Getting Started in Computer Science

Computer Science Department
School of Computing
College of Engineering and Computing

http://cs.gmu.edu/

Access these slides via the QR code
Agenda

- Finding Information
- Policies to Know
- The BS-CS and BS-ACS Degrees
- What do I register for?

Find these slides and materials at:

- https://cs.gmu.edu/ → Current Students → Undergraduates → Getting Started in CS at GMU
- https://cs.gmu.edu/current-students/undergraduates/getting-started-in-cs-at-gmu/
# Department Info

## Contacts

<table>
<thead>
<tr>
<th>Role</th>
<th>Location</th>
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<tbody>
<tr>
<td>Undergraduate CS office</td>
<td>Buchanan D215</td>
</tr>
<tr>
<td>Graduate CS Office</td>
<td>ENGR 4300</td>
</tr>
<tr>
<td>Advising appointments (physical and virtual)</td>
<td>Weekdays: 10am-12pm 1p-4pm</td>
</tr>
<tr>
<td>Contact email:</td>
<td><a href="mailto:csug@gmu.edu">csug@gmu.edu</a></td>
</tr>
<tr>
<td>Contact phone:</td>
<td>703-993-1530</td>
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## People

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
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<tbody>
<tr>
<td>Chair</td>
<td>Dr. David Rosenblum</td>
</tr>
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</table>
| Undergraduate Associate Chairs:   | Dr. Elizabeth White  
|                                   | Dr. Mark Snyder   |
| Undergraduate Advisors:           | Joshua Fletcher  
|                                   | Linda Sheridan    
|                                   | Vernell Wilks     
|                                   | Kristi Morrow     |
Quick Facts

• BS-CS is ABET-accredited
  https://www.abet.org
• daytime CS classes
  • vast majority are face-to-face

Sites to know

password.gmu.edu – create your GMU username (netID)
cs.gmu.edu - CS website.
  • read through current students/undergraduates section
patriotweb.gmu.edu
  • unofficial transcript: Student records → Unofficial transcript
  • Patriot Scheduler – search classes and register
  • DegreeWorks – see live mapping of your degree progress
catalog.gmu.edu – course/degree details; all academic policies; catalog requirements
Policies to Know
Catalog Years

- The **catalog** is published yearly.
  - you meet all requirements for **your** catalog year: **2023-2024**
  - Your catalog requirements don't change when we update later catalogs.

- **Degree Planner** – paper copy of your requirements. (on CS website)

- **DegreeWorks** – live mapping of your degree progress
  - Great for "What if?" scenarios. [https://patriotweb.gmu.edu/](https://patriotweb.gmu.edu/)

- **Online Catalog** – [https://catalog.gmu.edu](https://catalog.gmu.edu)
  - all official catalog text, including your entire degree requirements
  - course info/prerequisites
  - all department/school/university policies
Prerequisites

- Each class has hardcoded prerequisites – courses that must be successfully completed before you can take the course
- Need **C or better** to meet the prerequisite
More Prerequisites
Grading Policies

- **C or better** needed for all prerequisites
- **one C-/D grade** is allowed towards CS major
  - *(can't be a prerequisite for another course though – those all must be C or greater)*
- **Repeats**: third and final (successful) attempt required in next semester, or you're terminated from CEC
- **Selective Withdrawal**: three times as undergraduate, you may drop by mid-semester from class (grade of W)
- **Honor Code**: you pledged not to lie, cheat, steal, or plagiarize in all academic matters. [oai.gmu.edu](https://oai.gmu.edu)
  - It is strictly enforced! [https://oai.gmu.edu/full-honor-code-document/](https://oai.gmu.edu/full-honor-code-document/)
Study Elsewhere Constraints

• Once you begin at GMU, your transferrable coursework is complete. **you cannot take more courses elsewhere and transfer them in later.**

• Example: if you take extra courses at NVCC and ask to transfer them in, the answer will be "no".

• To request an exception to this policy, **ahead of time**, you need to fill out a Study Elsewhere request form.
  
