

**Georgia Institute of Technology
Graduate Curriculum Committee**

Minutes

January 20, 2011

Present: Babensee (BME), Pikowsky (Registrar), Storici (BIO), Clarke (CoM), Flowers (ARCH), Mazalek (LCC), Silva (ECON), Corso (PSYC), Ferri (ECE), Mark (CoC), Rosen (ME), Neitzel (ME), Butera (ECE), Chordia (CoA), Goldsman (ISYE), Singhal (MGT), Potts (Grad Studies)

Visitors: Laros (Registrar), Howson (Registrar), Paraska (VPFAD), Lohmann (VPFAD), White (CoC), Jordan (BIOL), Kubanek (BIOL), Bennett (MGT), Berthelot (GTL), Kirkland (TI), Llewellyn (CETL), Schmidt-Krey (BIOL), Blackwell (CRP), Stiffl (CRP), Hicks (PUBP), Basole (TI), Narasimhan (MGT), Scott (MGT), Rouse (TI)

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.

1. A motion was made to approve a request from the School of Mechanical Engineering for two External Dual Degrees. The motion was seconded and approved.

A key element of the GT Lorraine academic mission is to serve as the platform for engineering education in Europe and continents in need of developing engineers who may work and conduct research in areas with high demand of engineering skills and knowledge. GT Lorraine seeks out educational partners whose curricula matches the rigor of Georgia Tech's and also whose students have demonstrated a high level of academic achievement. Below are listed two new external dual degree programs.

External Dual Degrees:

Master of Science in Mechanical Engineering as a Dual Degree Program with the Grenoble Institute of Technology (GRENOBLE INP PHELMA)

This Dual degree program will be offered on three campuses: Grenoble INP Phelma in Grenoble (France), GT Lorraine in Metz (France), and GT Atlanta in Georgia (USA).

The GT MSME degree is a 30-hour program. For GTL partner students, the program hours are 31 hours which include a one-hour (*) Graduate Seminar:

REQUIREMENT	HOURS	COMMENTS
Coherent Major Area	21	All course work in the Coherent Major and Minor Areas must be from the College of Computing, Science, and/or Engineering. The minor will not appear on transcripts or degree documentation.
Coherent Minor Area	6	
Mathematics	3	
(*) Graduate Seminar	1	For GTL partner students only
Total hours required:	30/31	

Students enrolled in this Dual-degree program must fulfill the requirements that have been approved by the governing faculty bodies of Georgia Tech and as stated in the GT General Catalog as well as the School of Mechanical Engineering (ME) information in order to receive academic credit for coursework completed at GT Atlanta and GT Lorraine.

The Grenoble INP Phelma standards apply with regard to the award of academic credit toward the award of the Diplôme d'Ingénieur or Master degree. The faculty curriculum coordinators of the ME Graduate Office review and verify coursework and Grenoble INP Phelma student transcripts when determining transfer of credit toward the GT MS-ME degree.

The curriculum study schedule for Grenoble INP Phelma students requires 20 months to complete as follows:

- **Fall Semester** Year N: Grenoble INP Phelma students admitted to GT and attend courses at Grenoble INP Phelma to satisfy the upper-level (master equivalent) requirements of the Diplôme d'Ingénieur. *(Six of these hours completed will be considered for transfer of credit toward GT MS-ME degree.)*
- **Spring Semester** Year N+1: Grenoble INP Phelma students study at the GT Lorraine campus as full-time students taking courses for the GT MS-ME program. *(Complete 12 GT MS-ME hours.)*
- **Summer – Fall** Year N+1: Grenoble INP Phelma students complete the industrial internship required for award of the Diplôme d'Ingénieur. *(None of these hours are considered for transfer of credit toward GT MS-ME degree.)*
- **Spring Semester** Year N+2: Grenoble INP Phelma study at the Georgia Tech Atlanta campus to complete their academic curriculum and graduate with the GT MS-ME degree. *(Complete 12 hrs toward GT MS-ME degree.)*

Table 1: Study Schedule for Grenoble INP Phelma Students

Fall Year N	Spring Year N+1	Summer – Fall Year N+1	Spring Year N+2
Grenoble INP Phelma	GT Lorraine	Industrial internship	GT Atlanta
6 SCH for transfer	12 SCH	0 SCH	12 SCH

