

MAS 3114
SPRING 2020

SYLLABUS

COURSE TITLE: Computational Linear Algebra

CATALOG DESCRIPTION: Linear equations, matrices, and determinants; vector spaces and linear transformations; inner products and eigenvalues. This course emphasizes computational aspects of Linear Algebra.

COURSE CONTENT: MAS 3114 is designed to serve science, computer science, quantitative science, engineering majors, and mathematics minors. Mathematics majors are required to take MAS 4105.

MAS 3114 is a 3-credit course on linear algebra whose topics are of a computational nature. The topics include linear equations, matrices, determinants, vectors, vector spaces, linear transformations, inner products, eigenvalues, and applications.

Computer projects are assigned (5 per semester). We require the students to learn MATLAB, a programming environment, for the projects. Proofs are not stressed as much as in MAS 4105 Linear Algebra 1.

PREREQUISITES: familiarity with a programming language and a grade of a C or better in MAC 2312.

COURSE GOALS: By the end of the term, we expect the students to be able to analyze and solve linear systems and apply their knowledge to the real world problems.

INSTRUCTOR: **Dr. Larissa Williamson**
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E-Learning: <https://elearning.ufl.edu/>

Course Calendar

MAS 3114 – 07HF (17045)

Spring 2020	Monday	Tue	Wed	Thursday	Friday
January	6 M1	7	8 M2	9	10 M3
	13 M4	14	15 M5	16 HW M1-M3 due Skill Survey Quiz	17 M6
	20 Holiday	21	22 Review1	23 HW M4-M6 due	24 Exam1:M1-M6
	27 M7	28	29 M8	30 HW M7 due	31 M9 Project 0 due
February	3 M10	4	5 M11	6 HW M8-M10 due	7 M12 Project 1 due
	10 M13	11	12 M14	13 HW M11-13 due	14 Review2
	17 HW M14 due Exam2:M7-14	18	19 M15	20	21 M16
	24 M17	25	26 M18 Project 2 due	27 HW M15-17 due	28 M19
S P R I N G B R E A K: February 29 – March 8					
March	9 M20	10	11 M21	12 HW M18-20 due	13 Review3
	16 HW 21 due Exam3:M15-21	17	18 M22	19	20 M23
	23 M24	24	25 M25 Project 3 due	26 HW M22-24 due	27 M26
April	30 Review4	31	1 Exam4:M22-26	2 HW M25-26 due	3 M27
	6 M28	7	8 M29	9 HW M27-28 due	10 M30
	13 M31	14	15 M32 Project4 due	16 HW M29-31 due	17 Review 5
	20 HW M32 due MakeUp Exam (optional)	21	22 Quiz:M27-32 (on-line)	23 Reading Day	24 Reading Day

Delivering Content

TEXTBOOK & ACCESS CODE: We use the following textbook in this course:

Linear Algebra and Its Applications, 5th edition,
by David C. Lay, Steven R. Lay, Judi J. McDonald*

Access code to **MyLab & Mastering** is required in the course.

An access code can be obtained through UF All Access by authorizing charges to your student financials account and is provided at a discounted price**

If you do not wish to authorize charges to your student financials account, you may purchase an access code at the Campus bookstore instead (<https://www.bkstr.com/floridastore>), which will be more expensive than opting in.

* Registration with MyLab gives you an access to an electronic version of the textbook. If you wish to purchase a print text, you may also purchase those at the bookstore at a discounted price.

****Please see Course Materials and Registration Instructions on Canvas for complete information on obtaining an access code to MyLab by authorizing charges to your student financials account through UF All Access program.**

LECTURE NOTES: Lecture note shells make the note taking easier and are required in the course. They can be printed from E-Learning (under **Lecture Notes**) or purchased at Target Copy (1412 W University Ave, Gainesville, FL 32603) when the semester begins.

