GRADUATE STUDENT ORIENTATION

Department of Computer Science

Volgenau School of Engineering

Department chair: Professor David Rosenblum

Presented by: Professors Jeff Offutt, Zoran Duric, Alex Brodsky, Duminda Wijesekera

Fall 2020

cs.gmu.edu

- **Pandemic online education notes**
- **Overview: Department of Computer Science**
  - Graduate programs
  - Program directors
  - Rules & policies for all MS programs
- **Masters degree programs**
  - MS Computer Science
  - Foundation Courses for ISA, INFS, SWE
  - MS Information Security and Assurance
  - MS Information Systems
  - MS Software Engineering

- **Graduate certificate programs**
- **Procedures**
  - Transferring from non-degree status
  - Removal of provisional status
  - Transferring between MS programs
  - Plan of study forms
- **Advising**
- **Contact the department**
- **Questions ?**

- All graduate courses in fall 2020 are online
- Each professor will choose a delivery mechanism and style
  - Most will meet at the defined time, but online (blackboard collaborate, zoom, webex, …)
  - Look for the syllabus or reach out to the professor via email if you're unsure
- We will hold office hours, but online
- We're all new at this, so please be patient

- All business and paperwork this fall will be handled online
  - CS department office will NOT be physically open
- If you do have to come to campus, follow the required physical distancing and face covering protocols
  - GMU will send you information about being on-campus

- **CS Department ~~in the Nguyen Engineering Building in room 4300~~**

- **59 full-time faculty members (44 tenure-track)**

- **Research expertise in almost all areas of computing**
    - AI, Computational biology, Computer vision, Data mining, Databases, Graphics and computer technology, Human-centric computing, Information security, networks, robotics, Software engineering, Systems, Theoretical computer science
    - CS faculty publish many dozens of cutting edge research papers every year
    - CS spent $16M+ on research FY 2019
    - Mason was ranked 44th nationally in research expenditures in CS by NSF (FY 17)

- **Two undergraduate degree programs with 1500 students**
    - BS in Computer Science
    - BS in Applied Computer Science

- **Four MS programs with more than 400 students**
    - Computer Science
    - Information Security and Assurance
    - Information Systems
    - Software Engineering

- **Two PhD programs with around 130 students**
    - Computer Science
    - Information Technology with VSE

- **Master's Degree Programs (30 credit hours)**

  - MS Computer Science (MS CS)

  - MS Information Systems (MS INFS)

  - MS Information Security & Assurance (MS ISA)

  - MS Software Engineering (MS SWE)

- **Doctoral Degree Programs (72 credit hours)**

  - PhD in Computer Science

    - Separate orientation on Friday, August 23

    - Director: Prof. Hakan Aydin (aydin@gmu.edu)

  - PhD in Information Technology

    - Administered by the Volgenau School of Engineering

- **Graduate Certificate Programs (12 credit hours)**

  - Information Security and Assurance Graduate Certificate

  - Software Engineering Graduate Certificate

Prof. Zoran Duric, MS CS Director

- zduric@gmu.edu
- cs.gmu.edu/~zduric/

Prof. Duminda Wijesekera, MS ISA Director

- dwijesek@gmu.edu
- cs.gmu.edu/~duminda/

Prof. Alex Brodsky, MS INFS Director

- brodsky@gmu.edu
- cs.gmu.edu/~brodsky/

Prof. Jeff Offutt, MS SWE Director

- offutt@gmu.edu
- cs.gmu.edu/~offutt/

? Who is your faculty advisor?

- Identified in your letter of admission

- Each MS program consists of 10 courses (30 credit hours)

- A 3.0 GPA (B average) or higher is required to graduate
  - Maximum of two C grades is allowed

- **Students who receive two Fs or three unsatisfactory grades (C or F) will be terminated**

- **Students admitted provisionally must complete their required foundation courses before beginning core curriculum courses**

- All MS programs have a thesis option (3-6 credit hours)

Professor Zoran Duric

- **Mission: To combine a sound foundation in computer science with concentrated knowledge in the advanced areas.**

- **Website**
  - cs.gmu.edu/current-students/ms-students/ms-in-computer-science

- **Required Academic Background**
  - Calculus (MATH 113 & 114)
  - Discrete Math (MATH 125)
  - Data Structures (CS 310)
  - Formal Methods and Models (CS 330)
  - Computer Architecture and Systems Programming (CS 367)

Zoran Duric

- **Two courses are required for students entering the MS CS program**
  - **CS 530** Mathematical Foundations of Computer Science
  - **CS 531** Computer Systems and Fundamentals of Systems Programming

