Course Syllabus

GEOS 3084: Computing in Geospatial Science
Kimbell School of Geoscience
McCoy College of Science, Mathematics, & Engineering
Spring 2023 Section 201 & 21A, TuTh 12:00PM-2:40PM, Room BO-105

Instructor Contact Information

Instructor: Dr. Kashif Mahmud
Office: 307H Bolin Hall
Office hours: MW 1:50-3:30PM, F 8:50-10:30AM
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> This syllabus may change during the semester due to changes in course structure. Check D2L often for updates!

Teaching Assistant (TA)

Your TA is here to help you navigate this course as well. You should draw on them as resources throughout the semester. You should communicate with them regarding missed classes or assignments (while also copying me on the email). As they will be grading assignments, grading inquiries should be directed to them as well.

Teaching Assistant: Kuwin Wyke
Office hours: TuTh 11:30AM – 12:00PM, F 12:00-1:00PM, Room BO-105
Email: kwyke0708@my.msutexas.edu

Textbook & Instructional Materials (**Required**)
MATLAB - A Practical Introduction to Programming and Problem Solving, Stormy Attaway, Elsevier, 6th Ed., ISBN: 9780323917506.

Office Hours:

I can meet with students 1-on-1 at my (and the student's) discretion. For 1-to-1 meetings, we can adhere to the original office hours given above or schedule a meeting time via email. If you do not wish to meet in person. You are welcome to call my office during my office hour times. We can also use Zoom to set up virtual meetings.

Communication:

Email – I will use your **D2L** email account to communicate with you. It is your responsibility to check your D2L email. When you email me you need to make sure that you are very clear in describing the question/issue. Always start by stating your name and what class you are in. Use formal language and give it a proofread. If I can't understand your writing, I can't respond in a meaningful way. Vague emails will not receive a response.

D2L – I recommend that you download the '**Brightspace Pulse**' app on your phones so that you can be alerted anytime I post anything on D2L. If you do not download this app, you can just log into D2L often to see any news updates and new material. I will alert you about new lecture material, assignments, quizzes, and tests via D2L news items.

Course Objectives
The course will teach the students how to use software to create scientific graphics, to perform mathematical calculations, and to analyze scientific data using MATLAB. Students will:
- Learn the basics of scientific computing
- Be able to develop MATLAB code and construct scientific programs to perform data manipulation tasks with geoscience and environmental science datasets
- Know how to use commonly available MATLAB built-in functions and toolboxes
- Write efficient, well-structured and commented MATLAB scripts for a range of scientific data analysis tasks and mathematical calculations
- Use available documentation and internet resources to learn more advanced skills
- **Graduate credit** permits an additional level of analysis, application, evaluation, and knowledge synthesis

Prerequisite
This is a first course in scientific computing. <u>No previous programming experience is required (although it certainly is helpful).</u> It is necessary, however, to have *some* familiarity with mathematics (e.g., college-level algebra).

Course Format
Content for this class is not delivered in the traditional lecture/lab format. Lecture and Lab are integrated into the entire class time. You will use your textbook and lecture/lab guidance to complete all class activities. Weekly lab assignments will be completed and submitted the week after with Wednesday deadline. These will come with separate guidance documents in D2L.

Course Assessment and Grading
- **Four quizzes** will be given this semester. Each quiz mostly covers the new material presented since the previous quiz. However, the earlier class materials will be useful to solve the later quiz problems. All quizzes will be given during combined lecture/lab periods. Quizzes will be comprised of multiple choice, true/false, and/or practical exercises. **7.5% each of class grade, 30% total.**
- **Class Products:** Each class, you will follow along with the textbook to produce a final class product. This product serves as a participation grade for the course and must be submitted in the correct file format. Class products

are due on the day of class, mostly Thursdays (late submission will not be accepted) and will carry **14% of class grade**.

- **Lab Assignments:** You will have weekly lab assignments to complete, 14 in total. I will provide details in D2L for you to access the assignments and data (if needed). You will have 1 week to complete each assignment and late assignments will have one mark deducted for each day. **Check out D2L for assignment due date**. Lab Assignments will carry **56% of class grade.**

    - *You will likely need to work outside of the scheduled class time to complete course activities and assignments. Bolin 105 will be open during the week.*

    - *Class grades will be uploaded in D2L or given during office hours or by appointment. You will be responsible for keeping track of your assignment grades.*

Table 1. Overall percentage value for course exams and assignments

Exams/Assignments	Percent
Class Products	14
Lab Assignments	56
Quizzes	30
Total	100

Grading Standards
This class uses the following numerical equivalents for grades:
A = 100-90% | B = 89-80% | C = 79-70% | D = 69-60% | F = 59-0%.

