Getting Started in Computer Science
Transfer Students
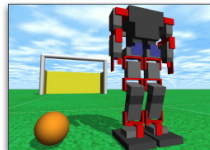
Department of Computer Science

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
  - Acting Associate Chair: Dr. Jan Allbeck – oversees the undergraduate programs
  - CS Undergraduate Advisors: Ms. Kara Smith and Ms. Katie Doyle
  - There are over 45 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

- 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/wiki/pmwiki.php/HonorCode/HomePage

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

- Courses offered by the department may be taken at most three times; failure to pass a required Math or CS course after three attempts results in termination from the major

- 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 (21 credits)
  - *Foundation*: English composition courses
  - *Core*: Literature, Western Civ., Social & Behavioral Sciences, Global Understanding, Fine Arts

- Major requirements (95 credits)
  - Required CS courses (33 credits)
  - Mathematics and Engineering courses (23 credits)
  - CS-Senior elective courses (15 credits)
  - CS-Related elective courses (6 credits)
  - Natural Sciences (12 credits)
  - Communications 100 - Public Speaking (3 credits)
  - Humanities (3 credits)

- General Electives (4 credits)
  - Note: Physical activity and remedial math classes do not count towards graduation

Major Requirements (CS Core)

- CS 101
  - Preview of Computer Science

- CS 105, CS 306
  - Ethics & Society; Ethics & Law for the Computing Professional

- CS 112, 211, 310
  - Introduction to Programming; Object-Oriented Programming; Data Structures

- CS 262, 367, 465; ECE 301
  - Intro to Low-level Programming; Computer Systems and Programming; Computer Systems Architecture; Digital Electronics

- CS 321
  - Software Engineering

- CS 330, 483
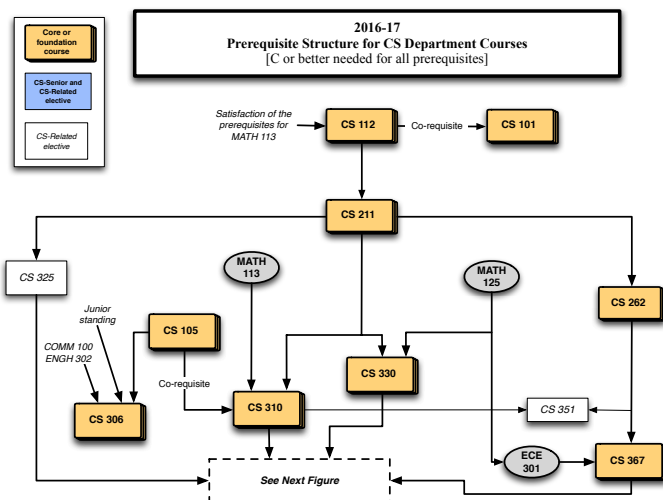 - Formal Methods & Models, Analysis of Algorithms

Five CS-Senior electives :
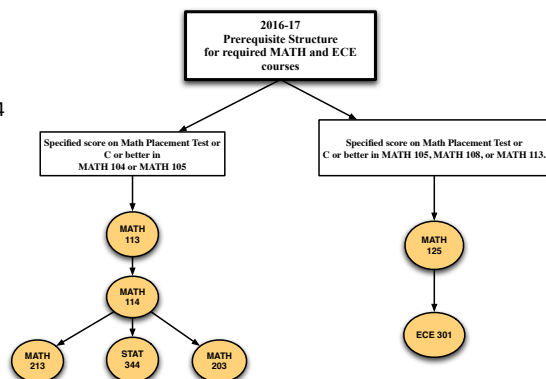
- CS 463 or 471 or 475

- 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 469 - Security Engineering
  CS 471 - Operating Systems
  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 499 - Special Topics in Computer Science[*]
  MATH 446 - Numerical Analysis I or OR 481 - Numerical Methods in Engineering

Course Prerequisite Chains

Core or foundation course

CS-Senior and CS-Related elective

CS-Related elective

2016-17
Prerequisite Structure for CS Department Courses
[C or better needed for all prerequisites]

Satisfaction of the prerequisites for MATH 113

CS 112 — Co-requisite → CS 101

CS 211

CS 325

MATH 113

MATH 125

CS 262

Junior standing

CS 105

COMM 100 ENGH 302

Co-requisite

CS 306

CS 310

CS 330

CS 351

ECE 301

CS 367

See Next Figure

Prerequisite Chains

Core or foundation course

CS-senior and CS-Related elective

CS-Related elective

MATH 203

STAT 344

CS 482

CS 484

ENGH 302

CS 321 → SWE 443

CS 444

CS 445

CS 485

CS 310

Co-requisite

CS 391

CS 332

SWE 432

SWE 437

CS 450

CS 483

MATH 125

CS 480

CS 451

CS 455

CS 468

CS 330

CS 440

CS 469

CS 211

CS 325

CS 262
CS 310

CS 351

CS 425

CS 426

CS 463

CS 477

CS 471

CS 367

CS 475

CS 465

CS 321, 483, two other 400-level classes and senior standing

CS 490

60 credit hours and permission of instructor; specific prerequisites vary with topic
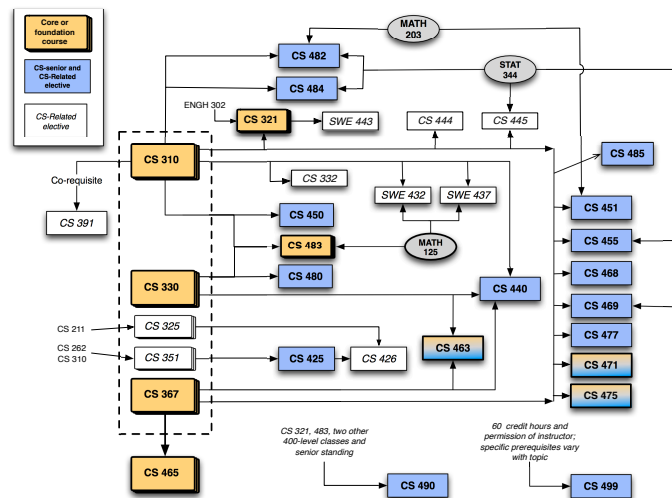
CS 499

