

CDS 130: Computing for Scientists

Fall 2023 Section K01

Syllabus and Class Policies

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Instructor's primary contact info: by email
Instructor's office: G758

Mode of Instruction

- This face-to-face (F2F) class meets every Tuesday and Thursday from 15:00 to 16:15 in room G304. Class attendance is mandatory. All students taking this course are required to follow the university's public health and safety precautions and procedures outlined on the university's Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>).

Instructor Office and Office Hours:

- The instructor will have an office (on campus or online) at G758 (office) during the semester.
- Students may contact the instructor anytime on Thursday between 13:00 (start time) and 14:30 (end time) for help.
- The instructor may conduct virtual office hours via Microsoft Teams Meeting by appointment.
- All meetings outside of published office hours are by appointment only. Students wishing to meet with the instructor are asked to send an e-mail or text to make an appointment.
- The instructor will endeavor to answer e-mail questions within 24 hours. Please note that questions received during the weekends may be delayed. If the instructor will be away from email for more than one day, times will be posted on the announcement tab in the Blackboard course folder.
- The instructor will announce any General Help Sessions being held on the class website. Sessions will be held virtually and/or in person.

STAR(s) Office and Office Hours:

- Non-applicable in Fall 2023.

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Course Introduction and Overview

CDS-130 Overview

CDS-130 is an introductory course about how to think computationally, and use computational tools (e.g., MATLAB) to solve scientific problems. First, a theoretical model is developed to represent a natural event. The model is then converted into a computer simulated model for investigation. In this course, you will learn how to develop computer algorithms to model events, how to use such algorithms to solve problems and how to use MATLAB programming as a tool to simulate the model. Upon completing the course, you will have developed this essential skill set, with direct applications in many scientific and business careers. Follow-on CDS courses provide further opportunities for students to learn additional computer language tools, more advanced techniques for more complex problems, and how to handle big data. Completing a minor or a major in this field may provide you a further advantage for your career. Recent results of salary surveys clearly showed that young professionals in the Washington, DC, area with backgrounds in computational data sciences are in high demand. In fact, the US Bureau of Labor Statistics estimated that the employment rate for data scientists will grow by 36% from 2021 to 2031. This is a mind-blowing increase compared to the average growth rate of 5%. The CDS-130 instructors understand that CDS-130 may be the first formal computer language course for many students. Therefore, CDS-130 focuses on the essentials on information technology for scientists. CDS 130 meets the Mason Core Requirements for Information Technology with Ethics (<https://masoncore.gmu.edu/information-technology-1/>).

CDS-130 Learning Outcomes

By the end of this course:

1. Students will understand the principles of information storage, exchange, security, and privacy and be aware of related ethical issues.
2. Students will become critical consumers of digital information; they will be capable of selecting and evaluating appropriate, relevant, and trustworthy sources of information.
3. Students can use appropriate information and computing technologies to organize and analyze information and use it to guide decision-making.
4. Students will be able to choose and apply appropriate algorithmic methods to solve a problem.

Advice to Succeed in CDS-130

It is strongly recommended that you stay on top of the workload of this course.

- Lectures and MATLAB skills are cumulative.
- Learning MATLAB is probably the first exposure to a scientific programming language for most students, so the course is paced to help everyone learn.
- Experience shows that CDS-130 assignments become highly demanding for students who choose not to invest time in their readings and other assignments - or both.

- Students who begin homework early in the week have the time to ask the instructors for help on questions or clarification on skills and concepts.
 - Remember that the only dumb question is the one you don't ask.
 - I can guarantee that someone else has the exact same question.
 - So, asking not only helps yourself, but will help your classmates.

Textbook: None.

- All class materials are made available through the class website on Blackboard.
- Presentations are made available in PowerPoint (.pptx) format and Adobe (.pdf) format. Presentation videos include transcripts (.txt) files and closed captioning.
- All printed materials are available for download in the Microsoft Word (.docx) format and/or Adobe (.pdf) format.