- **Three ways to fulfill this requirement:**
  1. Take the courses and receive passing grades
  2. Pass the corresponding test out exams
  3. Submit an appeal request and have it approved

- **CS 530 and CS 531 count towards the MS CS degree**
  - If you take the courses, they will count as **elective** credits
  - If you pass the corresponding test out exams, you do not get credit for the courses
  - PhD and Accelerated BS to MS CS students do not get credit for these courses and should not take them

Zoran Duric

- **Courses are divided into five areas**
    1. Artificial Intelligence & Databases
    2. Programming Languages & Software Engineering
    3. Systems & Networks
    4. Theoretical Computer Science
    5. Visual Computing

- **Courses are classified as basic or 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 Computer Science area) and two additional core courses from two other areas must be successfully completed with a grade of B- or better.
    - **Advanced Breadth requirement**: At least four advanced courses must be taken from at least two different areas.
    - **CS Requirement:** At least six courses, including two advanced courses, must be designated CS.
        - Note: MS CS students can take up to four SWE, ISA, or INFS courses
    - At least eight courses must be taken from the list of preapproved courses. Up to two computer science-related courses that are not on the list of preapproved courses may be taken with the approval of the program director

Zoran Duric

- **Cyber Security Concentration**
  - 2 required courses:
    - ISA 562, ISA 656
  - 2-3 electives:
    - CS 587, ISA 564, ISA 673, ISA 674, ISA 681, ISA 763, ISA 764
  - 0-1 related courses:
    - CS 540, CS 555, CS 571, CS 600, CS 655
  - Thesis (CS 799) can be used to replace one elective and one related course

- **Machine Learning Concentration**
  - 2 required courses:
    - CS 584, CS 688
  - 2-3 electives:
    - CS 657, CS 681, CS 747, CS 782
  - 0-1 related courses:
    - CS 580, CS 687, CS 682, CS 685
  - Thesis (CS 799) can be used to replace one elective and one related course

✓ **Discrete Math (Math 125 or INFS 501)**

✓ **Computer Organization and Operating Systems (CS 367 or INFS 515)**

✓ **Data Structures (CS 310 or INFS 519)**

✓ **Object-Oriented Programming with Java (CS 211 or SWE 510)**

- **Why?**
  - Ensure adequate background for graduate studies
  - Provide basic undergraduate CS knowledge students need for graduate programs
  - Protect students from poor performance in later courses
- **Policies**
  - Foundation courses do not count for graduate credit
  - Must be completed with a grade of B or better
  - You may need up to four foundation courses, depending on your background
  - You can test out of some or all of the foundation courses

Professor Alex Brodsky

Mission: to allow students of diverse baccalaureate and professional backgrounds to 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.

- **Website**
    - cs.gmu.edu/current-students/ms-students/ms-in-information-systems

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 are hosted in the cloud.

Alex Brodsky

- **Five required courses:**
  - CS 530 Mathematical Foundations of Computer Science
  - CS 550 Database Management
  - INFS 612 Principles/Practices of Communication Networks
  - INFS 622 Information Systems Analysis and Design
  - INFS 740 Database Programming for the World Wide Web

  Note: Students pursuing the emphasis area or Graduate Certificate in Software Engineering should substitute SWE 620 for INFS 622 and also take SWE 621.

- **Five elective courses**
  - Grouped into emphasis areas

- **Six emphasis areas are available**
  - Database Management, Data Mining, Electronic Commerce, Software Engineering, Knowledge Management, Information Security and Assurance

- **Students can take five electives from one emphasis area or mix and match from different emphasis areas**

Professor Duminda Wijesekera

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

- **Website**
  - cs.gmu.edu/current-students/ms-students/ms-in-information-security-and-assurance

- **Degree Requirements**
  - Three required courses (9 credits):
    - INFS 612 Principles & Practices of Communication Networks OR CS 555 Computer Communications and Networking
      - **Note: Students selecting the Networking and System Security concentration must take CS 555**
    - ISA 562 Information Security Theory and Practice
    - ISA 656 Network Security
  - Electives in one of the following concentrations (15 credits)
    - Networks and Systems Security
    - Applied Cyber Security
  - Two additional elective courses (6 credits)
    - Chosen from preapproved list

Duminda Wijesekera

- Students are **required** to choose a concentration

- **Networks & Systems Security concentration**
  - Required course: ISA 564 Security Laboratory
  - Four additional elective courses from a preapproved list

- **Applied Cyber Security concentration**
  - Five elective courses from a preapproved list

- Students **cannot** mix and match courses from both concentrations

Professor Jeff Offutt

- **Mission: To teach students to become leaders in engineering high quality, large scale, computing solutions to real life problems.**