TEXTBOOK READINGS: Reading the textbook is a part of learning process. The students are strongly recommended to read the corresponding sections of the textbook after (or before) attending a lecture and BEFORE doing the homework. The pages of the textbook that match the content of a lecture are listed in each corresponding Module on Canvas.

Course Structure

The course management system is E-Learning (Canvas): <https://elearning.ufl.edu/>

The course is divided into **5 units**:

<u>Unit 1</u>	M01 – M06	Linear Systems
<u>Unit 2</u>	M07 – M14	Matrices & Determinants
<u>Unit 3</u>	M15 – M21	Vector Spaces & Bases
<u>Unit 4</u>	M22 – M26	Eigenvalues & Eigenvectors
<u>Unit 5</u>	M27 – M32	Orthogonal Sets & Linear Models

MODULES & DUE DATES: It is advisable to begin working on a module on the date indicated in the Calendar so that you will stay on track and avoid having too many Modules to complete by the Due Date. Each Module becomes available on MyLab & Mastering at least 10 days prior to the due date and will be closed on the Due Date at 11:59 pm ET. The assignment, which is required to be completed for each Module, is an on-line Homework.

REVIEW: The dates indicated in the calendar as “Review #” are the due dates for Review Modules. A Review Module is the last one in each Unit. Working on the Review modules will help you to prepare for exams and the quiz (no homework is assigned for a Review module).

TEXTBOOK HOMEWORK: Textbook homework problems are assigned after each lecture. **They will not be graded** but should be considered as an additional tool for mastering the material and preparing for the Exams. A list of recommended Textbook Homework problems is located in each corresponding Module on Canvas.

Assessments

ON-LINE HOMEWORK: Each on-line **Homework** assignment (HW) is a set of problems assigned in MyLab and numbered according to the module covered. A HW assignment is due at 11:59 pm on the due date indicated in the Calendar, on Canvas, and on MyLab. The HW **will be closed after the due date**. A credit for a HW will be given according to the percent value of the correct work completed. There will be total of 32 assignments offered and the **2 lowest scores will be dropped**.

LECTURE PARTICIPATION: Starting on the second week of classes, lecture participation quizzes will be given in the lecture hall during each lecture. The students are required to register with **MyLab & Mastering** in order to use Pearson's Learning Catalytics (LC) system and get points for participation. The students will access the system from Canvas by clicking on the link **MyLab & Mastering** on the left-hand panel. The active session will be shown on MyLab Course Homepage. The students simply click on the active session's number to join. Learning Catalytics allows the students to use their smartphone, tablet, or laptop to respond to the questions in class, and their responses will be graded and recorded in the gradebook. A total of 33 sessions will be graded. There will be 2 multiple-choice questions per session. Each question is worth 1 point and the grade will be assigned as 75% for participation and 25% for correctness. A student will get a full credit 1.75 by attempting two questions and answering one correctly. If the students answer both questions correctly, they receive 2 points for the session, which includes 0.25 bonus. **The three lowest scores for the Lecture Participation will be dropped at the end of the term** to compensate for occasional absences, device failures, etc.

EXAMS & QUIZ: There will be four Unit Exams, an optional MakeUp Exam, and the Quiz offered during the term. Each Unit Exam covers the corresponding Unit, the Quiz covers Unit 5, and an optional MakeUp will be given for one of the Unit Exams. All exams in this course will be given in the **lecture hall** during the **regular class time** on the dates indicated in the Calendar. The Quiz has to be completed within MyLab and Mastering on the date indicated in the Calendar. The Quiz is mandatory, but does not require proctoring. Each exam contains 12 five-point multiple-choice questions and 5 one-point true/false bonus questions – the score will count out of 60 points. A 60-minute Quiz in MyLab contains 12 multiple-choice questions and will be graded out of 60 points (equivalently, out of 12 points in MyLab) – the review of the Quiz will become available after the due date and can be accessed from MyLab Gradebook. It may be necessary to miss a Unit Exam during the term or you might not be satisfied with one of your grades earned on the Unit Exams. For these reasons, an OPTIONAL MakeUp Exam will be offered on one of the four Unit Exams – no documentation is needed to take it. The grade on the MakeUp will replace your grade on the corresponding Unit Exam only if you do better on the MakeUp than on the regular Exam. A MakeUp is in the same format as the corresponding unit exam and counted out of 60 points.

