Getting Started in Computer Science
Freshmen Students

Department of Computer Science
http://cs.gmu.edu/
Volgenau School of Engineering

Agenda

PLEASE SIGN IN !!

- Department information
- General information
- Program information
  - The BS CS Degree Program
  - The BS ACS Degree Program
- What do I register for?
- Questions?

Department Info

- The CS Department office is located in the Nguyen Engineering (ENGR) Building, Room 4300
  - Department Chair: Dr. Sanjeev Setia
  - Associate Chairs: Dr. Mark Snyder; Dr. Elizabeth White
  - They oversee the undergraduate programs
  - CS Undergraduate Advisors: Ms. Lauren Reyna, Ms. Linda Sheridan
  - There are 50 full time Faculty in the Department and their offices are located on the 4th and 5th floors of the ENGR building
- We're part of the Volgenau School of Engineering (VSE) which contains the following Departments:
  - COMPUTER SCIENCE
  - Bioengineering
  - Civil & Environmental Engineering
  - Electrical and Computer Engineering
  - Information Sciences and Technology
  - Mechanical Engineering
  - Statistics
  - Systems Engineering & Operations Research

General Information

- Activate your Mason ID and password at password.gmu.edu
- All information to/from you and Mason is sent to your Mason email
- The CS Department website is cs.gmu.edu
- It contains Student FAQs, contact information for faculty, course syllabi, jobs and student organization information
- The Mason Registration system is called PatriotWeb: patriotweb.gmu.edu
- Use this website to register for classes
- Use this website to check your degree progress (DegreeWorks)
- Use this website to check your advanced placement or transfer credit
- The Mason Catalog is online: catalog.gmu.edu
- Check it frequently for reference to your degree requirements

NO ONLINE OR NIGHT CS CLASSES!!!
The Mason Transfer Admissions website is: admissions.gmu.edu/transfer

- Check it for AP/IB and Transfer equivalencies: http://admissions.gmu.edu/transfer/transferCreditSearch.asp

George Mason University has an Honor Code
- Make sure you understand what your responsibilities are.
- Go to the Mason Honor Code website: oai.gmu.edu

The Computer Science Department also has an Honor Code for Programming Projects.
- It is strictly enforced!
- Look for it on the Honor Code page of the CS website:
  http://cs.gmu.edu/resources/honor-code/

Undergraduate Degree Programs

- We offer two undergraduate BS degrees:
  - BS Computer Science (BS CS)
  - BS Applied Computer Science (BS ACS)

- Both degrees require a minimum of 120 credit hours = 4 years full-time

- Other program options:
  - Software Engineering Minor (16 credit hours)
  - BS/Accelerated MS options (144 credit hours)

Course Policies

- Course designations at Mason:
  - 100 level courses are typically for freshmen
  - 200 level courses are typically for sophomores
  - 300 level courses are typically for juniors
  - 400 level courses are typically for seniors

- Courses must be taken in sequence
  - Almost every course has a prerequisite chain
  - Prerequisites are enforced by the registration system

- You must earn a C or better in a CS or MATH class in order to take the follow-on course

Repeat Limits & Termination

Courses offered by the VSE departments may be taken at most three times. Failure to pass a required Math or CS course after three attempts results in termination from the ACS or CS majors

Selective Withdrawal:

Every GMU undergrad is allowed three selective withdrawals where you can to drop a course after the drop date (but before the selective withdrawal deadline) - use these wisely!

One C-/D rule:

Computer science majors are permitted to use one “C-” or “D” grade within Major coursework toward graduation, as long as that course is not a prerequisite for another class.
BS CS Educational Objectives

- The BS CS program is accredited by Computing Accreditation Commission of ABET (www.abet.org)
- The objectives of the BS CS degree are to provide our graduates with
  - A foundation for successful careers in industry:
    - graduates will have a broad understanding of the fundamental concepts, methodologies and tools, and applications of computer science.
  - A foundation for graduate study:
    - graduates of the program will have the academic preparation for successful completion of rigorous graduate programs.
  - Professional preparation:
    - graduates will have effective written and oral communication skills, and be able to work collaboratively in a professional and ethical manner.