Course Logistics

CDS-130 course materials are distributed through MASON's Blackboard. CDS-130 is offered in both on-line and face-to-face sections. Face-to-face sections meet regularly on campus. On-line synchronous sections hold regular meetings remotely. On-line asynchronous sections are self-paced without regular meeting times. In a typical week, your work involves:

- Reading about 3 articles and watching about 10 videos
- Completing and submitting 2 to 4 assignments by the due dates.
- Posting discussions on ethics topics with your classmates

Late submissions of any assignments are NOT accepted.

Class Schedule

CDS-130 classes will be held according to the schedule provided in this. Should MASON close the Fairfax Campus due to inclement weather or other reasons, classes will be held on-line, and assignments will be due as scheduled, unless otherwise notified by the instructor.

The workload in CDS-130 is designed to take about 2 hours of outside work for each hour of classroom/lesson work. Since CDS-130 is a 3-credit course, students can anticipate working about 9 hours per week on CDS-130. This workload complies with 34 CFR 668.8 (k & l)¹ and MASON Policy 3011.²

¹ 34 Code of Federal Regulations Part 668— “Student Assistance General Provisions” Section 668.8 subsections “Eligible Program” can be found at: https://www.ecfr.gov/cgi-bin/text-idx?SID=074e5218454792ab5b4acc0e605ba2dd&mc=true&node=se34.3.668_18&rgn=div8

² MASON University Policy 3011 “Credit Hours” can be found at <https://universitypolicy.gmu.edu/policies/credit-hours>.

Safe Return to Campus

For on-line sections, there is no preparations needed for safe return to campus. For face-to-face sections, students should read and follow the MASON Safe Return to Campus Plan and conform to the COVID vaccination requirements. (Please read: <https://www2.gmu.edu/Safe-Return-Campus>)

Computer Requirements

Students are required to provide their own computer and internet access or to use a GMU provided computer with access to the Internet. The computer must have:

Hardware Minimums

- Reliable internet connection capable of running Blackboard, viewing videos (such as YouTube) and internet video conferencing capabilities (such as Blackboard Collaborate, Zoom).
- Sufficient capabilities to run MATLAB software. Click on the following link to see MATLAB's listing of software needed for MATLAB Version R2022b or later. (<https://www.mathworks.com/support/sysreq.html>)
- Video camera (aka: Web Cam) which is required to be used when taking exams with RESPONDUS. More information is available under the "Help: RESPONDUS" tab on the Class Website.
- A USB Drive or other computer storage (about a few mega-bytes) to save your work.
- In an emergency, students can connect with the instructor through a telephone call, but video connection is the expected norm.
- Calculators are NOT needed for CDS-130 and may NOT be used in exams. (The addition/multiplication needed during CDS-130 is quite simple.)

Software Minimums

- MS Office suite (or equivalent) is required for viewing classroom materials. A free copy of MS Office 365 can be downloaded from GMU IT Services at: <https://its.gmu.edu/service/office-365-onedrive/>.
- E-mail access to GMU's e-mail account
- RESPONDUS Lockdown Browser must be running on the computer when a quiz, or Exam is being taken. A free copy of the RESPONDUS Lockdown Browser may be downloaded without charge from GMU/IT Services at: <https://its.gmu.edu/service/respondus-lockdown-browser-monitor/>.
- MATLAB: Students MUST have access to a copy of MATLAB software or to MATLAB on-line. More information is available under the on the class website.
- Screen-capturing Capability
- You will need to be upload screenshots of your work as part of your assignments. When you submit a picture for an assignment, you are asked to ONLY use the .png or .jpg formats. Other graphic file formats are not 100% reliable or portable. Unreadable files receive NO credits for that assignment.

Email Requirements

- ALL e-mails to your instructors and STARs MUST be from your Mason e-mail account.
- Mason Mail MUST be checked daily at a minimum for announcements and updates.

- PLEASE put CDS-130 followed by your section number in the subject line and include your first name in closing your message.
- E-mail Tips:
 - Clean up your mailbox regularly so that messages are not rejected due to quote limits.
 - You may forward your Mason e-mail to other accounts but communication with your instructor and your fellow students should be conducted using Mason e-mail for verification of your identity and YOUR security.
 - Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.

