from the Schools of Aerospace Engineering, Materials Science and Engineering, and Mechanical Engineering, though others outside of these schools can qualify if they meet the requirements of the certificate program.

In consultation with his/her advisor, the student selects courses that constitute a coherent sequence from an approved list (see attached forms). The student then sends the proposed program to the MPRL Director for review and approval. Upon successful completion of the program, a recommendation is forwarded by the MPRL Director to the Dean of Engineering for final approval similar to other existing certificate programs.

**Current Program of Study:**

**REQUIREMENTS**

12 hours from the following list, with at least three (3) hours from the core course category
CORE COURSES
- ME/MSE/CEE/AE 7772. Fundamentals of Fracture Mechanics
- MSE/ME/CEE/AE 7774. Fatigue of Materials and Structures

OTHER COURSES
- ME/MSE/CEE/AE 7773. Advanced Fracture Mechanics
- AE/ME/MATE 7775. Topics in Fracture and Fatigue of Metallic and Composite Structures**
- ME 6203 or equivalent. Inelastic Deformation of Solids
- ME 7203. Advanced Constitutive Relations for Solids
- MSE 7210. Dislocation and Deformation Mechanics
- CHE/TFE/MSE/ME 7771. Mechanics of Polymer Solids and Fluids
- AE/MSE/ME/TFE/CEE/CHE 4791. Mechanical Behavior of Composites
- AE/MSE/ME/TFE/CEE/CHE 7791. Damage, Failure and Durability of Composite Materials
- TFE/CHE/MSE/ME 6768. Polymer Structure, Physical Properties, and Characterization
- ME/MSE/TFE 6796. Structure-Property Relationships in Materials
- AE/CEE/CHE/ME/MSE/TFE 8000 level Special Topics Courses as approved by certificate administration.

* Certificate program prerequisites include MSE 2001, and MSE 3005 or ME 3201 or equivalent.

** Not allowed if ME 7774 is taken as a core course.

Proposed Program of Study:

REQUIREMENTS
12 hours from the following list, with at least three (3) hours from the core course category.
Nine (9) hours must be at the 6000 level or higher. Must earn C or better in each course.

CORE COURSES
- ME/MSE/CEE/AE/CHBE 7772. Fundamentals of Fracture Mechanics
- MSE/ME/CEE/AE/CHBE 7774. Fatigue of Materials and Structures

OTHER COURSES
- ME 6203. Inelastic Deformation of Solids, or CEE 6566. Plasticity and Viscoelasticity, or AE 6112. Inelastic Response
- ME 7203. Advanced Constitutive Relations for Solids
- AE/ME/MSE/CHBE 7775. Topics in Fracture and Fatigue of Metallic and Composite Structures**
- ME/MSE/CEE/AE/CHBE 7773. Advanced Fracture Mechanics
- MSE 7210. Dislocation and Deformation Mechanics
- PTFE/CHBE/MSE/ME 7771. Mechanics of Polymer Solids and Fluids
- AE/MSE/ME/PTFE/CEE/CHBE 4791. Mechanical Behavior of Composites
- AE/MSE/ME/PTFE/CEE/CHBE 7791. Damage, Failure and Durability of Composite Materials
- AE/MSE/ME/PTFE/CEE/CHBE 7792. Advanced Mechanics of Composites
- CEE 6521. Reinforced Concrete Members
- PTFE/CHBE/MSE/ME 6768. Polymer Structure, Physical Properties and Characterization
- ME/MSE/PTFE 6796. Structure-Property Relationships in Materials
- MSE 4010. Environmental Degradation of Materials
- ME 7201. Computational Mechanics of Materials, or CEE 6507. Nonlinear Finite Element Analysis
- AE/CEE/CHBE/ME/MSE/PTFE 8000 level Special Topics Courses as approved by certificate administration.

* Certificate program prerequisites include MSE 2001 or equivalent, and COE 3001 or equivalent.

** Not allowed if MSE/ME/CEE/AE/CHBE 7774 is taken as a core course.

4. A motion was made to approve a request from the School of Civil and Environmental Engineering for a new course and to deactivate courses. The motion was seconded and approved.

**New Course - Approved**
CEE 8096 Environmental Fluid Mechanics & Water Resources Seminar 1-0-1

**Deactivate Courses - Approved**
CEE 8093 - Water Resources Seminar
CEE 8092 - Fluid Mech & Hydraulic Seminar

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

**Degree Modification – Approved**
Master of Science in Computer Science

The College of Computing and the School of Interactive Computing request the addition of a concentration in Human-Centered Computing to the Master of Science in Computer Science (MSCS), [http://www.catalog.gatech.edu/colleges/coc/cs/grad/master/mscs.php](http://www.catalog.gatech.edu/colleges/coc/cs/grad/master/mscs.php).

This request was initiated by the faculty of the School of Interactive Computing and students in the Human-Centered Computing PhD program. The HCC program was proposed in 2004 without an associated MS program. So, unlike students in the CS and CSE PhD programs, HCC students do not have a clear option for exiting the program but completing an MS degree.
Under the pre-2011 curriculum, the MSCS was an inappropriate option for many students because of its requirements for passing courses in theory and operating systems. HCC draws students from many disciplines other than CS, and those students have no background in those areas. Some students did complete the MS degree in Human-Computer Interaction, but HCI is also inappropriate for HCC students who work in other areas such as cognitive science.

This concentration, unlike the others in MSCS, will be available only by permission of the MSCS coordinators upon the recommendation of the HCC PhD coordinator.

**Proposed MSCS concentration in Human-Centered Computing**

**Core (9 hours):**
- CS 6451, Introduction to Human-Centered Computing
- CS 6452, Prototyping Interactive Systems
- CS 7455, Issues in Human-Centered Computing

**Electives (3 hours):**
* One course from the approved list of electives at [http://www.ic.gatech.edu/future/phdhcc/program](http://www.ic.gatech.edu/future/phdhcc/program)

**This list was created as guidance for students who plan to complete the PhD. Students who instead plan to complete the MSCS HCC concentration will probably use only a small subset of these courses in their programs of study. For DegreeWorks, we can shorten this list to include only those classes that would be most commonly used. Other courses from the list could be substituted as necessary during the process of degree certification for each student.**

**We request the addition of a concentration in Human-Centered Computing.**

**MSCS Specialization in Human-Centered Computing**

| Core (9 hours) | CS 6451 Introduction to Human-Centered Computing  
|               | CS 6452 Prototyping Interactive Systems  
|               | CS 7455 Issues in Human-Centered Computing |

| Electives (3 hours) | One of the following:  
|                    | Artificial Intelligence  
|                    | - CS 6010 Principles of Design  
|                    | - CS 6601 Artificial Intelligence  
|                    | - CS 7495 Computer Vision  
|                    | - CS 7610 Modeling and Design  
|                    | - CS 7611 AI Problem Solving  
|                    | - CS 7613 Knowledge Systems Engineering  
<p>|                    | - CS 7620 Case-based Reasoning |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 7631</td>
<td>Multi Robot Systems</td>
</tr>
<tr>
<td>CS 7637</td>
<td>Knowledge-Based AI</td>
</tr>
<tr>
<td>CS 7641</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>CS 7646</td>
<td>Machine Learning for Trading</td>
</tr>
<tr>
<td>CS 7650</td>
<td>Natural Language</td>
</tr>
<tr>
<td>CS 8803 BHI</td>
<td>Introduction to Behavior Imaging</td>
</tr>
<tr>
<td>CS 8803 GAI</td>
<td>Game AI</td>
</tr>
</tbody>
</table>