The BS CS Curriculum

- Mason Core requirements (24 credits)
  - Foundation: English composition courses
  - Communications 100 - Public Speaking (3 credits)
  - Core: Literature, Western Civ., Social & Behavioral Sciences, Global Understanding, Fine Arts
- Major requirements (88 credits)
  - Required CS courses (35 credits)
  - Mathematics and Engineering courses (20 credits)
  - CS-Senior elective courses (15 credits)
  - CS-Related elective courses (6 credits)
  - Natural Sciences (12 credits)
- General Electives (8 credits)
  - Note: Remedial math classes do not count towards graduation

Major Requirements (CS Core)

- CS 110
  - Essentials of Computer Science
- CS 306
  - Synthesis of Ethics & Law for the Computing Professional
- CS 112, 211, 310
  - Introduction to Programming; Object-Oriented Programming; Data Structures
- CS 262, 367, 471
  - Intro to Low-level Programming; Computer Systems and Programming; Operating Systems
- CS 321
  - Software Engineering
- CS 330, 483
  - Formal Methods & Models, Analysis of Algorithms

Five CS-Senior electives:

- CS 455 or 468 or 475
- Four additional courses chosen from
  - CS 425 - Game Programming I
  - CS 440 - Language Processors and Programming Environments
  - CS 450 - Database Concepts
  - CS 451 - Computer Graphics
  - CS 455 - Computer Communications and Networking
  - CS 463 - Comparative Programming Languages
  - CS 468 - Secure Programming and Systems
  - CS 465 - Computer Systems Architecture
  - CS 475 - Concurrent and Distributed Systems
  - CS 477 - Mobile Application Development
  - CS 480 - Introduction to Artificial Intelligence
  - CS 482 - Computer Vision
  - CS 484 - Data Mining
  - CS 485 - Autonomous Robotics
  - CS 490 - Design Exhibition
  - CS 491 - Industry-Sponsored Senior Design Project (3 credits only)
  - CS 499 - Special Topics in Computer Science
  - MATH 446 - Numerical Analysis I or OR 481 - Numerical Methods in Engineering
**Course Prerequisite Chains**

<table>
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<th>Prerequisite Chains</th>
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<td>MATH 125, 203, STAT 344</td>
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<td>MATH 113, 114, 213</td>
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<td>Prob/Stat for Engineers</td>
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**Major Requirements**

- **MATH 113, 114, 213**
  - Calculus I, II, III
- **MATH 125, 203, STAT 344**
  - Discrete Math,
  - Linear Algebra
  - Prob/Stat for Engineers

- For Math overrides contact: Camaya@gmu.edu

**Prerequisite Chains**

**Major Requirements (continued)**

- **Natural Science:**
  - 12 credits that must include a two-semester laboratory sequence chosen from:
  - BIOL 103 (4), 106/107 (4)
  - CHEM 211 (3)/213 (1), 212 (3)/214 (1)
  - GEOG 101 (4), 102 (4)
  - PHYS 160 (3)/161 (1), 260 (3)/261 (1)
- **CS Related elective courses**
  - Two courses selected from an approved list of ECE, OR, PHIL, STAT, SWE, SYST, MATH, or CS courses (see catalog)
BS Applied CS Degree

- BS Applied Computer Science
  - Created for students who want to work in one of the many disciplines that require advanced computing techniques.
  - Concentrations: game design and software engineering
  - Students take foundation and core CS courses along with foundation and core courses in the concentration area.