Course Recordings

A person recording any class session MUST get verbal permission from the instructor prior to beginning any recording. All materials and class sessions are considered as Intellectual Property and therefore copyrighted by the instructor. Sharing of any recorded, copied, or other class materials without the instructors' written permission is STRICTLY prohibited.

Grading

Correspondence between Letter Grade and Numerical Grade

A+	> 97.00	B+	87.00 - 89.99	C+	77.00 - 79.99	D	60.00 - 69.99
A	93.00 - 96.99	B	83.00 - 86.99	C	73.00 - 76.99	F	< 60.00
A-	90.00 - 92.99	B-	80.00 - 82.99	C-	70.00 - 72.99		

Grading Items

Unless otherwise specified, each of the following items is a required component of this course:

- Ethics (13%):
 - In most weeks, an "Ethics Question of the Week" will be posted in Blackboard Discussion.
 - By Mid-Week (generally Wednesday) evening at 11:59pm, students are required to enter a short post (usually 2-3 sentences will do) to answer the question.
 - By End-of-Week (generally Saturday) evening at 11:59pm, students are to comment on 2 classmate responses to the question of the week (usually 1-2 sentences will do). Grade assigned will be based on subjective quality of the answers and insightfulness of comments.
 - Additionally, Ethics Quizzes may be assigned in some weeks.
- Your Turn Exercises "YTE" (20%):
 - YTE's are made up of a small number of quick-to-do problems to check your understanding of the material. The problems will be multiple choice, fill-in the blank or short answer questions and are auto graded.
 - All YTE for the week must be completed by their respective due dates shown on Blackboard.
- Weekly Assignments "WA" (20%):

- Each week a set of WA questions will be posted and MUST be completed by the due date shown on Blackboard.
- WA questions are a combination of medium-sized Ethics and MATLAB programming problems.
- WA questions may cover topics earlier in the course up through that week but will mostly focus on that week's material.
- WA problems are manually graded. Feedbacks will be available after grading.
- Stage Exams (20%):
 - There will be two Stage Exams in approximately week 5 and week 10.
 - The Stage Exams will be a combination of multiple-choice, fill-in-the-blank, short answer, Ethics problems, and MATLAB programming problems.
- Final Exam (25%):
 - The Final Exam will be a combination of multiple-choice, fill-in-the-blank, short answer, Ethics problems, and MATLAB programming problems.
 - The Final exam will mostly focus on materials after the 2nd Stage Exam cut-off but will cover materials from the entire course.
- Participation Points (2%):
 - There will be several activities throughout the course. Completion of these activities will earn participation points.
- Extra Credit Quizzes "ECQ":
 - Throughout the course there will be ECQ's. These quizzes will add extra credit points to one of the above grading categories. ECQ's are OPTIONAL.

Grade Calculations

- Grades for each category listed above will be mathematically determined as the total points earned divided by the total points available per category. The overall course grade will be a weighted sum of the grades from each category.
- All grade columns that begin with "NET" are updated after each item is graded. The column "Course Numeric Grade" is the current grade for all graded assignments and assessments.
- The overall course grade is NOT curved.
- An extra credit of about 7% of the course grade is built into the assignments and exams throughout the term in each of the above categories. There are no extra credit assignments/projects.
- Due dates are ABSOLUTE! Assignments submitted after the published due date will be reviewed but will NOT receive a grade. Time extensions are only given for extreme circumstances PRIOR to the start of week and may ONLY be granted in writing by your instructor, providing a specific extended due date.
- While correct answers are important, it is more important to show how you arrived at those answers. Completeness in answers (complete thoughts, complete codes, complete plots) is worth about half the credit for the problem.
- Students will be REQUIRED to show their GMU ID card PRIOR to beginning either exam on the webcam operating with the RESPONDUS Lockdown Browser. (Remember: "No GMU ID, No exam, No exception") More details to follow.