The curriculum study schedule for Georgia Tech students requires 24 months to complete as follows:

- **Fall Semester** Year N: Georgia Tech students study at the GT Lorraine campus as full-time students taking courses for the GT MS-ME program. *(Complete 12 GT MS-ME hours.)*
- **Spring Semester** Year N+1: Georgia Tech students study at the GT Lorraine campus as full-time students taking courses for the GT MS-ME program. *(Complete 12 GT MS-ME hours.)*
- **Summer** Year N+1: Georgia Tech students will be invited to do an industrial internship *(None of these hours are considered for transfer of credit toward GT MS-ME degree.)*
- **Fall Semester** Year N+1: Georgia Tech students study at the Grenoble INP Phelma campus to complete their academic curriculum and graduate with the GT MS-ME degree. *(6 hrs transferred toward the GT MS-ME degree.)*
- **Spring & Summer Semester** Year N+2: Georgia Tech students complete the industrial or research internship required for award of the Master degree. *(None of these hours are considered for transfer of credit toward GT MS-ME degree.)*

Table 2: Study Schedule for Georgia Tech Students

Fall Year N	Spring Year N+1	Fall Year N+1	Spring Year N+2
GT Lorraine	GT Lorraine	Grenoble INP Phelma	Grenoble INP Phelma
12 SCH	12 SCH	Full-time 6 SCH for transfer	Full-time

External Dual Degree:

Master of Science in Mechanical Engineering as a Dual Degree Program with the Grenoble Institute of Technology (GRENOBLE INP ENSE3)

This Dual degree program will be offered on three campuses: Grenoble INP Ense³ in Grenoble (France), GT Lorraine in Metz (France), and GT Atlanta in Georgia (USA).

The GT MSME degree is a 30-hour program. For the partner institution’s students, a one-hour (*) Graduate Seminar is included:

REQUIREMENT	HOURS	COMMENTS
Coherent Major Area	21	All course work in the Coherent Major and Minor Areas must be from the College of Computing, Science, and/or Engineering. The minor will not appear on transcripts or degree documentation.
Coherent Minor Area	6	
Mathematics	3	
(*) Graduate Seminar	1	For partner institution students
Total hours required:	30/31	

Students enrolled in this dual-degree program must fulfill the requirements that have been approved by the governing faculty bodies of Georgia Tech and as stated in the GT General Catalog as well as the Woodruff School of Mechanical Engineering information in order to receive academic credit for coursework completed at GT Atlanta and GT Lorraine.

The Grenoble INP Ense³ standards apply with regard to the award of academic credit toward the award of the Diplôme d'Ingénieur or master’s degree. The faculty curriculum coordinators of the ME Graduate Office review and verify coursework and Grenoble INP Ense³ student transcripts when determining transfer of credit toward the GT MS-ME degree.

The curriculum study schedule for Grenoble INP Ense³ students requires 20 months to complete as follows:

- **Fall Semester** Year N: Grenoble INP Ense³ students admitted to GT and attend courses at Grenoble INP Ense³ to satisfy the upper-level (master equivalent) requirements of the Diplôme d'Ingénieur. *(Six of these hours completed will be considered for transfer of credit toward GT MS-ME degree.)*
- **Spring Semester** Year N+1: Grenoble INP Ense³ students study at the GT Lorraine campus as full-time students taking courses for the GT MS-ME program. *(Complete 12 GT MS-ME hours.)*
- **Summer – Fall** Year N+1: Grenoble INP Ense³ students complete the industrial internship required for award of the Diplôme d'Ingénieur. *(None of these hours are considered for transfer of credit toward GT MS-ME degree.)*

- **Spring Semester** Year N+2: Grenoble INP Ense³ study at the Georgia Tech Atlanta campus to complete their academic curriculum and graduate with the GT MS-ME degree. (*Complete 12 hrs toward GT MS-ME degree.*)

Table 1: Study Schedule for Grenoble INP ENSE3 Students

Fall Year N Grenoble INP Ense ³	Spring Year N+1 GT Lorraine	Summer – Fall Year N+1 Industrial internship	Spring Year N+2 GT Atlanta
6 SCH for transfer	12 SCH	0 SCH	12 SCH