**Cognitive Science**
- CS 6795 Introduction to Cognitive Science
- CS 7695 Philosophy of Cognition
- CS 7697 Cognitive Models of Science and Technology
- CS 7790 Cognitive Modeling
- CS 8893 Special Topics in Cognitive Science: Cognition and Culture

**Collaboration**
- CS 6470 Design of Online Communities
- CS 7460 Collaborative Computing

**Human-Computer Interaction**
- CS 6455 User Interface Design and Evaluation
- CS 6456 User Interface Software
- CS 6750 Human-Computer Interaction
- CS 7450 Information Visualization
- CS 7470 Mobile and Ubiquitous Computing
- CS 7633 Human Robot Interaction
- CS 8803 Computers, Communications & International Development

**Information Security**
- CS 6725 Information Security Strategies and Policy

**Learning Sciences and Technology**
- CS 6460 Educational Technology: Conceptual Foundations
- CS 7465 Educational Technology: Design and Evaluation
- CS 7467 Computer-Supported Collaborative Learning
- CS 8803 CSE CS Education Research
- CS 8893 CC Special Topics in Cognitive Science: Cognition and Culture

**Social Computing**
- CS 6465 Computational Journalism
- CS 6470 Design of Online Communities
- CS 7460 Collaborative Computing
- CS 8893 CC Special Topics in Cognitive Science: Cognition and Culture

**Software**
- CS 6456 Principles of User Interface Software
- CS 7470 Mobile and Ubiquitous Computing
Program rules

- **GPA** – Students must achieve a cumulative grade point average of at least 3.0 to graduate, and no course grades below C will be allowed to count toward graduation. All grades labeled below as core and elective courses within your specialization must be B or better.
- No course may be used to satisfy the requirements of two degrees. In addition, no graduate credit will be given for CS courses with a number lower than 4140.
- A maximum of 6 hours may be taken at the 4000-level and/or with a subject code other than CS or CSE. See exceptions under the Project and Thesis options below.
- Pass-Fail and Audit – All courses applied to the MSCS degree must be taken for letter grade, other than thesis hours.
- The maximum total credit hours of Special Problems (CS or CSE 89xx) that may be applied toward the MSCS degree is 3. These courses must be within the CoC.
- There is no maximum number of Special Topics (CS or CSE 88xx) courses that may be used towards the degree.

Program options

- Students may choose from one of the following three options in pursuing the MSCS.

Course option

- 36 hours of course work (no MS project or thesis hours)
  - Total course credit hours required: 36
  - Minimum CS/CSE course credit hours: 30
  - Minimum CS/CSE course credit hours at the graduate (6000-8000) level: 18
  - Minimum total credit hours at the 6000-8000 level: 30

<table>
<thead>
<tr>
<th>Course option</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CS 7497 Virtual Environments</td>
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</tr>
<tr>
<td>CS 7697 Cognitive Models of Science and Technology</td>
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<tr>
<td>CS 8803 HAR Handheld AR Game Design</td>
<td></td>
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<tr>
<td>Software Engineering</td>
<td></td>
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<tr>
<td>CS 6320 Software Requirement Analysis and Specification</td>
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<td>Visualization</td>
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<tr>
<td>CS 6480 Computer Visualization Techniques</td>
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<tr>
<td>CS 6485 Visualization Methods for Science and Engineering</td>
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<tr>
<td>CS 7450 Information Visualization</td>
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</table>
Project Option
- 27 hours of course work and a 9-hour project. The student must obtain advance approval of the project proposal by the faculty advisor and MSCS coordinator. See your academic advisor for more information.

  - Total credit hours required: 36
  - MSCS project hours (CS 6999): 9
  - Minimum CS/CSE course hours required: 21
  - Minimum CS/CSE course credit hours at the graduate (6000-8000) level: 21
  - The approved program of study may include a maximum of (a) 3 hours of non-CS/CSE credit (b) 6 total 4000-level hours.

Thesis Option
- 24 hours of course work and a 12-hour thesis. The student must obtain advance approval of the thesis proposal by the faculty advisor and MSCS coordinator. See your academic advisor for more information about the thesis process.

  - Total credit hours required: 36
  - MSCS thesis hours (CS 7000): 12
  - Minimum CS/CSE course hours required: 24
  - Minimum CS/CSE course credit hours at the graduate (6000-8000) level: 18

The approved program of study may include a maximum of 6 total 4000-level CS hours. No non-CS/CSE hours may be applied to the degree requirements.

6. The College of Computing, at the request of the Committee, was present to provide an update on the MSCS – Distance Learning Program.

   Following the update and the discussion, the Committee endorsed the next step in the process; i.e., to move forward with discussions involving the Board of Regents and SACs as needed. The committee did not feel they could fully approve the program until all details are known.

7. A motion was made to approve a request from the School of Building Construction for a new course. The motion was seconded and approved.

   New Course - Approved
   BC 6185: Introduction to Construction Program Management 3-0-3

8. A motion was made to approve a request from the School of Architecture for a degree modification. The motion was seconded and approved.

   Degree Modification – Approved
   Master of Architecture

   The current proposal reflects changes to the Master of Architecture Professional degree requirements. Radical changes to the profession and the discipline of architecture over the
last 10 years make it necessary to update coursework from time to time in order to align our
requirements with those of our accrediting body, NAAB (National Architecture
Accreditation Board). Our curriculum was last updated during the quarter to semester
conversion. The course changes we propose as the modification were previously approved
by the IGCC as well as the Academic Senate. This modification is the official
implementation of these changes into the Master of Architecture Professional Degree
program.

What we are requesting to change:

We request to revise the courses in the program by:

(1) removing one course from the core (Arch 4414, it will remain a possible
elective offering for undergraduates)

(2) adding four new courses to the core (Arch 6316 Practice of Architecture II,
Arch 6470 Modeling + Media I, Arch 6472 Modeling + Media II and Arch
6474 Modeling + Media III, (course proposals already submitted and
approved by IGCC and Academic Senate)

(3) modifying content of Arch 6350, Theory of Architecture I (previously Arch
6131), Arch 6352, Theory of Architecture II (previously Arch 6132), Arch
6320, Practice of Architecture (previously Arch 4315), Arch 6071, Options
III Studio (previously Arch 6053), Arch 6072, Masters Project Studio
(previously Arch 7090). We have eliminated Arch 7060 Critical Positions
and replaced it with Arch 6316 Professional Practice of Architecture II.