BS ACS Degree Requirements

- All concentrations share the same common foundation requirements as the BS CS:
  - CS 110 (Essentials of Computer Science)
  - CS 112 (Introduction to Computer Programming)
  - CS 211 (Object-Oriented Programming)
  - MATH 113, MATH 114, MATH 125, MATH 203, STAT 344
  - Calculus I, II, Discrete Mathematics, Linear Algebra, Prob & Stat for Engineers
- All concentrations share the same common core requirements as the BS CS:
  - CS 262 (Intro to Low-Level Programming)
  - CS 306 (Law and Ethics for the Computing Professional)
  - CS 310 (Data Structures) / CS 330 (Formal Methods and Models)
  - CS 307 (Computer Systems & Programming)
  - CS 321 (Software Engineering)
  - CS 471 (Operating Systems)
  - CS 463 (Analysis of Algorithms)
- All concentrations must include one additional CS course numbered above 400

Concentration Requirements

- Concentration in Computer Game Design*
  - Foundation: GAME 230, CS 306, CS 325, CS 351; AVT 104; STAT 344
  - Core: CS 425, 426, 451; AVT 382, 383
  - One approved elective related to game design
  - PHYS 160/161, one additional lab science course
- Concentration in Software Engineering*
  - Foundation: STAT 344; CS 306
  - Core: SWE 205, 301, 401; CS 332, SWE 437
  - Five courses chosen from:
    - CS 450, 455, 463, 466, 468, 475, 477, 491; SWE 432, 443
    - ENGL 388 & one of the following:
      - PSYC 333, COMM 320, COMM 335
  - *Not all concentration courses are offered every semester

What Do I Register For?

- If your Math Placement Score qualifies you for MATH 113 (Calculus I), then you should sign up for:
  - CS 110 (Essentials of Computer Science), in Spring 2019
  - CS 112 (Introduction to Computer Science)
  - MATH 113 (Calculus I)
  - Mason Core classes (See the Sample Schedule handouts)
  - Classes needed for your ACS concentration (See the Sample Schedules handouts) if you are ACS major
- If your score does not qualify you for MATH 113, then:
  - CS 110 (Essentials of Computer Science), in Spring 2019
  - You should register for MATH 105 (Pre-Calculus) or MATH 104 (Trig & Transcendental Functions) or MATH 123 (Calculus with Algebra/Trig Part A) as appropriate
  - You should register for courses that satisfy the Mason Core requirements (see the Sample Schedule handout for students who start with Math 104 or 105)
  - Next semester, if you have earned a C or better in MATH 104/105/123 or passed the Placement Test, you should register for:
    - CS 112
    - MATH 113
    - ...
Freshman FAQs

- What should I do if I had AP or IB coursework in High School?
  - Depending on your score,
    - You might receive Mason credit for CS 112 if you took the AP Computer Science exam
    - You might receive Mason credit for MATH 113 if you took the AP Math exams
  - Check the admissions.gmu.edu/transfer website for score equivalencies
  - Make sure Mason has evidence that you received AP or IB credit or you will not be able to register for follow on courses

Mason Core

- How do I select Mason Core courses?
  - The catalog has a list of courses for each category: e.g. Fine Arts, Social & Behavioral Sciences, Literature, etc.
  - Consult the online Mason catalog under Mason Core here:
    - catalog.gmu.edu
    - It lists the courses that qualify for each of the Core categories

Getting Help

- After classes begin, you will be assigned a CS Faculty Advisor. We will email you to let you know who your Faculty Advisor is.
- If you have concerns about meeting the prerequisites for a class, contact the CS Department.
- If you are in need of assistance before the semester starts, contact the CS Department Office staff.
  - We accept walk-ins 10 – 4 pm every day.
  - Email: csug@gmu.edu
    - Contact us by email for CS course overrides
    - Send from your Mason email account
    - Include your G number on all correspondence

What Happens Next?

- Activate your Mason ID and password
- Take the Math Placement Test
- Use PatriotWeb to determine the day/times for the classes that you want to take
- Register on PatriotWeb.
  - Go to the registration site at the time and location listed for Orientation.
- Any questions?