The curriculum study schedule for Georgia Tech students requires 24 months to complete as follows:

- **Fall Semester** Year N: Georgia Tech students study at the GT Lorraine campus as full-time students taking courses for the GT MS-ME program. (*Complete 12 GT MS-ME hours.*)
- **Spring Semester** Year N+1: Georgia Tech students study at the GT Lorraine campus as full-time students taking courses for the GT MS-ME program. (*Complete 12 GT MS-ME hours.*)
- **Summer** Year N+1: Georgia Tech students will be invited to do an industrial internship (*None of these hours are considered for transfer of credit toward GT MS-ME degree.*)
- **Fall Semester** Year N+1: Georgia Tech students study at the Grenoble INP Ense³ campus to complete their academic curriculum and graduate with the GT MS-ME degree. (*6 hrs transferred toward the GT MS-ME degree.*)
- **Spring and Summer Semester** Year N+2: Georgia Tech students complete the industrial or research internship required for award of the Master degree. (None of these hours are considered for transfer of credit toward GT MS-ME degree.)

Table 2: Study Schedule for Georgia Tech Students

Fall Year N GT Lorraine or GT Atlanta	Spring Year N+1 GT Lorraine or GT Atlanta	Fall Year N+1 Grenoble INP Ense ³	Spring Year N+2 Grenoble INP Ense ³
12 SCH	12 SCH	Full-time 6 SCH for transfer	Full-time

2. A motion was made to approve a request from the School of City and Regional Planning and the School of Public Policy for a dual degree. The motion was tabled after much in-depth discussion.

Dual Degree:

Dual Master of City and Regional Planning / Master of Science in Public Policy

Note: The Committee tabled this proposal until a scale can be developed to provide guidelines to an appropriate range of double-counted credit hours as a function of total credit hours required for the degree. At present, there is no guidance for how many credit hours may be double-counted for a dual degree and since GT MS degrees vary in the number of total credit hours required, a single statement will not suffice. The Committee will develop a scale that will be utilized in the evaluation of this proposal when it is next brought before the Committee.

3. A motion was made to approve a request from the College of Engineering for a new degree. The motion was seconded and approved.

New Degree:

Master of Science in Enterprise Transformation (Executive Program)

The curriculum was developed based on requirements obtained through a market survey and addresses the needs of industry. The course of study for the Master of Science in Enterprise Transformation (MSEENTR) includes a set of seventeen required courses totaling 30 credit hours. The instruction will be targeted to cohorts of students who are working professionals. As such, the delivery will be structured so that they can make the best progress with the highest quality of learning while still maintaining their job focus.

All of these courses will be **new** courses. Sixteen Lecture Courses, totaling 21 credit hours and 9 hours of Thesis are required.

FIRST YEAR - FALL	COURSE TYPE	COURSE HRS	LOCATION	MODALITY	TOTAL SEM HRS
Systems Thinking Principles	R	2	GT-ATL	CL	2
Enterprise Transformation Principles	R	2	GT-ATL	CL	2
Enterprise Modeling Fundamentals	R	1	GT-ATL	CL	1
					5
FIRST YEAR - SPRING	COURSE TYPE	COURSE HRS	LOCATION	MODALITY	TOTAL SEM HRS
Systems Thinking Applications	R	1	GT-ATL	CL	1
Enterprise Transformation Practices	R	1	GT-ATL	CL	1
Enterprise Modeling Practices	R	2	GT-ATL	CL	2
Value-Driven Transformation Concepts	R	1	GT-ATL	CL	1
					5
FIRST YEAR - SUMMER	COURSE TYPE	COURSE HRS	LOCATION	MODALITY	TOTAL SEM HRS
Value-Driven Transformation Strategy	R	2	GT-ATL	CL	2
Enterprise Strategy Analysis	R	1	GT-ATL	CL	1
Transformation Economics Principles	R	1	GT-ATL	CL	1
Fundamentals of Information Strategy & Mgt	R	1	GT-ATL	CL	1
					5
SECOND YEAR - FALL	COURSE TYPE	COURSE HRS	LOCATION	MODALITY	TOTAL SEM HRS
Enterprise Strategy Planning	R	2	GT-ATL	CL	2
Transformation Economics Methodology	R	1	GT-ATL	CL	1
Information System Implementation	R	1	GT-ATL	CL	1
Thesis	TH	1	GT-ATL	CL	1
					5