All courses with updated content have new course numbers at the graduate level already
approved on a previous proposal and are reflected in this modification.

- Arch 7060 Critical Positions has been eliminated and replaced it with
Arch 6316, Professional Practice of Architecture II.
- Arch 7090 Masters Project Studio has been eliminated and renamed
Design + Research Studio II – Arch 6072
- Arch 6470, Modeling + Media I, replaces previous Arch 4414 Intro to
Visual Arts
- Arch 6472, Modeling + Media II, replaces Arch 4220 Intro to Design
Computing (previously required)
- Arch 4420, undergraduate number for Intro to Design Computing will
remain active as a possible elective course for undergraduates.
- Arch 6474, Modeling + Media III (ADDED)

We have reduced the number of professional electives required in the program from 21 to
18 to allow for the addition of Modeling + Media III. We have not changed the hour
requirement of the program it remains at 108 hours.

We are in the process of updating our curriculum given the changes in the field of
Architecture.
The general consensus (based on internal faculty review and student/alumni feedback) is that the program should require more digital courses, and more focus on design + research as well as professional practice. We believe the core curriculum needs to cover: (1) the history and theory of architecture (2) advanced principles of design computing, and (3) applied research methods in architecture and design. While our previous program addressed some of these needs, the changing face of the profession of architecture mandates that our graduates demonstrate a high level of research ability and digital skills in order to be competitive. We believe the updates outlined here will result in this positive change and bring us in greater alignment with the student learning outcomes required by our accrediting body, NAAB.

The courses we are removing have been replaced with updated content. These courses will remain as elective options for undergraduate students to take depending upon their interests and career goals.

The move toward research based studios in the final year and a professional practice research methods course will allow students an understanding of an in-depth area of personal interest to them that may be carried into their professional experience. The addition of the Design + Research studios as well as the additional Professional Practice course are intended to provide students with a solid grounding in the various methods used in architectural design practice as it relates to research, and to better prepare students to move forward into the profession. We believe this will increase the quality of graduates from our Professional degree program and be seen in a constructive, positive light by the accrediting body.

Finally, the program needs to focus on gaining instrumental and conceptual skills in digital design and media, i.e. how programming, design, and theory can be put to use in the creation of meaningful computational artifacts for people, communities, and the world. This requires a greater emphasis on computer aided instruction and project work, and we thus propose to require three Media + Modeling courses in the curriculum.

The current program includes 1 Visual Arts course, 1 Design Computing course, 1 Professional Practice course

Current program:
- 7 Studios: Arch 4021, Arch 4022, Arch 4023, Arch 6051, Arch 6052, Arch 6053, Arch 7090 = 39 credit hours
- 1 Required Design Computing Course (Arch 4420) = 3 credit hours
- 1 Required Visual Arts Course (Arch 4411) – 3 credit hours
- 14 Professional Core Courses: Arch 4105, Arch 4106, Arch 4219, Arch 3231, Arch 3241, COA 6151, Arch 6131, Arch 4231, Arch 4251, Arch 6132, Arch 4220, Arch 4252, Arch 4315, Arch 7060 = 42 credit hours
- 7 elective courses = 21 credit hours
- Total: 108 credit hours

The proposed program would include 3 Media + Modeling courses (replacing the visual arts and design computing required courses and adding one additional course). The addition of
the 3rd course would strengthen the students’ design computing ability. The proposed program would also include an additional Professional Practice course. The elimination of one required 3 hour elective as well as the Critical Positions course allow this change to result in no change to the hour requirements of the program, this holds at 108 hours.

Proposed program:
- 7 Studios: Arch 6024, Arch 6026, Arch 6027, Arch 6051, Arch 6052, Arch 6071, Arch 6072 = 39 credit hours
- 3 required Media + Modeling Courses: Arch 6470, Arch 6472, Arch 6474 = 9 credit hours
- 14 Professional Core Courses: Arch 6105, Arch 6106, Arch 4219, Arch 3231, Arch 3241, COA 6151, Arch 6350, Arch 4231, Arch 4251, Arch 6352, Arch 6230, Arch 4252, Arch 6320, Arch 6322 = 42 credit hours
- 6 elective courses = 18 credit hours
- Total: 108 credit hours

Previously Approved through IGCC and Academic Senate
- NCP #4108
- New course proposal to Deactivate Courses – Arch 6053, Arch 6131, Arch 6132, Arch 7090—included in Appendix A.
- NCP #4805
- New course proposal to approve graduate level course numbers for Arch 6071, Arch 6072, Arch 6230, Arch 6320, Arch 6322, Arch 6350, Arch 6352, Arch 6470, Arch 6472, Arch 6474—included in Appendix A.
- NCP #1336
- New course proposal to approve graduate level course numbers for Arch 6024, Arch 6026, Arch 6027, Arch 6105, Arch 6106, Arch 6229, Arch 6420—included in Appendix A.

Currently approved program:
The currently approved program includes 7 Studio courses (39 Hours), 1 required visual arts course (3 Hours), 1 required design computing course (3 Hours), 14 professional core courses (42 hours), Professional Electives (21 Hours), totaling 108 credit hours. Students must have a cumulative GPA of at least 2.7 to graduate, and no grade below “C” will be counted toward the degree.

REQUIREMENTS:
To graduate with the Master of Architecture Professional degree, students with no advance placement must complete 108 credit hours while meeting the following requirements:

Summer semester of first year
Arch 4021 Architecture Core I Studio (5 hours)
Arch 6024 Core I Studio – number changed to grad number 5 hours
Arch 4411 Intro to Visual Art
Arch 6470 Media + Modeling I – New Course 3 hours
**Fall semester of 1st year**

- Arch 4022 Architecture Core II Studio (5 hours)
- Arch 6027 Core II Studio – number changed to grad number 5 hours
- Arch 4105 History of Architecture I
- Arch 6105 History of Architecture I – number changed to grad number 3 hours
- Arch 4219 Construction Technology I
- Arch 6229 Construction Technology I – number changed to grad number 3 hours
- Arch 4420 Intro to Design Computing
- Arch 6072 Media + Modeling II – New Course 3 hours

**Spring semester of 1st year**

- Arch 4023 Architecture Core III Studio (5 hours)
- Arch 6027 Core III Studio – number changed to grad number 5 hours
- Arch 4106 History of Architecture II
- Arch 6106 History of Architecture II – number changed to grad number 3 hours
- Arch 3231 Environmental Systems I
- Arch 3241 Fundamentals of Structures 3 hours
- Arch 6474 Media + Modeling III – New Course (ADDED) 3 hours

**Fall semester of 2nd year**

- Arch 6051 Architecture Options I Studio (6 hours) 6 hours
- COA 6151 History of Urban Form 3 hours
- Arch 6131 Theory & Criticism of Architecture I
- Arch 6350 Theory of Architecture I (Content Adjusted) 3 hours
- Arch 4231 Environmental Systems II 3 hours
- Arch 4251 Architectural Structures I 3 hours

