Course Syllabus

Course: **CS 1132 Short Course in MATLAB** (Spring 2023)

Instructor: **K.-Y. Daisy Fan** (kdf4)

Website: **Canvas**

Credit Hours and Credit-Hour Options: **1.5 credits, S/U Only.**

Course Description

Introduction to the MATLAB programming language. Covers the basic programming constructs of MATLAB, including assignment, conditionals, iteration, functions, arrays, vectorized computation, and scientific graphics. Designed for students who need MATLAB for research or other courses. Does not assume any previous programming experience.

Expected Outcome

Students who take this course will be able to write simple MATLAB programs using procedural statements--assignments, conditional statements, loops, function calls--and arrays.

Times & Places

- **Lecture**: **MW 2:30 - 3:20pm** Phillips Hall 101 (13 sessions total)
- **Lab**: **F 2:55 - 4:10pm** Upson Hall 225 (7 sessions total)

Office and Consulting Hours

The instructor and teaching assistant hold weekly office hours, and undergraduate consultants hold weekly consulting hours. See the **Staff and Office Hours page** for the time and location beginning on August 28.

Communication

Course announcements and materials will be posted on Canvas. Assignment submission and feedback will be managed by **CMS (https://cmsx.cs.cornell.edu/)** . If you have a question about course material, post it to **Ed Discussion** (online forum); public posts are preferred so that others can benefit from the discussion (posts can be anonymous to other students). If you need to request special accommodation or discuss something one-on-one with the instructor, please use the instructor's office hour or email.

Material

- *Textbook (required for beginners, optional for experienced programmers)*
  - *Programming in MATLAB (an interactive ebook by **zyBook (https://learn.zybooks.com/)**). A subscription will last until December 30, 2023. A subscriber can print a personal copy of the book but it will exclude the interactive contents.*
    1. **Sign in or create an account at learn.zybooks.com (https://learn.zybooks.com/)**
    2. **Enter zyBook code: CORNELLCS1132FanFall2023**
    3. **Subscribe**

    The zyBook registration process will ask for your "ID number." DO NOT provide your student ID number! Instead, provide your NetID. (You should not give your student number to any entity outside of Cornell.)
- *Software:* MATLAB Student Version, available *for free* to current students (with Cornell NetID)
  - Use **MATLAB Online (https://matlab.mathworks.com/)** via your web browser--no download required!
  - Or download MATLAB student version onto your personal computer through CU Software Licensing Store through Cornell Licensing. Navigate to **https://it.cornell.edu/software-licensing/install-matlab#section-2 (https://it.cornell.edu/software-licensing/install-matlab#section-2)** and follow all steps carefully.
  - All students can use MATLAB Online on their personal computers or at public computer labs across campus.

Assessment

Though S/U only, the course **requires mastery of the material: you must pass the course at the B level**. Specifically, your overall course score must be 85 or higher, assessed through programming assignments. There is no exam.

Lab exercises	10%
Assignment 1	20%
Assignment 2	30%
Assignment 3 + Book "Challenge Activities"	40%

Multiple submissions are allowed in order to help you achieve mastery. For each assignment, if your first submission isn't perfect you may correct and *re*-submit it **once** without penalty; an *additional re*-submission, if allowed, incurs a 10% deduction for that assignment. We will accept a (re)submission that is late but within 24 hours of the deadline with a 10% penalty for that assignment. For each assignment, penalties accumulate--carry forward--from (re)submission to resubmission. Each assignment must be submitted by its individual final deadline.

The 40% of the course score from Assignment 3 (A3) plus Book Challenge Activities (BCA) is flexible: A3 is worth at least 30%; BCA is worth at most 10%.
Example 1: Suppose you correctly solve all the BCA questions. Then you have earned 10 overall course points out of 100 and your A3 is then worth 30% of your course score.
Example 2: Suppose you correctly solve half of the BCA questions. Then you have earned 5 overall course points out of 100 and your A3 is then worth 35% of your course score.
Example 3: Suppose you did not do any of the BCA questions. Then your A3 is worth 40% of your course score.