SECOND YEAR - SPRING	COURSE TYPE	COURSE HRS	LOCATION	MODALITY	TOTAL SEM HRS
Information System Leadership	R	1	GT-ATL	CL	1
Thesis	TH	4	GT-ATL	CL	4
					5
SECOND YEAR - SUMMER	COURSE TYPE	COURSE HRS	LOCATION	MODALITY	TOTAL SEM HRS
Transformation Economics	R	1	GT-ATL	CL	1
Investments					
Thesis	TH	4	GT-ATL	CL	4
					5
Total					30

New Courses:

ENTR 6001: Systems Thinking Principles	2-0-2
ENTR 6002: Systems Thinking Applications	1-0-1
ENTR 6011: Enterprise Transformation Principles	2-0-2
ENTR 6012: Enterprise Transformation Practices	1-0-1
ENTR 6021: Enterprise Modeling Fundamentals	1-0-1
ENTR 6022: Enterprise Modeling Practices	2-0-2
ENTR 6031: Value-Driven Transformation Concepts	1-0-1
ENTR 6032: Value-Driven Transformation Strategy	2-0-2
ENTR 6041: Enterprise Strategy Analysis	1-0-1
ENTR 6042: Enterprise Strategy Planning	2-0-2
ENTR 6051: Transformation Economics Principles	1-0-1
ENTR 6052: Transformation Economics Methodology	1-0-1
ENTR 6053: Transformation Economics Investments	1-0-1
ENTR 6061: Fundamentals of Information Strategy & Mgt	1-0-1
ENTR 6062: Information System Implementation	1-0-1
ENTR 6063: Information System Leadership	1-0-1
ENTR 7000: Thesis (variable hour/repeatable course)	1 to 21 – 0 – 1 to 21

The above new courses, with the exception of ENTR 7000, will be coded at catalog level as Letter Grade and Pass/Fail basis so that the department can decide how they wish to offer them. ENTR 7000 Thesis will be coded as Pass/Fail only.

- A motion was made by the College of Management for a degree modification. The motion was tabled.

Degree Modification:

Master of Business Administration – 39-hour Option for internal GT use

Note: The Committee discussed this proposal in depth and came to the conclusion that there are too many aspects of it that are unclear and that need additional research and consideration. The Committee presented the College of Management with several questions that need further investigation before the proposal can be resubmitted and put forward for a vote. In particular, was

the need to from a pedagogical point of view, to explain the body of knowledge needed for an MBA and how this is satisfied by the 39 hour MBA as compared to the standard 54 hour MBA.

5. A motion was made by the School of Biology for new courses and deactivation of courses. The motion was seconded and approved.

New Courses:

BIOL 6150: Genomics Appl Bioinf	2-3-3
BIOL 6478: Methods Molec Biophysics	3-0-3
BIOL 6480: Evolution-Develop Biol	2-0-2
BIOL 7210: Computational Genomics	3-0-3

(Note: It was suggested that the transcript titles be reviewed on the NCPs to make them more descriptive when possible, given the limited number of characters.)

Deactivate Courses:

BIOL 6108
BIOL 6612
BIOL 6621
BIOL 6764
BIOL 7670
BIOL 8101

6. A motion was made by the College of Computing for a degree modification. The motion was seconded and approved. In addition, an informational item was presented about a Computer Science departmental requirement and no concerns were expressed. The new CS courses and course modification requests to be presented were tabled until the next meeting because of time factors.

Degree Modifications:

Master of Science in Computer Science

The current MSCS has been in existence since 1991, around the time of the founding of the College of Computing. While it has served our graduate program well, the curriculum needs to be updated to reflect the growing breadth of the both the field as a whole and the College in particular. At its inception, the core requirements were designed to reflect both the research strengths of the College and the center of mass of computer science as a field. In the intervening two decades, the field of computer science has broadened significantly, as reflected by our faculty's research interests and the creation of three Schools within the College. As a result, our current core does not sufficiently reflect the state of the subfields of computing, and the specialization requirement does not sufficiently encourage depth.