**Spring Semester of 2nd year**

- Arch 6052 Architecture Options II Studio (6 hours) 6 hours
- Arch 6132 Theory & Criticism of Architecture II
- Arch 6352 Theory of Architecture II (Content Adjusted) 3 hours
- Arch 4220 Construction Technology II
- Arch 6230 Construction Technology II- number changed to grad number 3 hours
- Arch 4315 Professional Practice
- Arch 6315 Professional Practice of Architecture I 3 hours
- Professional Electives – 3 hours 3 hours

**Fall Semester of 3rd year**

- Arch 7060 Critical Positions
- Arch 6316 Professional Practice of Architecture II – (ADDED) 3 hours
- Arch 6071 Design + Research Studio I 6 hours
- Professional Electives – 6 hours 6 hours

**Spring Semester of 3rd year**

- Arch 7090 Masters Project Studio
- Arch 6072 Design + Research Studio II 6 hours
- Professional Electives – 9 hours 9 hours
Course Load Requirements

Students with GRA’s/GTA’s, fellowships, tuition waivers or student visas, and students assigned to the Institute by the armed forces for the purpose of pursuing a degree, are required to be enrolled for a minimum of 12 credit hours of letter grade or Pass/Fail credit per term.

Graduate Research Assistants (GRA’s) and typically enroll in COA 8998 for 3 hours of audit credit as a means to gain course credit for the GRA.

One 3-hour elective course may be taken on a P/F basis.

Audit credit does not count toward the degree.

Students may choose from elective courses in architecture or related disciplines, such as City & Regional Planning, Building Construction, Industrial Design, and Civil Engineering.

Optional-

In addition to the requirements above a student may choose to undertake an independent thesis adhering to all Institute guidelines and uploaded to the library thesis site. This will require a minimum of 6 hours of Master’s thesis work, Arch 7000.
**DEGREE NAME:** Master of Architecture Professional Degree

**DEGREE REQUIREMENTS** for August 2013

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**Total Required for Degree:** **108**
9. A motion was made to approve a request from the School of Industrial Design for the addition of a participating school for the multidisciplinary degree, Master of Science in Human Computer Interaction and for new courses. The motion was seconded and approved.

Additional School Participating in Multidisciplinary Degree – Approved
Master of Science in Human Computer Interaction

This proposal requests the addition of Industrial Design to the existing MS HCI degree program. The existing degree is currently offered by three units: Interactive Computing, Literature, Media and Communication, and Psychology.

The Academic Program Review for the MS HCI Program of 2005/2006 noted the absence of Industrial Design from the program. The Self Study of the MS HCI Program of November 2011 indicated the program would like to add a fourth partner from the newly-formed School of Industrial Design, in the College of Architecture. The School of Industrial Design Advisory Board Meeting on February 27/12 approved this plan. Professors Foley (Interactive Computing), Mazalek (Literature, Media and Communication) and Walker (Psychology) as representatives the three offering units approved the curriculum of the new Industrial Program track on Jan 26, 2012.

This proposal requests the approval for the addition of a 4th specialization, Industrial Design, within the existing MS HCI degree program. The existing degree currently offers specializations in: Interactive Computing (Computer Science), Digital Media (Literature, Media and Communication), and Psychology (Science).

The addition of Industrial Design will add a design specialty to the MS HCI Program and will enrich the overall MS HCI curriculum with the addition of multiple design courses available on priority access for all students in the MS HCI degree program.

The revised MS HCI degree program will offer students the flexibility to specialize in one of four areas of technical expertise with complementary strengths drawn from the other three fields:

- Digital Media
- Industrial Design
- Interactive Computing
- Psychology

The proposed Industrial Design specialization will follow the model of the Digital Media specialization with a 36 credit hour degree program.

The Academic Program Review for the MS HCI Program of 2005/2006 noted the absence of Industrial Design from the program. The Self Study of the MS HCI Program in November 2011 once again underscored the absence of a significant design component within the degree program and put forward a recommendation to add a fourth partner from the newly-formed School of Industrial Design, at the College of Architecture. The School of
Industrial Design Advisory Board Meeting on February 27/12 approved this plan. The three offering units approved the curriculum of the new Industrial Program track on Jan 26, 2012 by Professors Foley (Interactive Computing), Mazalek (Literature, Media and Communication) and Walker (Psychology).

The proposal for the MS HCI with a specialization in Industrial Design most closely follows the curriculum model for the Digital Media specialization:

- Same number of credits hours (36)
- Same number of core hours (11)
- 2 additional specialization hours (12 versus 10)
- 2 less elective hours (7 versus 9)
- Same number of studio hours (6)

The new School Chair, Professor Jim Budd, developed and initiated the plans for a major BSID curriculum change shortly after his appointment in August 2010.

School of Industrial Design Faculty Changes over past two years:

Original:
- 3 full-time faculty
- 2 joint appointments
- 2 lecturers
- 16 part time instructors
  23 total

Current:
- 5 full-time faculty + 1 search in progress
- 4 joint appointments
- 2 professors of the practice
- 3 lecturers
- 1 research scientist
- 6 part time instructors
  22 total

Over the past two years the School of Industrial Design has been able to consolidate the undergraduate studio space, add a new graduate studio, and add and equip a new Interactive Product Design Lab (with support from the GT Tech Fee Fund)

Over the past two years the School of Industrial Design has rewired and re-equipped all ID studios to support student use of computers in the studios and large format digital displays for teaching and presentation. Makerbot 3D printers and Wacom Sketch Tablets have also been installed in the senior and graduate studios to encourage and support ready access to advanced digital tools for design and prototyping.
Most recently the School of Industrial Design, in collaboration with the School of Architecture, has been developing a new initiative to leverage the Digital Fabrication Laboratory (located on Marietta Street) to support undergraduate education. The two Schools just received (January 2013) GT Tech Fee Funding support ($250K) to add a new suite of CNC machine tools including a large format water jet cutter, a three axis router, a three access wire cutter, and 2 Makerbot 3D printers.

The new equipment/resources in the ID studios and laboratories has been made available to “student mentors” to develop and deliver regular workshops and seminars for other students.

Georgia Tech’s Master of Science in Human-Computer Interaction (HCI) is one of the most prominent programs of its kind. The MS in HCI is an interdisciplinary program of three Schools: Interactive Computing; Literature, Media, and Communication (LMC); and Psychology. Students with diverse backgrounds in computing, digital media, and psychology enroll in the program through the corresponding School; they interact with one another and with faculty from these three (and other) disciplines, providing the broad base of knowledge and experiences that are so important to successful HCI practitioners.

The program provides students with the practical skills and theoretical understanding needed to become leaders in the design, implementation and evaluation of the next generation of human-computer interfaces. Our alumni work around the globe for national and international companies, as well as the many dozens of small companies in the Atlanta region needing HCI skills.