  • Some denied reasonings:
    • any attempts (including W) at the course at GMU
    • already have 60+ transferred credits
    • financial hardship
    • online version of a natural science with lab
    • also offered at GMU and open seats
More Programs

Minors

• Separate course sequence from major.
• Must have 8 unique credits (not used towards major)
• We offer the Software Engineering Minor (16 credit hours)

Accelerated Masters

• Use four graduate-level courses towards both BS and MS degrees (double-counted)
• Apply after earning 60 credits, with good GMU GPA
• Effectively a five-year BS+MS program
BS Computer Science Degree
BS CS Degree (120 credits)

- Mason Core (24cr)
- CS Core (35cr)
- Mathematics and Statistics (20cr)
- Natural Sciences (12cr)
- CS Senior electives (15cr)
- CS Related electives (6cr)
- General electives (8cr)
Mason Core (24cr)

- COMM 101 – oral communication
- ENGH 100/101 – composition
- ENGH 302N – advanced composition
  - *Natural Science sections only!*

Additional Mason Core
- One course from each list:
  - Arts
  - Global Understanding
  - Literature
  - Social and Behavioral Science
  - Global History (HIST 125)

- *Search lists of Mason Core courses on* [catalog.gmu.edu](http://catalog.gmu.edu)

- *All other Mason Core requirements are covered by CS/SoC requirements.*
CS Core Courses (35cr)

- **Ethics+ CS 110, 306**
  - Essentials of CS, Synthesis of Ethics/Law for the Computing Professional

- **Programming CS 112, 211, 310**
  - Introduction to Programming; Object-Oriented Programming; Data Structures
  - *New! CS 108 + CS 109 is a two-course replacement for CS 112.*

- **Systems CS 262, 367, 471**
  - Intro to Low-level Programming; Computer Systems and Programming; Operating Systems

- **Software Engineering CS 321**

- **Theory CS 330, 483**
  - Formal Methods & Models, Analysis of Algorithms
Math/Statistics (20cr)

- Calculus I — MATH 113 \textit{(or 123+124)}
- Calculus II — MATH 114
- Calculus III — MATH 213
- Discrete Math — MATH 125
- Linear Algebra — MATH 203
- Prob/Stat — STAT 344

**Math overrides contact:**

camaya@gmu.edu

\textit{(more info on overrides at the end of this talk)}
Natural Science Requirements (12cr)

Stronger requirements by CS than General Education.

- **Required:** lecture/lab sequence in one field, plus 4cr more
  - Some are one 4cr course combo, others are a separate lecture(3cr) and lab(1cr)
  - *Last 4cr: different-subject lab science from Mason Core, or use your sequence as prereqs.*
  - *Example: sequence of BIOL 102(4) & 103(3)/105(1), and PHYS 160(3)/161(1) == 12cr.*

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<tr>
<th>Field</th>
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<th>Second</th>
<th>Third</th>
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<tbody>
<tr>
<td>Biology</td>
<td>102</td>
<td>103/105</td>
<td></td>
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<tr>
<td>Chemistry</td>
<td>211/213</td>
<td>212/214</td>
<td>313/315 (or 314/218)</td>
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<tr>
<td>Geology</td>
<td>101/103</td>
<td>102/104</td>
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<tr>
<td>Physics</td>
<td>160/161</td>
<td>260/261</td>
<td>262/263</td>
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CS Senior Electives (15cr)

• your chance to specialize your degree!
• five of the following, including at least one of 455/468/475/487

- CS 425 – Game Programming I
- CS 440 – Language Processors and Programming Environments
- CS 450 – Database Concepts
- CS 451 – Computer Graphics
- CS 452 – Virtual Reality
- **CS 455 – Computer Communications and Networking**
- CS 463 – Comparative Programming Languages
- **CS 468 – Secure Programming and Systems**
- CS 465 – Computer Systems Architecture
- CS 469 – Security Engineering
- **CS 475 – Concurrent and Distributed Systems**
- CS 477 – Mobile Application Development
- CS 478 – Natural Language Processing
- CS 480 – Introduction to Artificial Intelligence
- CS 482 – Computer Vision
- CS 484 – Data Mining
- CS 485 – Autonomous Robotics
- **CS 487 – Introduction to Cryptography**
- CS 490 – Design Exhibition
- CS 491 – Industry-Sponsored Senior Design Project (3 cr. – only)
- CS 499 – Special Topics in Computer Science*
- MATH 446 – Numerical Analysis I (equiv. to OR 481)
CS Related Electives (6cr)

