Graduate Student Orientation

Department of Computer Science
The Volgenau School of Engineering

Professor Sanjeev Setia, Chair

Fall 2018

http://cs.gmu.edu

Presented by: Professor Alex Brodsky

Outline

- CS Department Overview
- Rules pertaining to all programs
- Masters Degree Programs
  - MS Computer Science
  - MS Information Systems
  - MS Information Security and Assurance
  - MS Software Engineering
- Graduate Certificate Programs
- Plan of Study Forms
- Miscellaneous Information
- Individual Advising

CS Department Overview

- The Computer Science Dept is located in the Nguyen Engineering Building (Room 4300, 4th floor)
- 50 full-time faculty members (41 tenure-track)
- Research expertise in almost all areas of computing
  - AI, Robotics, Software Engineering, Systems, Networks, Information Security, Data Mining, Databases, Computational Biology, Theoretical Computer Science, Graphics and Computer Game Technology, Computer Vision
  - CS had $8M+ in research expenditures in FY 2018
  - Mason was ranked 50th nationally in research expenditures in CS by NSF (FY 16)
- Two Undergraduate Degree Programs with 1500 students
  - BS in CS and BS in Applied CS
- Four MS programs with around 400 students
  - MS in CS, Software Engineering, Information Systems, Information Security & Assurance
- PhD in CS with around100 students, joint PhD in IT with VSE

Graduate Programs

- **Masters Programs (30 credit hours)**
  - MS Computer Science (MS-CS)
  - MS Information Systems (MS-IS)
  - MS Information Security & Assurance (MS-ISA)
  - MS Software Engineering (MS-SWE)
- **Doctoral Programs (72 credit hours)**
  - PhD in Computer Science
    - **Separate orientation on Friday, August 24**
    - **Director: Prof. Hakan Aydin (aydin@gmu.edu)**
  - PhD in IT (administered by the office of the Associate Dean for Research & Graduate Studies)
- **Graduate Certificate Programs (12 credit hours)**

Key Faculty for MS Programs

- **Directors** of MS Programs
  - **MS-CS Program**
    - **Professor Zoran Duric (zduric@cs.gmu.edu)**
  - **MS-IS Program**
    - **Professor Alex Brodsky (brodsky@gmu.edu)**
  - **MS-ISA Program**
    - **Professor Duminda Wijesekera (dwijesek@gmu.edu)**
  - **MS-SWE Program**
    - **Professor Jeff Offutt (offutt@gmu.edu)**
- Your academic advisor
  - Identified in your letter of admission

Rules Pertaining to all MS programs

- MS program consists of 10 courses (30 credit hours)
- To graduate, GPA must be 3.0 or higher (B average)
  - Maximum of two C grades allowed for MS degree
- **Students receiving two Fs or three unsatisfactory (C or F) grades are terminated from the program**
- **Students admitted provisionally must complete all courses that you are required to take before taking core curriculum courses**
- All MS programs have a thesis option (3-6 credit hours)

MS Computer Science

Professor Zoran Duric
Presented by Professor Jana Kosecka

- **Mission**
  - To combine a sound foundation in computer science with concentrated knowledge in the advanced areas.
- **Required Academic Background**
  - Discrete Math (Math 125)
  - Data Structures (CS 310)
  - Formal Methods and Models (CS 330)
  - Computer Architecture and Systems Programming (CS 367, CS 465)

MS Computer Science

- MS CS courses are divided into 5 areas (grouped by similarity):
  1. Theoretical CS
  2. Systems & Networks
  3. Programming Languages & Software Engineering
  4. Artificial Intelligence & Databases
  5. Visual Computing
- The list of courses and their respective areas are available at:

  http://cs.gmu.edu/programs/masters/cs/

MS Computer Science

- MS CS courses are classified as **basic** and **advanced**
- Some **basic** courses are designated as **core** courses in their respective areas
- Degree Requirements
  - **Core courses**: CS 583 (Analysis of Algorithms) from the "Theoretical CS" area and 2 additional core courses from 2 different areas must be completed with a grade of B- or better.
  - **At least five advanced courses** (15 credit hours)
  - **Breadth requirement**: Advanced courses must be taken from at least three different areas of CS
  - **CS requirement:** At least 6 courses (out of 10) must have CS prefix in course number and at least 2 must be advanced courses
    - NOTE: MS-CS students can take up to four SWE, ISA, or INFS courses

MS Computer Science – Provisional Admission

- Provisionally admitted students are required to take two courses in their first semester
  - CS 530 – Mathematical Foundations of Computer Science
  - CS 531 – Fundamentals of Systems Programming
- CS 530 and CS 531 count towards the MS CS degree
- You can test out of these courses by passing the associated test out exams

Foundation Courses – MS IS, MS ISA, MS SWE

- Ensure adequate background for graduate studies
- Protect students from poor performance in later courses
- Do not count for graduate credit
- Provide basic undergraduate CS knowledge you need for graduate program
- Must be completed with grade of B or better
- You may need to take up to 4 foundation courses, depending on your background
- You can test out of some or all of the foundation courses

Foundation Requirements for MS-IS, MS-ISA, MS-SWE

- INFS 501 Discrete and Logical Structures
  - Sometimes CS 530 is allowed instead - counts toward the program
- SWE 510 Object-Oriented Programming with Java
- INFS 515 Computer Organization
- INFS 519 Program Design and Data Structures

MS-Information Systems

Professor Alex Brodsky

- **Modern information systems** manage data, information and knowledge to support enterprise functions and decision making as well as human social activity over the Internet. Increasingly, these systems are distributed, collaborative, involve big data and hosted in the cloud.
- **Mission**: to allow students of diverse baccalaureate and professional backgrounds obtain a high-quality MS degree that
  - Provides students with the theoretical knowledge and hands-on project experience needed to analyze, design, build, deploy, maintain, manage and promote effective organizational use of modern information systems, and
  - Prepares students for technical or managerial careers in information systems in large and small organizations in both industry and government.