Exams

- You are ON YOUR HONOR not to cheat on Exams. MASON's Honor Code will be STRICTLY imposed.
- You will use the RESPONDUS Lockdown Browser to take all quizzes, and exams. The exam sessions will be monitored and recorded.
- You are permitted to use scratch paper on Exams. Within 2 hours of completing an exam, you are to upload a scan of your handwritten scratch paper This upload is considered as a part of the exam and will be given points for uploading as a part of the exam. Then, you are REQUIRED to destroy the scratch paper.

Netiquette for On-line Discussions³

- Class discussions should be collaborative, not combative; you are creating a learning environment, sharing information and learning from one another. Respectful communication is important to your success in this course and as a professional.
- Please re-read your responses carefully before you post them so others will not take them out of context or as personal attacks.
- Be positive to others and diplomatic with your words and I will try my best to do the same.
- Be careful when using sarcasm and humor. Without face-to-face communications your joke may be viewed as criticism.
- Experience shows that even an innocent remark in the on-line environment can be easily misconstrued.

Collaboration, Cheating, Plagiarism, Lying, and Stealing

All members of the Mason community are expected to uphold the principles of scholarly ethics. On admission to Mason, students agree to comply with the requirements of the GMU Honor Code and System.⁴ Similarly, graduating students are bound by the ethical requirements of the professional communities they join.

- To uphold the rigor of the course and the value of your degree, the Honor Code will be rigorously enforced. The instructor will use several manual and automated means to detect cheating in all work submitted by students. Keep in mind it is extremely easy to detect cheating with logic and code.
- All activities within all MASON courses are subject to GMU's Honor Code and IT policies.

³ Netiquette prepared by Charlene Douglas, Associate Professor, College of Health & Human Services, GMU.

⁴ <https://oai.gmu.edu/mason-honor-code/full-honor-code-document/>
<https://oai.gmu.edu/faculty-resource-center/syllabus-language-2/>
(materials provided by Volgeneau School of Engineering)

- The penalty for cheating, plagiarism, lying, and stealing will always be far worse than a zero grade, to ensure it is not worth taking the chance. Any instance of misconduct that is detected will be referred to the Office of Academic Integrity (OAI) and will most certainly translate into a lowered grade at a minimum and may result in course failure (a final grade of F).

Honor Code Violations

- If you have questions about what does/does not constitute an Honor Code violation, contact your instructor for clarification.
- For this course, the following additional requirements are specified:
 - Students are encouraged to discuss course content with other current students; however, all programming assignment submissions must contain only original, individually completed work.
 - More specifically, if any student submission is deemed to be greater than or equal to 50% identical to another student's submission, the course content discussion that occurred constitutes misconduct and all students involved will be referred to OAI for violating the Honor Code.
 - Copying material from any source not specifically authorized by your instructor may result in a referral to OAI for misconduct for all students involved.
 - Any contributions from ChatGPT or any other AI-generated documents are treated as other sources. Its use must be cited in the bibliography.
 - AI generated texts or assignments are not allowed in the class, and its use will be considered as cheating.
 - You can use AI to brainstorm, but the written assignment must be your own work.
 - Your instructor may use multiple detectors on detecting AI-generated documents. You are responsible for any copyright violations or plagiarism violations emanating from AI-generated submissions.
 - All Exams are closed book/closed notes, RESPONDUS Lockdown Browser MUST be used with the video camera turned on.
 - NO other electronic equipment (including phones of any type) may be used during any quiz or exam.
- Students are expressly prohibited from:
 - Discussing program design, algorithm logic, or code with individuals other than the course's instructor or current STARS.
 - Receiving, giving, or showing another student a partial, completed, or graded solution.
 - Knowingly sharing computers or storage devices (e.g., USB drive). If work is stolen because of a shared or borrowed computer or storage device, all students involved will be held equally responsible.
 - Stealing another student's work by taking photographs, using a lost storage device, or gaining access to another student's work in any other way without their knowledge. This action represents a particularly egregious offense placing an innocent student in jeopardy of receiving an Honor Code violation. Any student who has stolen will be referred for two violations (i.e., cheating and stealing), and will receive a sanction recommendation of at least course failure and a one-semester suspension.
 - Posting questions or a partial, complete, or graded solution on the Internet, even after the course has concluded.
 - Incorporating program design, algorithm logic, or code found on the Internet.