The MS in Human-Computer Interaction is a four–semester, 36 credit-hour degree. All students take the same core courses, a set of courses related to their chosen specialization (Computing, Digital Media, or Psychology), a broader set of electives and complete a master’s project.

Elective courses can be in a wide variety of areas, such as Industrial Design, Architecture, Music Technology, Industrial and Systems Engineering, Computer Science, Human-Robot Interaction, Human Factors, Management of Technology and Cognitive Science. Interested students can earn the Management of Technology Certificate from the College of Management.
## Existing Curriculum

### PART 1 (Fixed Core)

**FIXED CORE (11 HOURS)**

- CS/LCC/PSYC 6753, HCI – Professional Preparation and Practice (2 cr)
- PSYC 6023, Psychology Research Methods for HCI (4cr)
- CS/PSYC 6750, Human-Computer Interaction (3 cr)

### PART 2 (Specialization)

**COMPUTING SPECIALIZATION (9 HOURS)**

- Software (3 hours):
  - CS 6300, Software Development Process
  - CS 6452, Prototyping Interactive Systems
  - CS 6456, Principles of User Interface Software
  - CS 7470, Mobile and Ubiquitous Computing
  - CS 8803-MAS, Mobile Apps and Services

- Design, Evaluation and Cognitive Modeling (6 hours)
  - CS 6010, Principles of Design
  - CS 6150, Computing for Good
  - CS 6451, Introduction to Human-Centered Computing
  - CS 6455, User Interface Design and Evaluation
  - CS 6460, Educational Technology: Conceptual Foundations
  - CS 6470, Design of Online Communities
  - CS/LMC 6770/6340, Mixed Reality Design
  - CS 6795, Introduction to Cognitive Science
  - CS 7450, Information Visualization
  - CS 7460, Collaborative Computing
  - CS 6763/CS 8803-DG, Design Games
  - CS/PSYC 7790, Cognitive Modeling
  - CS 8803-HEF/ID 8900 HEF, Special Topics: Healthcare

## Proposed Curriculum

### Environment of the Future

### PART 1 (Fixed Core)

**FIXED CORE (11 HOURS)**

- CS/LCC/PSYC 6753, HCI – Professional Preparation and Practice (2 cr)
- PSYC 6023, Psychology Research Methods for HCI (4cr)
- CS/PSYC 6750, Human-Computer Interaction (3 cr)

### PART 2 (Specialization)

**COMPUTING SPECIALIZATION (9 HOURS)**

- Software (3 hours):
  - CS 6300, Software Development Process
  - CS 6452, Prototyping Interactive Systems
  - CS 6456, Principles of User Interface Software
  - CS 7470, Mobile and Ubiquitous Computing
  - CS 8803-MAS, Mobile Apps and Services

- Design, Evaluation and Cognitive Modeling (6 hours)
  - CS 6010, Principles of Design
  - CS 6150, Computing for Good
  - CS 6451, Introduction to Human-Centered Computing
  - CS 6455, User Interface Design and Evaluation
  - CS 6460, Educational Technology: Conceptual Foundations
  - CS 6470, Design of Online Communities
  - CS/LMC 6770/6340, Mixed Reality Design
  - CS 6795, Introduction to Cognitive Science
  - CS 7450, Information Visualization
  - CS 7460, Collaborative Computing
  - CS 6763/CS 8803-DG, Design Games
### Existing Curriculum
- CS/PSYC 7790, Cognitive Modeling
- CS 8803-HEF/ID 8900 HEF, Special Topics: Healthcare Environment of the Future

### Proposed Curriculum
- PSYC 6022, Psychological Statistics for HCI (4cr)
- PSYC 6032, Eng. Psychology Stressors (1cr)
- PSYC 6033, Eng. Psychology Cognitive Ergonomics (1cr)

### Comparison of Overall Existing Program Structure to Overall Proposed Program Structure

<table>
<thead>
<tr>
<th>Existing Curriculum</th>
<th>Proposed Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PART 2 (Specialization cont’d)</strong></td>
<td><strong>PART 2 (Specialization cont’d)</strong></td>
</tr>
<tr>
<td><strong>COMPUTING SPECIALIZATION (cont’d)</strong></td>
<td><strong>COMPUTING SPECIALIZATION (cont’d)</strong></td>
</tr>
<tr>
<td>- CS 8803-HAR, Special Topics: Handheld Augmented Reality Game Studio</td>
<td>- CS 8803-HAR, Special Topics: Handheld Augmented Reality Game Studio</td>
</tr>
<tr>
<td>- CS 8803-IBI, Special Topics: Introduction to Bio-Informatics</td>
<td>- CS 8803-IBI, Special Topics: Introduction to Bio-Informatics</td>
</tr>
<tr>
<td>- CS 8803-VG, Special Topics: Video Game Design</td>
<td>- CS 8803-VG, Special Topics: Video Game Design</td>
</tr>
<tr>
<td>- CS 8803-SOC, Social Computing</td>
<td>- CS 8803-SOC, Social Computing</td>
</tr>
</tbody>
</table>

### PART 2 (Specialization)

**DIGITAL MEDIA (DM) SPECIALIZATION (10 HOURS)**
- Required (may be repeated; up to 6 hours of LCC 6650 may be applied toward the specialization)
  - LCC 6650, Project Studio (enrollment by permission of instructor)

  One of the following courses, preferably taken in the first year of study:
  - LCC 6310, The Computer as an Expressive Medium
  - LCC 6313, Principles of Interactive Design
  - LCC 6399, Discovery & Invention in Digital Design
  - LCC 8903, Special Problems in HCI

### PART 2 (Specialization)

**PSYCHOLOGY SPECIALIZATION (11 HOURS)**
- Required:

### PART 2 (Specialization)

**DIGITAL MEDIA (DM) SPECIALIZATION (10 HOURS)**
- Required (may be repeated; up to 6 hours of LCC 6650 may be applied toward the specialization)
  - LCC 6650, Project Studio (enrollment by permission of instructor)

  One of the following courses, preferably taken in the first year of study:
  - LCC 6310, The Computer as an Expressive Medium
  - LCC 6313, Principles of Interactive Design
  - LCC 6399, Discovery & Invention in Digital Design
  - LCC 8903, Special Problems in HCI

### PART 2 (Specialization)

**PSYCHOLOGY SPECIALIZATION (11 HOURS)**
- Required:
School of Industrial Design

Proposal for Modifications to the MS HCI-ID (Master of Science in Human Computer Interaction)

Comparison of Overall Existing Program Structure to Overall Proposed Program Structure

### Existing Curriculum
- PSYC 6022, Psychological Statistics for HCI (4cr)
- PSYC 6032, Eng. Psychology Stressors (1cr)
- PSYC 6033, Eng. Psychology Cognitive Ergonomics (1cr)

### Proposed Curriculum

#### PART 2 (Specialization)

**PSYCHOLOGY SPECIALIZATION (cont’d)**
- PSYC 6034, Engineering Psychology Displays (1cr)
- PSYC 6035, Engineering Psychology Controls & Workspaces (1cr)