We propose to reflect the changes in the field by changing the MSCS requirements so that each specialization defines its own core requirements. Each specialization must consist of 12-15 hours, each one optionally split between core and specialization electives.

The course, project, and thesis options will remain as before with the following minor adjustments:

- a) All grades for core and specialization courses must be B or better.
- b) Under the Course Option, the Minimum CoC Course Credit Hours will increase from 24 to 30.

- c) A maximum of 6 hours may be taken at the 4000-level and/or outside of the CoC
- d) A maximum of 3 hours of special problems may be taken, and these must be within the CoC.

Adjustments b) - d) reflect that the CoC now offers many more courses at the graduate level than when the program was first introduced.

The requirement for the computer science core and specializations will change as follows:

Specializations

All MSCS students, regardless of program option, are required to complete the requirements of **at least one specialization**. As requirements for different specializations may overlap, students will be encouraged to satisfy multiple specializations. Each specialization that is satisfied will be reflected in the transcript and on the diploma.

Note: Further discussion will need to occur with the Registrar’s Office on the number of specializations (concentrations) that will be involved for each student. In addition, the diploma is an “Institute” record or document and any changes to it would have to occur with the input of the Provost’s Office, the President’s Office, and Communication and Marketing. The Registrar’s Office will pursue discussions with these offices about what might be possible. Specializations (concentrations) on the transcript are now possible since the field in Banner is in use for the first time. However, there may be technical limitations on how many may be recorded for each student.

There are thirteen proposed specializations:

computational perception and robotics	high performance computing
machine learning	networking
interactive intelligence	databases and software engineering
modeling and simulation	human computer interaction
scientific computing	architecture
computer graphics	systems
social computing	

The MSCS program will continue to evolve, as new classes and specializations may be needed, and minor adjustments to the requirements may be appropriate. A MSCS Committee consisting of a faculty member from each specialization area will collect and discuss requests for changes to the

program and will make recommendations to the College faculty who will vote on the recommendations. We propose that approved courses for each specialization be listed on the program website rather than in the General Catalog, and that approval by the MSCS Committee be sufficient for modifying the approved courses. Modifications other than approved courses would require the approval of the Institute Graduate Committee and Academic Senate.

Note: This aspect of the proposal generated some discussion in terms of to what extent these changes can occur within the College and not constitute a “degree modification”. The Threads Curriculum at the undergraduate level has been rather fluid since its inception, but changes are reported to the Undergraduate Curriculum Committee. At the conclusion of this discussion, it was determined that although the College will be allowed to alter courses on the lists for the specializations, they must notify the Graduate Committee of those changes as they occur and the Graduate Committee reserves the right to declare the changes a “degree modification” and require additional approval steps as normally required.

MSCS Specialization in Machine Learning (ML):

Core courses (6 hours):

Algorithms: Pick 1 of

- CS 6505 Computability, Algorithms, and Complexity
- CS 6520 Computational Complexity Theory
- CS 6550 Design and Analysis of Algorithms
- CS 7520 Approximation Algorithms
- CS7530 Randomized Algorithms
- CSE 6140 Computational Science and Engineering Algorithms

And, Pick 1 of

- CS 7641 Machine Learning
- CSE 6740 Computational Data Analysis: Foundations of Machine Learning and Data Mining.

Electives (6 hours): Pick 2 of

- CS 7641 Machine Learning
- CSE 6740 Computational Data Analysis: Foundations of Machine Learning and Data Mining.
- CSE 6240 Web Search and Text Mining
- CS 7616 Pattern Recognition
- CS 8803 Machine Learning Theory
- CS 8803 ML for Finance
- CSE 8803 DVA Data and Visual Analytics

[Note that students must take CS 7641 or CSE 6740 to satisfy the core and can then take the other if they choose to apply toward the specialization electives]

MSCS Specialization in Computational Perception and Robotics (CPR)

Core courses (6 hours):

Algorithms: Pick 1 of

- CS 6505 Computability, Algorithms, and Complexity
- CS 6520 Computational Complexity Theory
- CS 6550 Design and Analysis of Algorithms
- CS 7520 Approximation Algorithms
- CS7530 Randomized Algorithms
- CSE 6140 Computational Science and Engineering Algorithms