- STAT 354
- SYST 371, 470
- PHIL 371, 376
- ENGH 388
- OR 335, 441, 442

- ECE 301, 231/232, 350, 446, 447, 511
- SWE ≥300
- MATH > 300
- CS > 300

General Electives (8cr)

- can't count remedial math (e.g. MATH 105) or some MLSC courses
- may count up to 3cr of RECR
- university requires 120 credits total to graduate; no exceptions
BS Applied Computer Science

- Concentrations: SWE, CGDS, GINF, BMGT, BMKT, TCHP
  - Please declare your concentration during this orientation.
- Students take foundation/core courses in CS and in the concentration area.

- All concentrations share the same common foundation/core:
  - CS 110/306
  - CS 112/211/310
  - CS 262/367/471
  - CS 321
  - CS 330/483
  - MATH 113/114/125/203, STAT 344 (or other stat course) (no calc III)
  - ACS Elective: one additional course CS≥400 (except CS 498)
ACS Concentrations

• Concentration in **Computer Game Design (CGDS)**
  • 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 (SWE)**
  • Foundation: STAT 344; CS 306
  • Core: SWE 205, 301, 401; SWE 419, SWE 437
  • Five courses chosen from:
    CS 450, 455, 463, 465, 468, 475, 477, 491; SWE 432, 443
  • ENGH 388 & one of the following:
    (PSYC 333, COMM 320, COMM 335)

• Concentration in **Geoinformatics (GINF)**
  • Foundation: CS 306, GGS 102, 103, 110, 300; STAT 250
  • Core: GGS 310, 311, 366, 379
  • four courses from GGS 354, 411, 416, 422, 426, 429, 462, 463, 470
ACS Concentrations

• Concentration in Business Management (BMGT)
  • Foundation: STAT 250; CS 306; BUS 100; PSYC 100; MGMT 303; MKTG 303
  • Core: MGMT 313, 321, 451, 453
  • three courses chosen from MGMT 300-499

• Concentration in Business Marketing (BMKT)
  • Foundation: STAT 250; CS 306; BUS 100; PSYC 100; MGMT 303; MKTG 303
  • Core: MKTG 312, 351, 471
  • four courses chosen from MKTG >300

• Concentration in Technology Policy (TCHP)
  • Foundation: GOVT 101/103, 134, 150, 300
  • Core: GOVT 352, 363, 366/7/8, 426, 460, GOVT490/CS306
  • four courses chosen from GOVT 304, 312, 318, 351, 369, 400, 414, 435, 444, 446, 461, 462, 464, 480
Transferrable Credits

- Only **college-level approved coursework** is transferrable
- **AP/IB scores** with sufficient scores
- **specific courses from specific places** have been approved for specific courses here at GMU
- All listed online (search for "GMU transfer credit")
  - [https://www2.gmu.edu/admissions-aid/how-apply/transfer/transfer-credit-policy](https://www2.gmu.edu/admissions-aid/how-apply/transfer/transfer-credit-policy)

- **Remember:** once starting courses at GMU, GMU students cannot take coursework elsewhere for GMU credit (without PRIOR permission).
  - As an example, you cannot take coursework at NVCC for GMU credit even if it's equivalent.

Getting Credits

- **Send scores/official transcript** to GMU after grades posted.
- GMU receives scores, processes manually — then they should show up on your transcript. (patriotweb → student records → unofficial transcript)
- **appeal elective credit** as specific course: send syllabus, coursework samples, etc. to relevant department. Rarely approved with only a syllabus.
When/How to Request Overrides

**When:** you plan on **immediately** taking a course that needs to use your transfer credits as a prerequisite, but they aren't yet in the system.