At least 3 cr hours from the following:
- PSYC 6011, Cognitive Psychology
- PSYC 6012, Social Psychology
- PSYC 6014, Sensation & Perception
- PSYC 6041, Topics in Cognitive Aging

**INDUSTRIAL DESIGN (ID) SPECIALIZATION**
- Does not exist under current curriculum

**INDUSTRIAL DESIGN (ID) SPECIALIZATION (12 HOURS)**

**Required:**
- ID 6100, Intro to ID Grad Studies
- ID 6101, Human-Centered Design
- ID 6401, Visualizing Interaction

**One of the following courses:**
- ID 6214 Strategic Design Language
- ID 6215 Service Design
- ID 6271 Healthcare Design of the Future
- ID 6509 Computing, Creativity and Design Cognition
- ID 6510 Design for Interaction
- ID 6515 Interface Prototyping
- ID 6763 Design of Interactive Environments
### Existing Curriculum
- ID 6800 Universal Design
- ID 6820 Web Design Accessibility

### Proposed Curriculum
- CS 8803-VG, Special Topics Video Game Design
- CS 8803, Special Topics: Adaptive Personalized Info Enviro
- CS 8803, Special Problems in Human Computer Interaction
- CS 8902, Special Problems

### Part 3 (Electives)

#### Elective Courses
All specialization courses may be taken as part of the Elective Courses.  
**Computing and Psychology tracks:** at least 9 credit hours of electives that must be taken outside your specialization.  
**Digital Media track:** at least 6 credit hours of electives that must be taken outside your specialization.  
All maximum of 3 credit hours of Special problems in HCI (CS/LCC/PSYC 8903) may count toward the Elective Courses.

#### From Computer Science
- CS 6010, Principles of Design
- CS 6150, Computing Form Good
- CS 6451, Introduction to Human-Centered Computing
- CS 6455, User Interface Design and Evaluation
- CS 6460, Educational Technology: Conceptual Foundations
- CS 6465, Computational Journalism
- CS 6470, Design of Online Communities
- CS 6795, Introduction to Cognitive Science
- CS 7450, Information Visualization
- CS 7460, Collaborative Computing
- CS 7790, Cognitive Modeling
- CS 8803-DG, Special Topics: Design Games
- CS 8803-HEF, Special Topics Healthcare Informatics
- CS 8803-HAR, Handheld Augmented Reality Game Studio
- CS 8803-HRI, Special Topics: Human-Robot Interaction
- CS 8803-IBI, Special Topics: Intro to Biomedical Informatics
- CS 8803-SOC, Special Topics: Social Computing

#### Part 3 (Electives)

#### Elective Courses
All specialization courses may be taken as part of the Elective Courses.  
**Computing and Psychology tracks:** at least 9 credit hours of electives that must be taken outside your specialization.  
**Digital Media and Industrial Design tracks:** at least 6 credit hours of electives that must be taken outside your specialization.  
All maximum of 3 credit hours of Special problems in HCI (CS/LCC/PSYC 8903) may count toward the Elective Courses.

#### From Computer Science
- CS 6010, Principles of Design
- CS 6150, Computing Form Good
- CS 6451, Introduction to Human-Centered Computing
- CS 6455, User Interface Design and Evaluation
- CS 6460, Educational Technology: Conceptual Foundations
- CS 6465, Computational Journalism
- CS 6470, Design of Online Communities
- CS 6795, Introduction to Cognitive Science
- CS 7450, Information Visualization
- CS 7460, Collaborative Computing
- CS 7790, Cognitive Modeling
- CS 8803-DG, Special Topics: Design Games
- CS 8803-HEF, Special Topics Healthcare Informatics
- CS 8803-HAR, Handheld Augmented Reality Game Studio
- CS 8803-HRI, Special Topics: Human-Robot Interaction
- CS 8803-IBI, Special Topics: Intro to Biomedical Informatics
- CS 8803-SOC, Special Topics: Social Computing
## Proposal for Modifications to the MS HCI-ID (Master of Science in Human Computer Interaction)

### Comparison of Overall Existing Program Structure to Overall Proposed Program Structure

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</tr>
<tr>
<td>• CS 8803, Special Topics: Adaptive Personalized Info Environ</td>
<td>• PSYC 6034, Displays</td>
</tr>
<tr>
<td>• CS 8803, Special Problems in Human Computer Interaction</td>
<td>• PSYC 6035, Controls and Workspace</td>
</tr>
<tr>
<td>• CS 8902, Special Problems</td>
<td>• PSYC 6041, Topics in Cognitive Aging</td>
</tr>
</tbody>
</table>

### Part 3 (Electives) From Literature, Media and Communications

- LCC 6215, Media Studies
- LCC 6310, The Computer as Expressive Media
- LCC 6311, Visual Culture and Design
- LCC 6312, Design, Technology and Representation
- LCC 6313, Principals of Interactive Design
- LCC 6314, Design of Networked Media
- LCC 6315, Project Production
- LCC 6317, Interactive Fiction
- LCC 6318, Experimental Media
- LCC 6319, Intellectual Property and Law
- LCC 6325, Game Design and Analysis
- LCC 6399, Discovery and Invention in Digital Media
- LCC 6650, Project Studio, Synaesthetic Media Lab
- LCC 8000, Pro-Seminar in Media Theory
- LCC 8001, Pro-Seminar in Digital Media Studies
- LCC 8903, Special Problems in Human-Computer Interaction

### Part 3 (Electives) From Psychology

- PSYC 6011, Cognitive Psychology
- PSYC 6012, Social Psychology
- PSYC 6014, Sensation and Perception
- PSYC 6022, Psychological Statistics for HCI
- PSYC 6023, Psychology Research Methods for HCI
- PSYC 6031, Engineering Psychology Analysis Techniques

### Part 3 (Electives) From Psychology

- PSYC 6011, Cognitive Psychology
- PSYC 6012, Social Psychology
- PSYC 6014, Sensation and Perception
- PSYC 6022, Psychological Statistics for HCI
- PSYC 6023, Psychology Research Methods for HCI
- PSYC 6031, Engineering Psychology Analysis Techniques
School of Industrial Design

Proposal for Modifications to the MS HCI-ID (Master of Science in Human Computer Interaction)

Comparison of Overall Existing Program Structure to Overall Proposed Program Structure

**Existing Curriculum**
- PSYC 6033, Cognitive Ergonomics
- PSYC 6034, Displays
- PSYC 6035, Controls and Workspace
- PSYC 6041, Topics in Cognitive Aging

**Part 3 (Electives)**
**From Psychology**
- PSYC 6750, Human Computer Interaction
- PSYC 7104, Psychomotor and Cognitive Skills
- PSYC 8040, Seminar in Engineering Psychology
- PSYC 8903, Special Problems in Human-Computer Interaction

**From Architecture**
- COA 6763, Design of Environments
- COA 8823-ED, Special Topics: Health Environment of the Future
- COA 8823, Special Topics: Patient Room of the Future
- COA 8823-ED, Special Topics in Design Computing