And, pick 1 of

- CS 6601 Artificial Intelligence
- CS 7641 Machine Learning

Electives (9 hours):

Pick 3 courses from Perception and Robotics, with at least one course from each

Perception

- CS 7495 Computer Vision
- CS 7636 Computational Perception
- CS 8803 3D Reconstruction and Mapping
- CS 8803 Multiview Geometry in Computer Vision
- CS 8803 CP. Advanced Computational Photography

Robotics

- CS 7630 Autonomous Robotics
- CS 7631 Multi-Robot Systems
- CS 7633 Human-Robot Interaction
- CS 7649 Robot Intelligence: Planning

MSCS Specialization in Computer Graphics

Core Courses (6 hours):

- CS 6505 (Algorithms)
- CS 6490 (Graphics)

Electives (6 hours): Pick two from:

- CS 6485 Visual Methods in Science and Engineering
- CS 6764 Geometric Modeling
- CS 7490 Advanced Image Synthesis
- CS 7491 3D Complexity
- CS 7495 Computer Vision
- CS 7496 Animation
- CS 7497 Virtual Reality
- CS 6457 Video Game Design
- CS 8803 Simulation of Biological Systems

MSCS Specialization in Interactive Intelligence

[Prerequisite: An undergraduate or above algorithms/computational thinking course.]

Core Courses and Electives (12 hours): Take a total of 4 courses from 2 of these areas:

Intelligence:

- CS 6601 Artificial Intelligence
- CS 7620 Case-based Reasoning
- CS 7637 Knowledge Based AI
- CS 7641 Machine Learning

Interaction:

- CS 6440 Educational Technology
- CS 6460 Educational Technology
- CS 6465 Computational Journalism
- CS 7650 Natural Language Understanding
- CS 7634 AI Storytelling for Virtual Worlds
- CS 8803 Advanced Game AI

Cognition:

- CS 4752 Philosophical Issues in Computation
- CS 4793 Perspectives in Cognitive Science
- CS 6795 Introduction to Cognitive Science
- CS 8893 Special Topics in Cognitive Science
- CS 7610 Modeling and Design
- CS 7697 Cognitive Models of Science and Technology

MSCS Specialization in Human-Computer Interaction (HCI):

Core Courses (6 hours)

- CS 6750: HCI
- CS 6456: Principles UI Software

Electives (9 hours)

Pick 3 courses from the two sub-areas below, including at least 1 from each sub-area:

Sub-area: Design and evaluation concepts

- CS 6010: Principles of Design
- CS 6320: Requirements Analysis
- CS 6455: UI Design and Evaluation
- CS 6460: Educational Technology: Foundations
- CS 6465: Computational Journalism
- CS 6470: Online Communities
- CS 6795: Intro Cognitive Science
- CS 7465: Educational technology: Design and Evaluation
- CS 7467: Comparative Collaborative Learning
- CS 7790: Cognitive Modeling

Sub-area: Interactive technology

- CS 6763: Design of Environments
- CS 6770: Mixed Reality Design
- CS 7450: Information Visualization
- CS 7460: Collaborative Computing
- CS 7470: Mobile & Ubiquitous Computing

MSCS Specialization in Networking

Core Courses: (6 hours)

CS6505 Computability and Algorithms

CS6250 Computer Networks

Electives: (9 hours)

Pick 1 of:

CS 6210 Advanced Operating Systems

CS 6290 High Performance Computer Architecture

Pick 2 of:

CS 6262 Network Security

CS 6675 Adv. Internet Computing Systems and Application Development

CS 7260 Internet Architecture and Protocols

CS 7270 Internet Services and Applications

MSCS Specialization in Databases and Software Engineering (DB+SE)

Core Courses: (6 hours)

CS6505 Computability and Algorithms

Pick 1 of:

CS8803-GOS Graduate Introduction to Operating Systems

CS6210 Advanced Operating Systems

CS6241 Compiler Design

CS6290 High Performance Computer Architecture

Electives (9 hours): Pick 3 of:

CS 6300 Software Engineering Processes,

CS 6310 Software Architecture and Design,

CS 6422 Database System Implementation,

CS 6675 Advanced Internet Computing Systems and Applications.