**How:** email the relevant department with a printed-to-pdf copy of your unofficial transcript/scores, requesting the override.

- Use your **GMU email**, including G#, e.g. **G01234567**
- Attach **PDF of unofficial scores** (with your name and score visible)
- You must re-attempt registration after the override is approved

Computer Science  **csug@gmu.edu**
Mathematics  **camaya@gmu.edu**
Others  <email the department>
What do I register for?
What do I register for? (Freshmen)

Recommendation: only four courses.

Are you calculus-ready? *(Math Placement Test score or credit for MATH 113/123)*

- Take four courses:
  - CS 110
  - CS 112
  - MATH 113 (or MATH 123 or MATH 124)
  - Mason Core *(e.g. approved Mason Core Literature course, COMM 100/101)*

Not calculus ready yet?

- CS 108 *(covers first half of CS 112)*
- CS 110
- proscribed next Math course (105, 123)
- Mason Core *(e.g. approved Mason Core Literature course, COMM 100/101)*
What do I register for? (Transfers)

Each transfer's starting point is different! Here are guidelines. Four courses recommended.

- **CS 110** *(needed first semester, everyone)*
- next programming course (e.g. 112, 211, 262 and/or 310)
- next math course (e.g. MATH 113, 114, 213, 125, 203, STAT 344)
- next natural science or mason core
- ENGH 302N (Natural Science sections only)
- CS-Related courses (PHIL 376, ENGH 388, more math, SWE courses)

- **Goal**: finish CS 310, 330, 367 to open up prerequisite chains
Getting Help

• 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 offer appointments every workday. (10am-12pm, 1pm-4pm)
    https://go.gmu.edu/cs-ug-advising

• Email: csug@gmu.edu
  • Contact us by email – for questions, sending forms, requesting CS course overrides
  • Only send from your Mason email account (@gmu.edu)
  • Always include your G number on all correspondence (e.g. G01234567)
  • Attach print-to-pdf webpage showing your relevant scores, e.g. A.P., transcript, etc. (needs to show your name on it too, of course!)
What Happens Next

- Activate your Mason ID/password
- Take the Math Placement Test if needed https://math.gmu.edu/placement_test
- Use PatriotWeb/PatriotScheduler to plan your semester
  - patriotweb.gmu.edu → Student Services → Registration
- Register on PatriotWeb (part of orientation schedule)
  - Registration Guide: https://registrar.gmu.edu/topics/registration-guide/
  - Adding to a waitlist: https://registrar.gmu.edu/students/patriot-web-tutorials/interactive-demo-adding-yourself-to-waitlists/

Getting Help

Advising

csug@gmu.edu

Buchanan D215
10am-12pm. 1-4pm weekdays
https://go.gmu.edu/cs-ug-advising
Override requests for CS courses.
(use @gmu.edu account, G#)

Things to Read/Explore

CS website: cs.gmu.edu
  Current Students → Undergraduates

Unofficial Transcript (on Patriotweb)

Catalog: BS CS policies
More Useful Orientation Links

These slides: (or via QR code to the right → )

Math Placement Test & Override Request:
science.gmu.edu/academics/departments-units/mathematical-sciences/mathematical-sciences-testing-center

Info about AP Scores:
www2.gmu.edu/admissions-aid/apply-now/how-apply/transfer/transfer-credit-policy#exams

George Mason Course Catalog: catalog.gmu.edu

How to Register for Classes:
• **video:** https://registrar.gmu.edu/wp-content/uploads/8E519658-EC8A-4DE5-ADA7-515A28693764-.mp4
  • **pdf:** https://registrar.gmu.edu/wp-content/uploads/Registration-Instructions_4-2-21.pdf

Adding yourself to a Waitlist:
• https://registrar.gmu.edu/students/patriot-web-tutorials/interactive-demo-adding-yourself-to-waitlists/