GRADUATE MS STUDENT ORIENTATION

Department of Computer Science

School of Computing

College of Engineering and Computing

Department chair: Professor David Rosenblum

Host: Professor Jeff Offutt (Associate chair, SWE program director)

Spring 2023

cs.gmu.edu

GEORGE MASON UNIVERSITY

Congratulations!!!!
And welcome to graduate school at George Mason University

George Mason University
A university for the world
Freedom & learning
Diversity
Inclusion
Belonging
Cutting edge computing education for the 21st century

INTRODUCTIONS

Professor David Rosenblum
Department Chair

Professor Jeff Offutt
Associate Department Chair

Beth Posocco
Grad program specialist

Cecelia Kimes
Grad program specialist

csgrad@gmu.edu

FIRST THINGS FIRST

- **We are fully aware that some classes are full with waitlists**
- **We have plenty of courses and sections for all students**
  - You may not get your first choice
- **We are experiencing dramatic enrollment growth**
- **MS-CS students should take CS 530 and CS 531 as "early as possible"**
  - Does not have to be in your first semester
- **MS-SWE students can take core courses anytime**
- **Faculty CANNOT "force add" students to courses that are full**
  - Please don't ask!
- **The department CANNOT "force add" students to courses that are full**
  - Please don't ask!
- **We have no ability to manage waitlists**

Thank you for your patience and understanding!

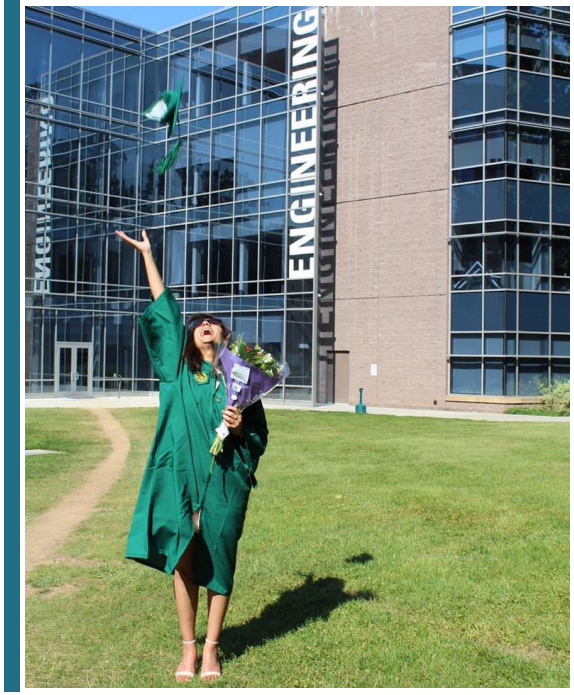
FUNDING AND CAREER PROSPECTS

The CS dept. has a few GTA positions

Very competitive: First semester MS students rarely obtain GTA positions

Other GMU departments hire our MS students

Apply through *handshake*:
https://gmu.joinhandshake.com/
(do NOT email professors)

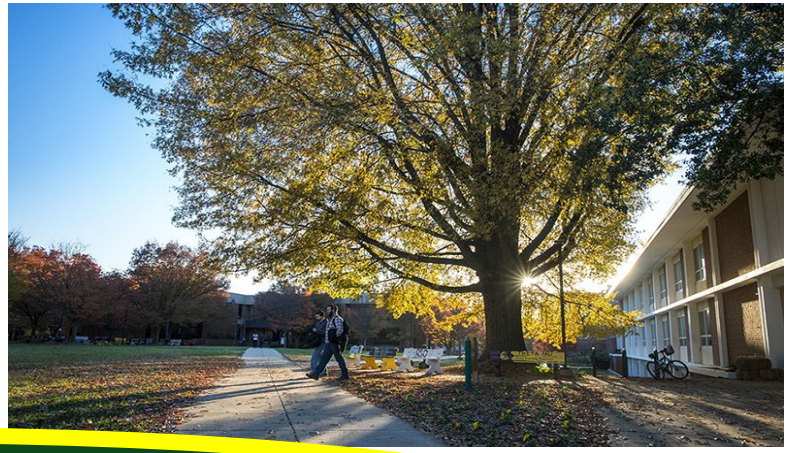


This area is second in the world for the most jobs in the software industry

Our graduates are highly respected

Almost half of our MS students are part-time, working full-time

Every class meeting is a mini jobs fair



The Department of CS has three MS programs

Computer Science

Information Security & Assurance

Software Engineering

MS-CS

Theoretical foundations of computation and computer-based systems, and practical techniques to design and build them