New programmers are strongly advised to complete the BCA, i.e., "Challenge Activities" in the textbook (zyBook) in order to get enough practice with programming. (Note that only the CHALLENGE Activities in the required sections, i.e., the sections NOT marked optional, count for credit; the Participation Activities do not count.) If you are an experienced programmer and choose not to obtain the specified textbook, your course score does not suffer in this flexible scoring scheme.

Schedule and Topics (subject to change)

- Week 1: MATLAB basics, conditionals, user-defined function
- Week 2: Loops, 1-dimensional array (vector), simple graphics
- Weeks 3 & 4: 2-dimensional array (matrix), nested loops
- Week 5: Vectorized arithmetic and examples
- Week 6: Type char array, cell arrays, file input/output
- Week 7: Extraction and filtering, image processing

Alongside the above topics, throughout the course you will practice **testing and debugging**.

Course Management

Community of Learning

We aim to create an inclusive learning environment where diversity and individual differences are respected, appreciated, and recognized as a source of strength. It is expected that students in this class will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own. By participating in this course, all students and staff commit to contribute positively to our community of learning:

- Recognize that everyone will start from different bases of knowledge. Be respectful and constructive while pointing out mistakes.
- Listen to one another and, especially during group work, actively encourage everyone to contribute.
- Help build a lively and active online learning environment. Outside of class meetings, ask *and answer* questions on our Ed Discussion forum, always remembering to be respectful and constructive.

Academic Integrity

Integrity is a cornerstone of our learning community; it is about respecting yourself and respecting others. You respect yourself by submitting work completed through your own effort; you respect others by acknowledging contribution from others when such external contribution is allowed. Refer to the University **Code of Academic Integrity** (http://theuniversityfaculty.cornell.edu/academic-integrity/) for further information. Ignorance of the Code is not an acceptable excuse.

On the weekly lab exercises, you are free to collaborate with classmates, but artificial intelligence (AI) powered coding tools are prohibited. On the three programming assignments, your own effort is required and it would be a violation of academic integrity to:

1. Look at or be in possession of the code of another student in this semester or a previous one with a similar assignment.
2. Show or give your code to another student not in your group.
3. Post code on any communication platform (including Q&A sites and public posts on Ed Discussion) that other students can see.
4. Use any artificial intelligence (AI) powered coding tool to generate code for any part of your assignment. See further explanation below.

You may discuss assignments with others at a high level, but the discussion should not extend to writing actual code, picking variable names, agreeing on specifications or comments, etc. If someone else contributes a key idea affecting your program design, you must credit them in a code comment, clearly specifying the scope of their contribution.

In a programming course, we believe you must code yourself to internalize the material. The act of construction reinforces concepts, checks your knowledge, and gives you opportunities for learning by failure that ultimately accelerate your learning. Generative AI tools such as ChatGPT, GitHub Copilot, and advanced auto-completion plug-ins deny you the opportunity to learn by construction. Consequently, we forbid the use of AI-powered coding tools in this course. To be explicit, use of GitHub Copilot, ChatGPT, or any other AI-powered coding tool is an academic integrity violation.

If we suspect that the Code of Academic Integrity is not being upheld, we may upload student submissions to 3rd-party services that detect plagiarism; enrollment in this course implies consent for your submissions to be used in this manner.

Accommodation

Students with Disabilities: Your access in this course is important to us. In order to have adequate time to arrange your approved accommodation, you must request your accommodation letter from **Student Disability Services (SDS) (http://sds.cornell.edu/) no later than the add/drop deadline for the semester**. If you become registered with SDS later in the semester, you must request your accommodation letter as soon as possible. Once SDS approves your accommodation letter, it will be emailed to both you and me. Please follow up with the course instructor to discuss the necessary logistics of your accommodation(s).

Physical and Mental Health: Your health and wellbeing are important! If your physical or mental health prevents you from completing required work, email the course instructor as soon as possible to make an alternative arrangement for the missed work. Additionally, there is a continuum of campus resources available to support your mental health: **https://mentalhealth.cornell.edu/get-support/support-students (https://mentalhealth.cornell.edu/get-support/support-students)** .

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