PROJECTS: 5 computer projects will be assigned during the semester. All projects have to be completed by using MATLAB software. Project 0 is an individual project and will be counted out of 10 points. Projects 1–4 are group projects – each is worth 30 points – **and the grade will be assigned to the whole group**. The projects have to be submitted on Canvas through the Assignments before the due dates indicated on the Calendar. For more information please visit the link “MATLAB Projects” on Canvas and read the instructions for each Project located under Assignments, Project#.

Make-up Policy

MAKEUP POLICY ON ON-LINE HOMEWORK: If you missed the due date on homework on a legitimate and documented reason (which include: being sick, being away on a UF business, a family emergency), you have to present valid documentation to Dr. Williamson prior to the due date or right after you came back to school if you were sick. Late excuse documentation will not be accepted. **No extensions on HW will be given after the due date without an appropriate documentation.**

MAKEUP POLICY ON EXAMS AND QUIZ: **If you are missing a Unit Exam due to legitimate documented circumstances** (which include: being sick, being away on the UF business, a family emergency), you have an option of taking the MakeUp Exam. However, if you wish to make it up earlier and save the MakeUp for another test, you will need to contact Dr. Williamson (lwill@ufl.edu) and provide the documentation at least a week prior to the test or immediately afterwards if you were sick. Important: an early make-up exam has to be scheduled within one week time frame of presenting the documentation; otherwise, the student will take the regular MakeUp. Late excuse documentation will not be accepted. Missing the Quiz without an appropriate documentation and making it up later will result in a deduction of points at the Instructor’s discretion.

IMPORTANT NOTE: Homework, exams, quizzes, and projects will not be reviewed, offered, and/or accepted for grading at the end of the term. We will not accept any late excuse documentation. You can discuss an Exam, homework, lecture participation quiz, or Project within one week and the Quiz within one day with your instructor if there is a grading error or any other problem. “Late submission” policy on Projects is posted on each individual Project page on Canvas.

Grades

COURSE GRADE: The course grade is assigned based on the student’s performance on the following weighted categories:

30	Lecture Participation	@	52.5 points	9 %
30	On-line homework	@	90 points	16 %
5	Projects	@	130 points	23 %
1	Quiz	@	60 points	10 %
4	Exams	@	<u>240 points</u>	<u>42 %</u>
Total:			572.5 points	100 %

The course grade is the grade satisfying the conditions below and **will be adhered** to:

	Minimum %		Minimum %
A	90 %	C-	62 %
A-	86 %	D+	58 %
B+	82 %	D	54 %
B	78 %	D-	50 %
B-	74 %	E	0 %
C+	70 %		
C	66 %		

Note: We have 0.5% round up margin towards a higher letter grade.

GRADE POSTING: All grades will be posted in a timing manner on E-Learning (Canvas) at <https://elearning.ufl.edu/>. You are advised to check regularly whether your grades are handled and recorded properly. You should immediately report any problem with your grade to the Instructor.

Miscellaneous

CALCULATOR POLICY: Calculators may be useful for some homework problems but are not required in the course and are not allowed on the exams.

HELP: Please visit Resources & Help link on the Canvas Homepage for the information.

Grades: Grading will be in accord with the UF policy stated at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Honor Code: “UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The [Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.”

Class Attendance: “Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.”

Accommodations for Students with Disabilities: “Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/> It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.”

Online Evaluations: “Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.”

Contact information for the Counseling and Wellness Center: <https://counseling.ufl.edu/> 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.