MSCS Specialization in Systems

Core Courses (6 hrs):

CS 6210 Advanced OS

CS 6505 Computability and Algorithms

Electives (9 hrs):

Pick 1 of

CS 6238 Secure Computer Systems

CS 6241 Compiler Design

CS 6250 Computer Networks

CS 6290 High Performance Computer Architecture

And, Pick 2 of

CS 6235 Embedded Systems/ Real-time Systems

CS 6365 Introduction to Enterprise Computing

CS 6675 Advanced Internet Computing Systems and Application Development

CS 7210 Distributed Systems

MSCS Specialization in Architecture:

Core Courses (6 hours):

CS6241 Compiler Design
CS6290 High Performance Computer Architecture

Electives (9 hours):

CS 7290 Advanced Microarchitecture.

And, pick 2 of:

CS 7292 Reliable Secure Computer Architecture
CS 6210 Advanced Operating Systems
ECE 6101 Parallel and Distributed Computer Architecture
ECE 6130 Advanced VLSI Systems

MSCS Specialization in High Performance Computing (HPC):

Core Courses: (6 hours)

CSE 6220 High Performance Computing
CSE 6140 Computational Science and Engineering Algorithms

Elective Courses: (9 hours) Pick 3 of:

CSE 6221 Multicore Computing: Concurrency and Parallelism on the Desktop
CSE/CS 6230 High Performance Parallel Computing: Tools and Applications
CSE/CS 6236 Parallel and Distributed Simulation
CS6290 High-Performance Computer Architecture
CS/CSE 8803PNA Parallel Numerical Algorithms
CSE 8803HPC Hot Topics in Parallel Computing

MSCS Specialization in Modeling and Simulations (M&S):

Core Courses (6 hours):

CSE 6730 Modeling and Simulation: Fundamentals & Implementation

Pick 1 of:

CSE 6220 High Performance Computing
MATH 6640 Introduction to Numerical Methods for PDEs
ISYE 6644 Simulation

Electives (9 hours): Pick 3 of:

CSE 6220 High Performance Computing
MATH 6640 Introduction to Numerical Methods for PDEs
ISYE 6644 Simulation
CSE/CS 6236 Parallel and Distributed Simulation
CSE/INTA 6742 Modeling, Simulation, and Military Gaming
CSE/Chem 8803QC Quantum Information, Computation, and Simulation

MSCS Specialization in Scientific Computing (SC):

Core Courses: (6 hours)

CSE/Math 6643 Numerical Linear Algebra

Pick 1 of:

CSE/Math 6644 Iterative Methods for Systems of Equations
MATH 6640 Introduction to Numerical Methods for PDEs

Electives: (9 hours) Pick 3 of:

CSE/Math 6644 Iterative Methods for Systems of Equations
CSE/CS 6230 High Performance Parallel Computing: Tools and Applications
CSE 6220 High Performance Computing
MATH 6640 Introduction to Numerical Methods for PDEs
CSE 6140 Computational Science and Engineering Algorithms
CS/CSE 8803PNA Parallel Numerical Algorithms

CSE 8803BME Algorithms for medical imaging and inverse problems
CSE 8803/Chem 6485 Computational Chemistry

MSCS Specialization in Social Computing:

Core Courses: (6 hours)

Pick 1 of:

CS 6465 Computational Journalismism
CS 6470 Design of Online Communities

Pick 1 of:

CS 6675 Advanced Internet Computing Systems and Application Development
CS 7270 Internet Systems and Services

Electives: (9 hours) Pick 3 more classes including additional classes from the above and:

CS 6250 Computer Networks
CS 6238 Secure Computer Systems
CS 6456 Principles of User Interface Software
CS 6505 Computability and Algorithms
CS 6750 Human-Computer Interaction
CS 7210 Distributed Systems
CS 7450 Information Visualization
CS 8893 Special Topics in Cognitive Science: Cognition and Culture

Informational Item related to all Doctoral Degrees in the College of Computer Science:

Addition of Teaching Apprenticeship Requirement for all College of Computing PhD students

Programs Affected:

DR-ROBO-CS
DR-HCC
DR-CSE-CS
DR-CS
DR-BINF-CS
DR-BIOE-CS
DR-ACO-CS

After an internal faculty review, the faculty of the College of Computing has approved the requirement of a teaching apprenticeship for all newly admitted PhD students in the College of Computing, effective Summer Semester 2011. In the case of the multi-unit PhD programs in which the college participates - Algorithmics, Combinatorics, and Optimization; Bioengineering; Bioinformatics; Computational Science and Engineering; and Robotics - the requirement would apply only to

students whose home college is the College of Computing. This is similar to the teaching-practicum requirement of the School of Mechanical Engineering. There is currently no such requirement in the College of Computing.