Extra Credit:
There will be no extra credit offered for this course. If you are struggling, try harder. If you are still struggling, come see me.

Late Work:
Make-up quizzes will only be given where notice of a university-excused absence is presented ***before or within one class period of the scheduled exam.** Late Class Products will not be accepted. Late lab assignments will have one letter grade deducted for each day. ***Special note** – Class Products and lab assignments submitted on time, but in the wrong file format, will be considered late if a corrected re-submission is not made before the due date.

Attendance – Attendance is necessary. In-person attendance for undergraduate students in this class is **mandatory** except for university-excused students. Students with 4 or more unexcused absences may be dropped from the course. All students should refer to the MSU Student Handbook for university policies related to student responsibilities, rights, and activities.

Desire-to-Learn (D2L)
Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into D2L through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Graduate Credit
Those graduate students enrolled in this course will be required to complete 1 to 2 additional individual lab work(s) related to Machine learning algorithms and concepts to receive graduate credit. Graduate students will also receive 2 to 4 additional graduate level assignments and modified quizzes with long-format programming problems that will challenge their abilities at a higher level. Additionally, the writing style and content of the assignments will be evaluated at a graduate level.

Student Handbook
Refer to: Student Handbook

Academic Misconduct Policy & Procedures:
Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct. Cheating, collusion, and plagiarism on course assignments will result, at a minimum, in a grade of '0' for that assignment. Depending on the magnitude of the offense, a course grade of 'F' or withdrawal from the course may be imposed.

Change of Schedule:
A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Important Dates:
Last day for term schedule changes: 01/20
Deadline to file for graduation: 02/20
Last Day to drop with a grade of "W:" 03/20
Refer to: Drops, Withdrawals & Void

Refund and Repayment Policy:
A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester.

HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exists in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students With Disabilities:
In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to Disability Support Services.

College Policies:
Campus Carry Rules/Policies
Refer to: Campus Carry Rules and Policies

Smoking/Tobacco Policy:
College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy:
To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Grade Appeal Process:
Update as needed. Students who wish to appeal a grade should consult the Midwestern State University Undergraduate Catalog

GEOS 3084 Course & Lab Schedule

Week	Dates	Lecture / Lab Topics / Assignments / Quizzes	Book Chapter(s)
1	1/17, 1/19	Course & Computer Lab Intro Introduction to MATLAB **Lab Assignment 1 assigned**	1
2	1/24, 1/26	Vectors and Matrices **Lab Assignment 1 due** **Lab Assignment 2 assigned**	2
3	1/31, 2/2	Introduction to MATLAB programming **Lab Assignment 2 due** **Lab Assignment 3 assigned**	3
4	2/7, 2/9	Selection statements **Lab Assignment 3 due** **Lab Assignment 4 assigned** **Quiz 1 2/9**	4
5	2/14, 2/16	Loop statements and vectorizing code **Lab Assignment 4 due** **Lab Assignment 5 assigned**	5
6	2/21, 2/23	MATLAB programs **Lab Assignment 5 due** **Lab Assignment 6 assigned**	6
7	2/28, 3/2	Text manipulation **Lab Assignment 6 due** **Lab Assignment 7 assigned** **Quiz 2 3/2**	7
8	3/7, 3/9	Data structures **Lab Assignment 7 due** **Lab Assignment 8 assigned**	8
9	3/14, 3/16	**No Class – Spring Break**	NA
10	3/21, 3/23	Data transfer **Lab Assignment 8 due** **Lab Assignment 9 assigned**	9
11	3/28, 3/30	Advanced functions **Lab Assignment 9 due** **Lab Assignment 10 assigned**	10
12	4/4, 4/6	**Quiz 3 4/4** **No Class 4/6 – Easter Holiday**	N/A
13	4/11, 4/13	Object-oriented programming **Lab Assignment 10 due** **Lab Assignment 11 assigned**	11
14	4/18, 4/20	Plotting techniques **Lab Assignment 11 due** **Lab Assignment 12 assigned**	12
15	4/25, 4/27	Sights and sounds **Lab Assignment 12 due** **Lab Assignment 13 assigned**	13
16	5/2, 5/4	Advanced Mathematics **Lab Assignment 13 due** **Lab Assignment 14 assigned** **Quiz 4 5/4**	14
17	**Final Week**	**Lab Assignment 14 due by Monday (5/8) Midnight**	N/A

Underlined dates are classes missed due to the Holidays

Notice
Changes in the course syllabus, format, assignments, and schedule may be made at the discretion of the instructor.