MS-Information Systems

- **Four required courses:**
  - INFS 612 – Principles/Practices of Communication Networks
  - CS 550 – Database Management
  - INFS 622 – Info Systems Analysis and Design
  - ISA 562 – Information Security Theory and Practice
- Note: Students taking the emphasis area and/or Graduate Certificate in Software Engineering should substitute SWE 620 for INFS 622 and also take SWE 621
- **Six elective courses:**
  - Grouped into emphasis areas

MS-IS Program Emphasis Areas

- MS-IS students take 6 electives from an emphasis area or may mix and match from different emphasis areas:
  - Database Management
  - Data Mining and Data Warehousing
  - Electronic Commerce
  - Software Engineering
  - Knowledge Management
  - Information Security and Assurance
- For more information: http://cs.gmu.edu/programs/masters/infs/

MS-ISA PROGRAM
Information Security and Assurance

Professor Duminda Wijesekera

- **Mission**: Focus on the technical and management aspects of information security and examine ways to provide secure information processing systems

- **Three required courses (9 credits):**
  - INFS 612 Principles/Practices of Communication Networks
  - ISA 562 Information Security Theory and Practice
  - ISA 656 Network Security

- Students have to pick one of **two concentrations(15 credits)**
  - **Networks and Systems Security**
  - **Applied Cyber-Security**

- **Two additional elective courses (6 credits)**
  - From pre-approved list

MS-ISA program cont'd

- Two concentrations
  - Not optional – students have to pick one
- **Networks & Systems Security concentration**
  - **Required course** ISA 564 – Security Laboratory
  - **Four additional elective courses** from a list of courses
- **Applied Cyber-Security concentration**
  - **Five elective courses** from a list of courses
- For more information:
  http://cs.gmu.edu/programs/masters/isa/

MS–SWE Program
Software Engineering

Professor Jeff Offutt
Presented by Professor Paul Ammann

- **Mission**: To teach students to become leaders in engineering high quality, large scale, computing solutions to real life problems.
- **Four required courses:**
  - SWE 619 Object-Oriented Software Specification and Construction
  - SWE 621 Software Modeling and Architectural Design
  - SWE 632 User Interface Design and Development
  - SWE 637 Software Testing
- **Software engineering-related courses — 3 Courses**
- **Electives — 3 Courses**
  - See approved list of electives

MS–SWE Program
Software engineering-related

- 3 Courses - (9 Credits) from a list of SWE-related courses
  - All SWE courses 600 and above
  - 5 CS courses
  - 3 ISA courses
  - 1 INFS course
  - 1 OR course
- For more information: https://cs.gmu.edu/prospective-students/ms-programs/ms-in-software-engineering/

Graduate Certificate Programs

- A Graduate Certificate program consists of four or five courses that provide specialized knowledge.
- **Students may obtain one graduate certificate in conjunction with their MS studies.**
- Average grade of B or better (Only 1 C grade allowed)
- Graduate Certificates offered by the CS Department:
  - Information Security and Assurance
  - Software Engineering
  - Web-based Software Engineering
- For more information: http://cs.gmu.edu/programs/certificates/

MS Students Transferring from Non-degree Status

Please note the following:

- **Only 12 hours of credit can be transferred into degree status**
  - **There will be no exceptions to this rule.**
- Classes must be successfully completed with a grade of B or better to be transferred
- Simply complete a masters graduate application and submit it to Graduate Admissions

MS Students Transferring from Provisional Status

- Transfer from Provisional status to Degree Status
  - **Completion** of all provisional requirements with B or better grade
- You must apply to transfer; it will not happen automatically
- **Provisional requirements must be satisfied before taking additional classes**

Transfer Between MS Programs

- If you plan to transfer between MS programs (e.g., MS-CS to MS-IS)
  - You will need to take at least 18 credits in the new program
  - You can request a program transfer after your first semester
- Depending on new MS program's requirements
  - You may have to take one or more additional courses
- Talk to your Academic Advisor or the Program Director for your target MS

Plan of Study Forms

- The plan of study forms are to be filled out by the student and submitted to the CS Dept office for approval **during your first semester**
  - **Available on the CS web site**
- Designed to help students plan their course of study
  - Students have 6 years to complete the degree
  - Part-time students usually take 1 or 2 courses per semester
  - Electives may be taken at any time **as long as pre-requisites are satisfied**
  - Any electives that do not appear on approved list MUST have your advisor's approval before registration
  - Note pre-requisites when planning course of study

Advising Procedures

- Call the CS office at 703-993-1530 and ask for the Graduate Program Specialist
  - The Graduate Program Specialist will try to answer your question on the phone
    - **MS CS and PhD CS – Mr. Ryan Lucas (wlucas@gmu.edu)**
    - **MS IS, MS ISA, and MS SWE – currently vacant**
  - If the Graduate Program Specialist cannot answer your question, it will be forwarded to your faculty advisor
    - Your academic advisor is identified in your letter of admission
  - MS Program Directors can also answer questions

Miscellaneous

- Various forms can be found in the department web page at http://cs.gmu.edu
- You can send a written query by fax, letter, or email
  - **Email: csgrad@gmu.edu**
  - Phone: 703-993-1530 Fax: 703-993-1710
  - Mailing Address: George Mason University
    CS Department – MS 4A5
    4400 University Drive
    Fairfax, Virginia 22030-4444
- Please keep the department informed of any name, address or phone changes by sending email to **csgrad@gmu.edu**

Questions?