- All work must be newly created by the student during this term. Work developed for another course, or for this course in a prior term, may not be used without prior instructor approval.
- Posting or sharing course content (e.g., instructor lecture notes, assignment directions, or anything not created by the student) using any non-electronic or electronic medium (e.g., web site) so that the course content is accessible to someone other than the individual student. Such an act constitutes stealing/copyright infringement and is strictly prohibited without prior instructor approval.
- Giving others (e.g., family members, classmates and friends) access to university accounts (e.g., GMU email, blackboard).

If you have any questions on these requirements, please discuss them with your instructor. Any deviation from these requirements is considered a violation.

Misconduct Process

When the instructor for this section makes the determination that misconduct has occurred, the instructor shall:

- Notify the student that a potential misconduct incident has been identified. The student will be given a chance to provide explanation for their actions prior to the instructor's final determination that misconduct has occurred.
- For the first incident, the instructor shall:
 - Record a grade of zero for the entire assignment or assessment,
 - Issue a letter of warning/notification of misconduct to the student, and
 - Report the incident to the Chair of the Computational and Data Sciences Department and the MASON Honor Committee for further adjudication and additional remedial action/sanctions. (This is not optional for the instructor.
 - Note: Student cannot receive credit for the course until the MASON Honor Committee process has concluded. Also, withdrawing from a course does NOT stop the Honor Committee process.
- For a second or third incident, the instructor shall:
 - Repeat the recording and reporting as in the 1st incident,
 - Recommend to the MASON Honor Committee that the student be assigned an automatic grade of "F" for the course and immediate removal from the course.
 - Note: Additionally, with a student's 2nd incident's referral to the MASON Honor Committee from any course in any term, the Honor Committee automatically recommends suspension from MASON. With a student's 3rd referral, the MASON Honor Committee automatically recommends expulsion from MASON.

Further information about the Misconduct Process may be found at: <https://oai.gmu.edu>.

Disability Accommodations

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University.

If you are seeking accommodations for detailed information about the Disability Services registration process, Disability Services is located in Student Union Building I (SUB I), Suite 2500.

Email:ods@gmu.edu | Phone: (703) 993-2474

If you have a documented learning disability or other condition that may affect academic performance, students MUST:

- Have the need for accommodation on file with Office of Disability Services, please visit <http://ds.gmu.edu/>
- Provide the Instructor with a copy of the Office of Disability Services accommodation determination prior to receiving any accommodations. The instructor will closely protect this information as private and will not share the information with anyone other than the class assistants unless authorized in writing by the student or the Office of Disability Services.
- NOTE: If you are having ANY difficulties with CDS-130 due to personal limitations, PLEASE discuss them with your instructor.

Diversity and Inclusion

The CDS Department seeks to create a learning environment that fosters respect for people across identities. We welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

Sexual Harassment, Sexual Misconduct, and Interpersonal Violence

George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote community well-being and student success. We encourage students who believe that they have been sexually harassed, assaulted or subjected to sexual misconduct to seek assistance and support. University Policy 1202: Sexual Harassment and Misconduct speaks to the specifics of Mason's process, the resources, and the options available to students.

As a faculty member and designated "Responsible Employee," the instructor is required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per university policy 1412. If you wish to speak with someone confidentially, please contact the Student Support and Advocacy Center (703-380-1434) or Counseling and Psychological Services (703-993-2380). You may also seek assistance from Mason's Title IX Coordinator (703-993-8730; titleix@gmu.edu).

Student Support Resources

The following resources are available to students:

- Counseling and Psychological Services
- The Learning Services Office or field-specific tutoring
- The Office of Diversity, Inclusion, and Multicultural Education (ODIME)
- University Career Services

- University Writing Center

Information and links regarding these and other student support offices are available on our Student Support Resources on Campus page.

Concluding remarks: We want to help you succeed in CDS-130 and in your MASON career!