Major Requirements (Math & ECE)

- MATH 113, 114, 213
  - Calculus I, II, III
- MATH 125, 203, STAT 344
  - Discrete Math,
  - Linear Algebra
  - Prob/Stat for Engineers
- ECE 301
  - Digital Electronics

2016-17
Prerequisite Structure for required MATH and ECE courses

Specified score on Math Placement Test or C or better in MATH 104 or MATH 105

Specified score on Math Placement Test or C or better in MATH 105, MATH 108, or MATH 113.

MATH 113

MATH 114

MATH 213

STAT 344

MATH 203

MATH 125

ECE 301

Major Requirements (continued)

- **Natural Science:**

  12 credits that must include a two-semester laboratory sequence chosen from:
  - ASTR 111 (3)/112 (1), 113 (3)/114 (1)
  - BIOL 103 (4), 104 (4)
  - CHEM 211 (3)/213 (1), 212 (3)/214 (1)
  - GEOL 101 (4), 102 (4)
  - PHYS 160 (3)/161 (1), 260 (3)/261 (1)
  - EVPP 110 (4), 111 (4)

- **CS Related elective courses**
  - Two courses selected from an approved list of ECE, OR, PHIL, STAT, SWE, SYST, MATH, or CS courses (see catalog)

- **Humanities:** (3 additional credits)

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: bioinformatics, game design, geography, 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 <u>foundation</u> requirements as the BS CS:
  - **CS 101** (Preview of Computer Science)
  - **CS 105** (Computer Ethics & Society)
  - **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 <u>core</u> requirements as the BS CS:
  - **CS 262** (Intro to Low-Level Programming) **/ ECE 301** (Digital Electronics)
  - **CS 306** (Law and Ethics for the Computing Professional)
  - **CS 310** (Data Structures) **/ CS 330** (Formal Methods and Models)
  - **CS 367** (Computer Systems & Programming)
  - **CS 321** (Software Engineering)
  - **CS 465** (Computer Systems Architecture)
  - **CS 483** (Analysis of Algorithms)

- All concentrations must include <u>one</u> additional CS course numbered above 400

Concentration Requirements

- Concentration in Bioinformatics*

  - Foundation: PHYS 160/161, CHEM 201, BIOL 213, STAT 344
  - Core: BINF 450, BIOL 482, BIOL 580; CS 306, 444, 445, 450
  - Two approved electives related to bioinformatics

- Concentration in Computer Game Design*

  - Foundation: CS 225, 306, 325, 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

*Not all concentration courses are offered every semester

- Concentration in Geography*

  - Foundation: GGS101, 102, 103, 110, 300; STAT 344
  - Core: CS 306; GGS 310, 311, 411, 412, 416, 463
  - One GGS course numbered above 300

- 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, 468, 471, 475; SWE 432, 443
  - ENGL 388 & one of the following:
       (PSYC 333, COMM 320, COMM 335)

*Not all concentration courses are offered every semester

Transfer Student FAQs

- What courses transferred?
  - Check your transcript on PatriotWeb
  - Make sure your Associate's Degree is recorded on your transcript if you have one.

- What should I do if a previous course didn't transfer?
  - Submit course information to the CS Department Office if you did not receive a pre-approved transfer equivalency
  - Check with us after classes have started to make sure the paperwork is updated.

- Make sure Mason receives your <u>most recent transcript</u> from your previous school !!

What Do I Register For?

- <u>All</u> transfer students must take CS 101 (Preview of Computer Science) their first semester at Mason

- If you have an Associate's Degree in Computer Science from VCCS
  - Make sure Mason receives your final transcript
  - You must still take ENGH 302 (Advanced Composition) even if your Mason Core requirements might be 'waived'
    - Only the <u>Natural Sciences</u> section of ENGH 302 is <u>acceptable</u>
  - You may still need CS 105 (Ethics), CS 262 (Intro to Low-level Programming, MATH 125 (Discrete Mathematics), COMM 100 (Public Speaking), and/or an extra Humanities elective beyond Mason Core
  - See the Sample Schedule for students with A.S. degrees from VCCS

- If you do not have an AS or AA degree you should
  - Make sure Mason receives your final transcript
  - Register for foundation Math and CS classes
  - Work on your Mason Core classes
    - Consult the BS CS brochure or advising checklist and take the Mason Core that you haven't completed
- If you are also an ACS major, register for classes needed for your ACS concentration
  - Consult the ACS concentration handouts or ACS advising checklists

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 are open 9 – 5pm every day.
  - Email: *csadmin@cs.gmu.edu*

What Happens Next?

- Activate your Mason ID and password

- 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?