- **Website**
  - cs.gmu.edu/current-students/ms-students/ms-in-software-engineering

- **Four required courses (12 credits)**
  - 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 (9 credits)**

- **Electives (9 credits)**
  - Chosen from very long preapproved list

Jeff Offutt

- **Software Engineering-Related Courses**
    - **Choose 3 courses from the following:**
    - All SWE courses 600 and above
    - Computer Science
        - CS 540 Language Processors
        - CS 550 Database Systems
        - CS 555 Computer Communications and Networking
        - CS 571 Operating Systems
        - CS 675 Distributed Systems
    - Information Security & Assurance
        - ISA 562 Information Security Theory and Practice
        - ISA 650 Security Policy
        - ISA 673 Operating Systems Security
    - Information Systems
        - INFS 740 Database Programming for the World Wide Web
    - Operations Research
        - OR 542 Operations Research: Stochastic Models

- A graduate certificate program consists of 12 hours (4 courses)
- Students may obtain one graduate certificate in conjunction with the MS
- Average grade of B or better is required (only 1 C grade is allowed)
- Available graduate certificates:
  - Information Security and Assurance
  - Software Engineering
- Website
  - cs.gmu.edu/current-students/ms-students/graduate-certificates

- **To transfer from non-degree status …**
  - Only 12 credit hours can be transferred into degree status (**no exceptions)**
  - Grade must be B or better to be transferred
  - Submit an application to the department office
  - Upon admission, fill out a Graduate Transfer of Credit form and submit it to the CS Office
    - (https://registrar.gmu.edu/wp-content/uploads/GTC.pdf)

- **To remove provisional status …**
  - Complete all provisional course requirements with a grade of B or better *or* pass the corresponding test out exams
  - Provisional requirements must be satisfied before taking additional classes
  - Contact the graduate staff at csgrad@gmu.edu when you have fulfilled your requirements to have your provisional status removed

- **To transfer between MS programs …**
  - Must take at least 18 credits in the new program
  - Must complete one semester before transferring
  - Talk to your advisor and submit a Graduate Change of Program form to the CS office
    - (https://registrar.gmu.edu/wp-content/uploads/GCP.pdf)
 - Additional courses may be required for the new program

- **Plan of Study Forms**
    - Each MS program has a Plan of Study form available on the CS website
        - cs.gmu.edu/resources/student-forms
    - We strongly recommend submitting a plan of study to the CS office as soon as possible after beginning your degree program
    - A Plan of Study serves as a guide and can be changed at any time
    - A Plan of Study is how you request a course not on a preapproved list
    - **While filling out your plan of study, please note:**
        - Students have six years to complete their MS degree
        - Part-time students take 1-2 courses per semester, while full time students usually take 3
        - Electives may be taken at any time **as long as pre-requisites are satisfied**
        - Electives not on approved list **MUST** be approved *before* registration
        - Check pre-requisites when planning your course of study

- **Two Graduate Program Specialists are available in the CS office**

Ryan Lucas
MS & PhD Programs
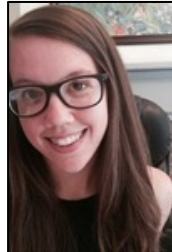
Beth Posocco
MS Programs

- **For inquiries and general advising:**
  - ~~Call the office at 703-993-1530 and ask for a graduate advisor~~
  - e-mail csgrad@gmu.edu

- **If the staff cannot answer your question, we will forward it to your faculty advisor**
  - Refer to your admissions letter to identify your advisor

- **MS Program Directors can also answer questions**

- **Email**
  - MS inquiries: csgrad@gmu.edu
  - PhD inquiries: csphd@gmu.edu
  - General information: csinfo@gmu.edu

- **Phone**
  - **General:** 703-993-1530
  - **Fax:** 703-993-1710

- **Mailing address**

  George Mason University

  Department of Computer Science – MS 4A5

  4400 University Drive

  Fairfax, VA 22030-4444

- **Department website**
  - cs.gmu.edu

- **Graduate courses are 4:30-7:10pm or 7:20-10:00pm**
  - They meet once a week
- ~~**Allow for traffic, parking, and walking to classrooms**~~
- **Always stand up and move during breaks**
- **Eat something, but not too much**
- **You will learn more if you :**
  - Read materials before class
  - Start assignments early
  - Work with classmates—especially classmates with diverse backgrounds
  - Get enough sleep
- **We take honesty and integrity very seriously**
- **Is it better to be full or part-time?**
  - Part-time students have less time but bring context from work
  - Full-time students have more time but less practical experience
- **The loudmouth student who talks about fancy technology does NOT know more than you do and is NOT smarter**

QUESTIONS?