**From International Affairs**
- INTA 8803, Special Topics: Computers, Communication, and International Development

**From Industrial Design**
- ID 6100, Intro to Grad Studies
- ID 6101, Human-Centered Design
- ID 6200, Graduate Studio II
- ID 6820, Web Design Usability and Accessibility
- ID 8900, Advanced Sketching

**Proposed Curriculum**
- ID 8900, Interactive Product Design
- ID 8900, Service Design
- ID 8900, Universal Design: Exploration and Investigation of Real World Applications

**Part 3 (Electives)**
**From Psychology**
- PSYC 6750, Human Computer Interaction
- PSYC 7104, Psychomotor and Cognitive Skills
- PSYC 8040, Seminar in Engineering Psychology
- PSYC 8903, Special Problems in Human-Computer Interaction

**From Architecture**
- COA 6763, Design of Environments
- COA 8823-ED, Special Topics: Health Environment of the Future
- COA 8823, Special Topics: Patient Room of the Future
- COA 8823-ED, Special Topics in Design Computing

**From International Affairs**
- INTA 8803, Special Topics: Computers, Communication, and International Development

**From Industrial Design**
- ID 6100, Intro to Grad Studies
- ID 6101, Human-Centered Design
- ID 6200, Graduate Studio II
- ID 6820, Web Design Usability and Accessibility
- ID 6420, Advanced Sketching
## Existing Curriculum

- **ID 6510, Design for Interaction**
- **ID 6215, Service Design**
- **ID 6800, Universal Design: Exploration and Investigation of Real World Applications**

### Part 3 (Electives) From Industrial Design
- **ID 8900 Healthcare Environment of the Future**

### Part 3 (Electives) From INDUSTRIAL AND SYSTEMS ENGINEERING
- **ISyE 6205, Cognitive Engineering**
- **ISyE 6215, Models in Human-Machine Systems**
- **ISyE 6231, Design of Human-Integrated Systems**
- **ISyE 6413, Design and Analysis of Experiments**
- **ISyE 6414, Regression Analysis**
- **ISyE 6739, Basic Statistical Methods**
- **ISyE 6722, Managing Resources of Technological Firms**
- **ISyE 7210, Real-Time Interactive Simulations**

### Part 3 (Electives) From MANAGEMENT OF TECHNOLOGY
- **MGT 6056, Electronic Commerce**
- **MGT 6326, Collaborative Product Development**
- **MGT 6772, Managing Resources of the Technological Firm**
- **MGT 8803, Special Topics Software Project Management**

### Part 3 (Electives) From MUSIC
- **MUSI 6001, Music Perception and Cognition**
- **MUSI 6003, Music Technology History and Repertoire**
- **MUSI 6004, Integrating Music Multimedia**

## Proposed Curriculum

- **MUSI 6001, Music Perception and Cognition**
- **MUSI 6003, Music Technology History and Repertoire**
- **MUSI 6004, Integrating Music Multimedia**

### Part 3 (Electives) From Industrial Design
- **ID 6214 Strategic Design Language**
- **ID 6401 Visualizing Interaction**
- **ID 6515 Interface Prototyping**
- **ID 6271 Healthcare Design of the Future**
- **ID 6763 Design of Interactive Environments**

### Part 3 (Electives) From INDUSTRIAL AND SYSTEMS ENGINEERING
- **ISyE 6205, Cognitive Engineering**
- **ISyE 6215, Models in Human-Machine Systems**
- **ISyE 6231, Design of Human-Integrated Systems**
- **ISyE 6413, Design and Analysis of Experiments**
- **ISyE 6414, Regression Analysis**
- **ISyE 6739, Basic Statistical Methods**
- **ISyE 6722, Managing Resources of Technological Firms**
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### Part 3 (Electives) From MANAGEMENT OF TECHNOLOGY
- **MGT 6056, Electronic Commerce**
- **MGT 6326, Collaborative Product Development**
- **MGT 6772, Managing Resources of the Technological Firm**
- **MGT 8803, Special Topics Software Project Management**
## Existing Curriculum

### From MUSIC
- MUSI 6001, Music Perception and Cognition
- MUSI 6003, Music Technology History and Repertoire
- MUSI 6004, Integrating Music Multimedia

### Part 3 (Electives)
#### From MUSIC
- MUSI 6301, Music Interface Design
- MUSI 6303, Network Music
- MUSI 7100, Music Technology Research Lab

### Part 3 (Electives)
#### From Public Policy
- PUBP 6111, The Internet & Public Policy
- PUBP 6401, Science, Technology, and Public Policy

### Seminars
These seminars may be used to fill out your schedule if you are required to carry a full course load (12 hours), but they cannot be used for credit toward a degree. All are 1 credit hour.
- CS/LCC/PSYC 6753, HCI – Professional Prep & Practice
- CS 8001-AHS, Aware Home Seminar
- CS 8001-ELC, Electronic Learning Communities Seminar
- CS 8001-GVU, GVU Brown Bag
- CS 8001-INF, Information Security Seminar
- CS 8001-RIM, Robotics and Intelligent Machines Seminar
- CS 8001-SYS, Center for Experimental Research in Computing Systems (CERCS) Seminar

## Proposed Curriculum

### Specialization: 6 HOURS for Digital Media Specialization
Each student should complete this requirement, under the supervision of a faculty member, during the last two semesters of their program. Students must submit a project proposal and final report and present their work to the three school faculty coordinators.

### Part 3 (Electives)
#### From MUSIC
- MUSI 6301, Music Interface Design
- MUSI 6303, Network Music
- MUSI 7100, Music Technology Research Lab

### Part 3 (Electives)
#### From Public Policy
- PUBP 6111, The Internet & Public Policy
- PUBP 6401, Science, Technology, and Public Policy

### Seminars
These seminars may be used to fill out your schedule if you are required to carry a full course load (12 hours), but they cannot be used for credit toward a degree. All are 1 credit hour.
- CS/LCC/PSYC 6753, HCI – Professional Prep & Practice
- CS 8001-AHS, Aware Home Seminar
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- CS 8001-GVU, GVU Brown Bag
- CS 8001-INF, Information Security Seminar
- CS 8001-RIM, Robotics and Intelligent Machines Seminar
- CS 8001-SYS, Center for Experimental Research in Computing Systems (CERCS) Seminar

## PART 4

**PROJECT (4 HOURS for Computer Science & Psychology)**
## Existing Curriculum

**PROJECT (4 HOURS for Computer Science & Psychology Specialization; 6 HOURS for Digital Media & Industrial Design Specialization)**

Each student should complete this requirement, under the supervision of a faculty member, during the last two semesters of their program. Students must submit a project proposal and final report and present their work to the three school faculty coordinators and other MS-HCI students late during the semester of graduation (as described in the MS HCI Project Requirements document).

Quite a few students work as graduate research assistants or as corporate interns as part of their master’s project; all students are expected to do a summer internship between their second and third semesters.

