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 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. The course is delivered entirely online.

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 (Canvas):   https://elearning.ufl.edu/

E-MAIL: Preferred way of communication is **Canvas E-mail** via **Inbox** tool

Course Calendar

Summer 2021	Monday	Tuesday	Wednesday	Thursday	Friday
May	10 M1 L	11 M2 L	12	13 M3 L	14 HW&LC M1-2 Skill Survey Quiz
	17 M4 L	18 M5 L	19	20 HW&LC M3-M5	21 M6 L **Project 0 due**
	24 M7 L	25 M8 L	26 M9 L	27 HW&LC M6-M8 Review1 LC due	28 M10 L **Project 1 due**
June	31 Memorial Day	1 M11 L	2	3 HW&LC M9-11	4 M12 L
	7 M13 L	8 M14 L	9	10 HW&LC M12-14 Review2 LC due	11 M15 L **Exam1:M1-14**
	14 M16 L	15 M17 L	16 **Project 2 due**	17 HW&LC M15-17	18 M18 L
	S U M M E R B R E A K: J U N E 21 – J U N E 25				
July	28 M19 L	29 M20 L	30 M21 L	1 HW&LC M18-20	2 M22 L
	5 Holiday	6 M23 L	7	8 HW&LC M21-23 Review3 LC due	9 M24 L **Project 3 due**
	12 M25 L	13 M26 L	14	15 HW&LC M24-26 Review4 LC due	16 **Exam2:M15-26**
	19 M27 L	20 M28 L	21	22 HW&LC M27-28	23 M29 L **Project 4 due**
	26 M30 L	27 M31 L	28 **MakeUp**	29 HW&LC M29-31	30 M32 L
August	2	3 HW&LC M32 Review5 LC due	4 **Quiz: M27-32**	5	6

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 and Mastering** is required in the course. **Access code can be obtained through UF All Access program by authorizing charges to your student financials account and is provided at a reduced price.****
This option will become available starting one week prior to the beginning of the semester and ends three weeks after the first day of class.
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 purchase it at the bookstore.
****Please see "Course Materials and Registration Instructions" on E-Learning (Canvas) for complete information on obtaining an access code to MyLab and Mastering through UF All Access and registering with the site.**

LECTURE NOTES: Lectures in this course are delivered using Lecture note shells which can be printed from each Module on Canvas or from the Canvas page "Lecture Notes". Lecture note shells make note taking easier and are required in the course. The whole set of the Lecture Notes (Course Pack) is available for purchase at Target Copy: it can be either picked up at the location (1412 W University Ave, Gainesville, FL 32603) or ordered online (http://target-copy.com/) and it will be shipped to you.

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) viewing Part I or Part II of a lecture and <u>before</u> doing homework on MyLab or taking the quiz on Learning Catalytics (see "Lectures" and "Lecture Participation Quizzes" in this Syllabus). The pages of the textbook matching content of the lectures are listed on each Canvas Module.

Course Structure

The Course Management System is E-Learning (Canvas): https://elearning.ufl.edu/
The course material 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: The course has total of 32 conceptual Modules. It is advisable to complete a Module <u>on or before</u> the date indicated on the Course Calendar as "M# L", so that

you can stay on track and avoid having too many Modules to complete by the Due Date. To start working on a Module, the student needs to access it through the Canvas course main page and go through the steps on the "To Do" list. Working on M01-M32 requires viewing the Lecture and completing MyLab assignments, which include online Homework (HW) and Learning Catalytics (LC) quiz (please see "Lectures", "On-line Homework", and "Lecture Participation Quizzes" below). Each MyLab assignment will close on the due date at 11:59 pm ET.

The dates marked on the Calendar as "Review# L" indicate the dates <u>on or prior to which</u> the students are advised to start working on a Review Module. A Review Module is the last one in each Unit. Working on the Review modules will help you to prepare for the Exams/Quiz. The assignment required to be completed for each Review Module is a LC quiz (there is no HW).

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. Lists of recommended Textbook Homework problems are located in Canvas Modules.

LECTURES: The students will view Lectures online. All Lectures are recorded and available in each Module on Canvas at any time; however, to stay with the course flow, it is recommended viewing each Lecture <u>no later</u> than on the date marked on the Course Calendar as "M# L".

Assessments

ON-LINE HOMEWORK: Each on-line **Homework** assignment (HW) is a set of problems assigned on MyLab and numbered according to the Module covered. A HW assignment will give you necessary practice for mastering the material delivered in lecture. A homework assignment is due at 11:59 pm on the due date which is indicated on the Course Calendar, on Canvas, and on MyLab & Mastering. 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 a total of 32 homework assignments offered, and the **2 lowest scores will be dropped** at the end of the term.