Students will benefit from the skills they develop in pedagogy, communication, and organization, regardless of whether they enter academic or industrial careers. The college will benefit by being able to develop a better process for assigning teaching assistantships and having a more predictable pool of available teaching assistants. The faculty are committed to mentoring students and have developed a seminar that will support their growth as teachers. This seminar will be offered every fall and spring, beginning in Fall 2011. We have consulted with the Center of Enhancement for Teaching and Learning on the design of this seminar, and we will encourage students to take CETL classes as appropriate.

Students would be required to spend two semesters as teaching apprentices. The first semester would be similar to the current teaching assistantship for a CS or CSE course, accompanied by a weekly, one-hour, pass/fail seminar to support the development of such skills as course planning and classroom management. Fulfillment of this first-semester requirement would be based on (a) successful participation in this seminar and (b) written confirmation by the supervising faculty member that the student had served successfully as a teaching assistant for the student's assigned class.

For the second semester, the student would again serve as a teaching assistant for a CS or CSE class while taking a one-hour seminar. This seminar would be more advanced, helping students prepare to be instructors of their own classes. The students would do more advanced work, such as preparing and delivering lectures for their assigned classes. Again, fulfillment of the requirement would be based on (a) successful participation in this seminar and (b) written confirmation by the supervising faculty member that the student had served successfully as a teaching assistant for the student's assigned class.

There will be no effect on existing requirements for any of the degree programs.

7. A motion was made to approve two parts of a request by the Center for the Teaching and Learning (CETL) for course modifications and to table the third part of the request. The motion was seconded and approved. See notes below for more detail.

Grade Mode Change for CETL 8801, 8802, and 8803

CETL 8801, 8802, and 8803 are the graduate special topics course numbers for the Center for the Enhancement of Teaching and Learning. We use these numbers to try out new courses before coming to the Curriculum Committee for approval of a new "permanent" course.

It was our intention when these courses were created to allow all grading modes (P/F, LG, and Audit) to allow for maximum flexibility with our new courses. However, it appears that the courses were originally approved without the Letter Grade option.

CETL's three requests are:

1. Approve a modification to each course's grading mode to be " P/F, LG, and Audit" for CETL 8801, 8802, and 8803. (Approved)
2. Approve modification to CETL 8803TL and CETL 8803CD specifically to allow letter grades. (Approved)
3. Allow CETL 8803 and CETK 8803CD to be used for degree requirements so that students may use as credit to a minor with approval of their departmental faculty. (Tabled)

Petitions

1. A motion was made to approval subcommittee decisions on petitions in the following areas. The motion was seconded and approved.

All were approved except where noted.

- 1- Use 15 undergraduate hours towards MS Degree
- 11- Term withdrawal
- 4- Change Grade mode (**3 Denied**)
- 1- Extension of time to complete thesis
- 1- Remove "W" from transcript
- 3- Selective withdrawal (**2 Denied**)
- 1- Enrollment Waiver
- 1- Graduate with GPA below 3.0 (School requirement)

The following petitions have been handled Administratively by the Registrar's office. All were approved except where noted.

- 1- Six-year rule waiver
- 1- Use excess Pass-Fail hours
- 1- Seven-year rule waiver
- 13- Change to Full Graduate standing
- 5- Readmit after first drop
- 1- Use MSE9000 as MSE7000 hours to meet MS degree requirements

2. A motion was made to deny a written appeal for a late retroactive withdrawal from Fall 2008. The motion was seconded and approved.
3. A motion was made to table a request for an exception to the graduate course option. The motion was seconded and approved.

Note: The Registrar will seek more information from the School on this petition and put it on the agenda for the next meeting.

Adjourned,

Reta Pikowsky
Registrar