MS-SWE

How to engineer high quality large scale software products

MS-ISA

Understand and defend against vulnerabilities in computer networks and systems

OVERVIEW OF MS PROGRAM RULES @ GMU

- **MS programs require 30 credit hours**
  - 10 3-credit courses
- **Must have a 3.0 GPA (B average) to graduate**
  - Maximum of 2 grades of C
- **Two grades of F results in termination**
- **All MS programs have a research option**
  - 6 credits for an MS thesis (few students take this option)
- **Easy to transfer between MS programs**
  - Must complete one semester in initial program
  - A simple form (Graduate Change of Program on registrar's website)
  - Most classes will count as electives in the new degree program
- **Be sure to understand the honesty and integrity rules**
  - Honor codes are taken very seriously at George Mason

ADVISING AND CONTACTS

1. **Start with the official source of all rules**
   - Catalog (https://catalog.gmu.edu/)
2. **Then ask the graduate advisors**
   - csgrad@gmu.edu (Beth, Cecelia)
3. **Strictly academic questions or advice?**
   - Your faculty advisor's name is on your dept. acceptance letter
   - You can also find it on patriot web
4. **Problems and unusual issues?**
   - Contact the Program Director

Prof. Zoran Duric
MS-CS

Prof. Xinyuan Wang
MS-ISA

Prof. Jeff Offutt
MS-SWE

MS COMPUTER SCIENCE

Program director: Professor Zoran Duric

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

First courses

CS 530 Mathematical Foundations of Computer Science
CS 531 Computer Systems and Fundamentals of Systems Programming

Do you need CS 530 & CS 531?

- Some students already know this material from strong Computer Science undergraduate programs
- You may request to substitute for advanced electives by:
  1. Passing the corresponding test out exams (in-person only)
  2. Submitting an appeal request and getting it approved

MS COMPUTER SCIENCE

5 areas

1. Artificial Intelligence & Databases
2. Programming Languages & Software Engineering
3. Systems & Networks
4. Theoretical Computer Science
5. Visual Computing

3 core (required) courses

1. CS 583 Analysis of Algorithms (Theoretical CS)
2. Core course from a second area
3. Core course from a third area

Must get B- or higher in core courses

Advanced breadth

- 4 advanced courses
- From at least 2 different areas

Electives and CS requirement

- Additional courses from list of electives
- At least 6 courses must be CS
- Up to 4 can be SWE, ISA, or INFS

MS COMPUTER SCIENCE

2 optional concentrations

1. Cyber Security
2. Machine Learning

Cyber Security

1. 2 required: ISA 562, ISA 656
2. 2-3 electives: CS 587, ISA 564, ISA 673, ISA 674, ISA 763, ISA 764, SWE 681
3. 0-1 related: CS 540, CS 555, CS 571, CS 600, CS 655

Machine Learning

1. 2 required: CS 584, CS 688
2. 2-3 electives: CS 657, CS 681, CS 747, CS 782
3. 0-1 related: CS 580, CS 687, CS 682, CS 685

MS SOFTWARE ENGINEERING

Program director: Professor Jeff Offutt

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 & Construction
- SWE 621 Software Modeling and Architectural Design
- SWE 632 User Interface Design and Development
- SWE 637 Software Testing

Three software engineering-related courses

From a list in the catalog

Three elective courses

From a list in the catalog

MS SOFTWARE ENGINEERING

Software Engineering vs. Computer Engineering

- Software engineering is about building high quality software
  - Abstraction … human centered … quality … teamwork …
  - A computing discipline
  - Most common job title in the software industry
- Computer Engineering is connected to hardware
  - A branch of Electrical Engineering
  - Hardware that supports computing

Some non-USA universities use the term "computer engineering" for what we call "software engineering"

These are separate degree programs at Mason:

- Computer Science
- Software Engineering
- Computer Engineering (ECE department)

If you applied to the wrong program, you can transfer after your first semester

MS INFORMATION SECURITY & ASSURANCE

Program director: Professor Frank Wang

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

Three required courses

- INFS 612 Principles & Practices of Communication Networks
  - Or: CS 555 Computer Communications and Networking
- ISA 562 Information Security Theory and Practice
- ISA 656 Network Security

Five courses from one of two concentrations

- Networks and Systems Security
- Applied Cyber Security

Two elective courses

From a list in the catalog

FOUNDATIONS OF COMPUTING CERTIFICATE

Mission: Provide a **bridge** for students without computing backgrounds into our MS programs