The project must be conducted over at least two semesters. Students should register their project hours with a specific professor using Special Problems course numbers in CS, PSYC, or LMC:

- CS 8902, Special Problems (repeatable, variable credit hours)
- PSYC 8903, Special Problems in HCI (repeatable, variable credit hours)
- LMC 6800, Master’s Project (repeatable, variable credit hours)

## Proposed Curriculum

**PART 4**

**PROJECT (4 HOURS for Computer Science & Psychology Specialization; 6 HOURS for Digital Media & Industrial Design Specialization)**

and other MS-HCI students late during the semester of graduation (as described in the MS HCI Project Requirements document).

Quite a few students work as graduate research assistants or as corporate interns as part of their master’s project; all students are expected to do a summer internship between their second and third semesters.

The project must be conducted over at least two semesters. Students should register their project hours with a specific professor using Special Problems course numbers in CS, PSYC, LMC or ID:

- CS 8902, Special Problems (repeatable, variable credit hours)
- PSYC 8903, Special Problems in HCI (repeatable, variable credit hours)
- LMC 6800, Master’s Project (repeatable, variable credit hours)
- ID 6400, Master’s Project (repeatable, variable credit hours)
## Proposal for Modifications to the MS HCI-ID (Master of Science in Human Computer Interaction)

**Comparison of Overall Existing Program Structure to Overall Proposed Program Structure**

<table>
<thead>
<tr>
<th>Existing Curriculum</th>
<th>Proposed Curriculum</th>
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</table>
## Appendix 2

### Proposal for Modifications to the MS HCI-ID (Master of Science in Human Computer Interaction)

**Comparison of Example of Existing Curriculum to Example of Proposed Curriculum**

<table>
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<tr>
<th></th>
<th>Existing Curriculum</th>
<th>Proposed Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computing Specialization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fall Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC 6023, Psychological Research Methods for HCI</td>
<td>4 cr</td>
<td>PSYC 6023, Psychological Research Methods for HCI</td>
</tr>
<tr>
<td>PSYC 6031, Eng. Psychology Analysis Techniques</td>
<td>2 cr</td>
<td>PSYC 6031, Eng. Psychology Analysis Techniques</td>
</tr>
<tr>
<td>CS 8001, Special Topics HCI</td>
<td>1 cr</td>
<td>CS 8001, Special Topics HCI</td>
</tr>
<tr>
<td>CS 8001, GVU Seminar</td>
<td>1 cr</td>
<td>CS 8001, GVU Seminar</td>
</tr>
<tr>
<td>CS 8001, Aware Home Seminar</td>
<td>1 cr</td>
<td>CS 8001, Aware Home Seminar</td>
</tr>
<tr>
<td>CS 7450, Information Visualization</td>
<td>3 cr</td>
<td>CS 7450, Information Visualization</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12 cr</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Spring Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 6750, Human Computer Interaction</td>
<td>3 cr</td>
<td>CS 6750, Human Computer Interaction</td>
</tr>
<tr>
<td>CS 6470, Design of Online Communities</td>
<td>3 cr</td>
<td>CS 6470, Design of Online Communities</td>
</tr>
<tr>
<td>PSYC 6011, Cognitive Psychology</td>
<td>3 cr</td>
<td>PSYC 6011, Cognitive Psychology</td>
</tr>
<tr>
<td>CS 8903, Special Problems</td>
<td>3 cr</td>
<td>CS 8903, Special Problems</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>12 cr</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Fall Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 8902, Master’s Project</td>
<td>2 cr</td>
<td>CS 8902, Master’s Project</td>
</tr>
<tr>
<td>CS 6470, Principles of User Interface Software</td>
<td>3 cr</td>
<td>CS 6470, Principles of User Interface Software</td>
</tr>
<tr>
<td>LCC 6310, The Computer as an Expressive Medium</td>
<td>3 cr</td>
<td>LCC 6310, The Computer as an Expressive Medium</td>
</tr>
<tr>
<td>CS 8801, Special Topics in HCI</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>9 cr</strong></td>
<td><strong>Total</strong></td>
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<tr>
<td><strong>Spring Semester</strong></td>
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<td>CS 8902, Master’s Project</td>
<td>2 cr</td>
<td>CS 8902, Master’s Project</td>
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<td>LCC 6650, Project Studio</td>
<td>3 cr</td>
<td>LCC 6650, Project Studio</td>
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<td>MUSI 6301, Music Interface Design</td>
<td>3 cr</td>
<td>MUSI 6301, Music Interface Design</td>
</tr>
<tr>
<td>PSYC 6022, Psychological Statistics for HCI</td>
<td>4 cr</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>12 cr</strong></td>
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### Digital Media Specialization

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12 cr
## Existing Curriculum

**industrial Design Specialization**

*Does not exist in current curriculum*

## Proposed Curriculum

### Industrial Design Specialization

#### Fall Semester

- PSYC 6023, Psychological Research Methods for HCI 4 cr
- PSYC 6031, Eng. Psychology Analysis Techniques 2 cr
- CS/LCC/PSYC 6753, HCl – Professional Preparation and Practice 2 cr
- CS 8001, Aware Home Seminar 1 cr
- ID 6100, Intro to Grad Studies 3 cr

**Total: 12 cr**

#### Spring Semester

- CS 6750, Human Computer Interaction 3 cr
- ID 6101, Human-Centered Design 3 cr
- ID 6510, Design for Interaction 3 cr
- ID 6401, Visualizing Interaction 3 cr

**Total: 12 cr**

#### Fall Semester

- ID 6400, Master’s Project/Thesis 3 cr
- LCC 6313, Principles of Interactive Design 3 cr
- ID 6215, Service Design 3 cr
- CS 8903, Special Problems 2 cr
- CS 8801, Special Topics in HCI 1 cr

**Total: 12 cr**

#### Spring Semester

- ID 6400 Master’s Project/Thesis 3 cr
- ID 6515, Interface Prototyping 3 cr
- LCC 6650, Project Studio 3 cr
- PSYC 6033/6034/6035, Displays/Controls/Cognitive Science 3 cr

**Total: 12 cr**
New Courses - Approved
ID 6215: Service Design 3-0-3
ID 6271: Healthcare Design of the Future 3-0-3
ID 6401: Visualizing Interaction 3-0-3
ID 6420: Advanced Sketching 3-0-3
ID 6510: Design for Interaction 3-0-3
ID 6515: Interface Prototyping 3-0-3

Petitions

1. A motion was made to approve recommendations from the Petitions Subcommittee in the following areas. The motion was seconded and approved.

The following Petitions were reviewed by the Graduate Petitions Subcommittee. (All approved except where noted.)

The following petitions were reviewed administratively by the Registrar’s office. (All approved except where noted)

14- Full Graduate Standing
2- Readmit after first drop for the Summer 2013 term
1- Readmit after second drop for the Summer 2013 term (1 Denied)
3- Register late for course
1- Two-year rule waiver

Adjourned,

Reta Pikowsky
Registrar