Four core courses

- COMP 501 Computer Programming Foundations I
- COMP 502 Mathematical Foundations of Computing I
- COMP 503 Computer Systems Foundations I
- COMP 511 Computer Programming Foundations II

Two of three

- COMP 512 Mathematical Foundations of Computing II
- COMP 513 Computer Systems Foundations II
- CS 504 Principles of Data Management and Mining

Grades of B or better ensure admission into MS-SWE or MS-ISA

Grades of B or better ensure admission into MS-CS

ADVISING AND PROCESSES

- **Email csgrad@gmu.edu to …**
  - Submit all forms
  - Transfer from non-degree status or between MS programs
  - Remove provisional status after completing requirements
- **Forms are on the web**
  - Department forms: cs.gmu.edu/resources/student-forms/
  - GMU forms: registrar.gmu.edu/forms/
- **The course planner spreadsheet will help you plan your program**
  - CS: cs.gmu.edu/media/uploads/programs/graduate/masters/ms-cs-courseplanner-2022.xls
  - SWE: cs.gmu.edu/media/uploads/programs/graduate/masters/ms-swe-courseplanner-2022.xls
- **College orientation videos are on the web**
  - cec.gmu.edu/admissions/graduate-admissions/new-graduate-students
- **The Grad Team is here to help**
  - ~~In person: Nguyen Engineering Building, 4300~~
  - Virtually: Bookings (link on department website)

Beth Posocco
MS Programs

Cecelia Kimes
PhD Program

MS INFORMATION SYSTEMS

Joint between IST and CS departments

Mission: to teach diverse students theoretical knowledge and hands-on project experience needed to analyze, design, build, deploy, maintain, manage and promote effective organizational use of modern information systems

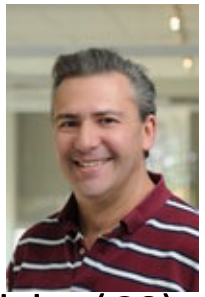
Five required courses

COMP 502 Mathematical Foundations of Computing I
CS 550 Database Management
INFS 580 Analytics: Big Data to Information
INFS 611 Rapid Information Systems Prototyping
INFS 622 Information Systems Analysis and Design

A concentration plus 1 elective
or
No concentration and 5 electives

Prof. Zhisheng Yan (IST)

msinfs@gmu.edu



Prof. Alex Brodsky (CS)

CS DEPARTMENT, GEORGE MASON UNIVERSITY

MS INFORMATION SYSTEMS

2 optional concentrations

1. Human-Centered Computing
2. Cloud-based Information Systems

Human-Centered Computing

1. 2 of 3 required: AIT 642, AIT 684, AIT 718
2. Remaining 1 or 2 from: AIT 724, COMP 505, COMP 522, CS 777, SWE 632

Cloud-based Information Systems

1. 3 required: AIT 660, AIT 670, SWE 642
2. 1 elective: SWE 622, SWE 625, SWE 632, SWE 645

PROCEDURAL ISSUES FOR MS-INFS

- **Mason's catalog is the official source of all rules**
  - https://catalog.gmu.edu/
- **Email msinfs@gmu.edu to …**
  - Submit all forms
  - Transfer from non-degree status
  - Remove provisional status after completing requirements
- **The course planner spreadsheet will help you plan your program**
  - cs.gmu.edu/media/uploads/programs/graduate/masters/ms-infs-courseplanner-2021-2022.xls
- **Contact a Program Director for problems and unusual issues:**

Prof. Zhisheng Yan
(IST department)

Prof. Alex Brodsky
(CS department)

BEING RESPONSIBLE SCHOLAR CITIZENS

- **DO NOT CHEAT!!!**
  - GMU takes the Honor Code (HC) very seriously
  - Cheating is NOT worth it
    - Cheating leads to F grades
    - Fs lead to being dismissed from the university
    - Second HC violation always results in an F and usually dismissal
    - C grades are okay (most companies care about graduation, not GPA)
  - We have lost more than 50 students in the last year because of cheating
    - Some with large debts
    - Some close to graduation
  - **CHEATING IS NOT WORTH IT**!
- Arriving late to a semester is disrespectful to the professor
- Know your name as it is on our rosters and put that name on your assignments
- Know the name of your program and use it correctly

PRO TIPS FROM FORMER STUDENTS

- **Most 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
- **GMU professors take honesty and integrity very seriously!!**
- **Is it better to be full or part-time? It's a tradeoff:**
  - Part-time students have less time but bring context from work
  - Full-time students have more time but less practical experience
- **The vocal student who talks about technology does NOT know more than you do and is NOT smarter**


OPEN
QUESTIONS
TIME