LECTURE PARTICIPATION QUIZZES: Viewing Lectures (available on Canvas), analyzing them, and taking Learning Catalytics quizzes is considered Lecture Participation and required in the course. Pearson's software Learning Catalytics (LC) will monitor your Lecture Participation – you will be able to access it from MyLab and Mastering. For each Module, there is a quiz on LC: the students will join the corresponding session and answer the questions. Your LC quiz responses will be graded and <u>after the deadline for the quiz</u> your score will show on MyLab Gradebook. A total of 37 LC sessions will be offered. There are 2 questions per session. Each question is in a "many choice" format and worth 1 point, thus, a maximum of 2 points can be earned on a LC quiz. The grade will be assigned as 75% for participation and 25% for correctness and will be counted out of 1.75 points – thus, a student can earn 0.25 point bonus for answering both questions correctly. **The 5 lowest scores on LC quizzes will be dropped at the end of the term**.

<u>Important</u>: The due dates for M01-M32 LC quizzes are the same as for the corresponding HW. The due dates for the Review LC Modules are marked on the Calendar as "Review# LC due". **For more information on Learning Catalytics quizzes, please visit Canvas page "Course Tools & Technology → Course Materials & Registration Instructions"**.

EXAMS & QUIZ: There will be two Exams, one Quiz, and an optional MakeUp Exam offered on MyLab & Mastering during the term. Exam1 covers Units 1-2, Exam2 covers Units 3-4, the mandatory Quiz covers Unit 5, and an optional MakeUp is either for Exam1 **OR** for Exam2.

All exams and the Quiz have to be taken on MyLab & Mastering on the dates indicated on the Calendar. The review of a completed Exam or Quiz will become available after the due date and can be accessed from MyLab Gradebook.
All exams in our course are proctored through ProctorU. You can schedule your session on the ProctorU for any available time between 12 am and 9 pm on the day of the exam. You should schedule your session ahead of time (the numbers of appointments are limited) and at least 4 days prior to the exam date to avoid "late scheduling" fee. Each Exam opens on MyLab at 12 am on the date of the exam and closes at 11:59 pm on the same day. An Exam contains 26 multiple-choice questions, which include 2 bonus questions. The student will have 100 minutes to complete an exam and is only permitted to use pencils, pens, eraser, and scratch paper while the exam is in progress. Each Exam will be graded by MyLab software out of 26 points upon submission, but the grade on Canvas will be calculated out of 24 points, which includes a bonus, and is equivalent to 120 points on the Course Grading scale (please see section "Grades" below).
The 60-minute MyLab Quiz is mandatory, but does not require proctoring. The Quiz contains 12 multiple-choice questions and will be graded out of 12 points, which is equivalent to 60 points on the Course Grading scale.
An optional MakeUp will be given on Exam1 or Exam2. It may be necessary to miss one of the exams during the term or you might not be satisfied with one of your grades earned on the Exams. For these reasons, an optional MakeUp Exam will be given on MyLab and Mastering (and proctored through ProctorU) on the date indicated on the Calendar – no documentation or signing-up is needed to take it. **You can take/retake only one of the two midterm exams**. The grade on the MakeUp will replace your grade on the corresponding midterm Exam only on condition if you do better on the MakeUp than on the regular Exam. A MakeUp is in the same format and covers the same portion of the material as the corresponding midterm Exam.
Important: Calculators are not allowed on Exams! While taking your exam with ProctorU, you need to present your valid picture ID and you cannot use any notes or open ANY other program or file on your computer except the ones that are required. If you open a program or a file such as MATLAB, Calculator, MyLab homework, or Lecture Notes, the ProctorU will send an Incident Report to the Instructor. **For more information on Exams, Quiz, and ProctorU, please visit the link "Exam Information" on Canvas.**

PROJECTS: **Five** (5) computer projects will be assigned during the semester. All projects must be completed using MATLAB software. The projects have to be submitted for grading through the Assignments page on Canvas before the due dates indicated on the Calendar. "Late policy" for each Project is posted on Canvas under the Assignments, Project #.
Project 0 has to be completed and submitted by each student individually and will be graded out of 10 points. Projects 1–4 are group projects – each is worth 30 points. **There will be one submission per group and the Rubric's score will be assigned to the whole group**. In 48 hours after the due date, two peer reviews will be assigned to each student individually, which, if not completed, will result in deduction of points from the Rubric's score for that student.
For more information on the Projects, please visit the link MATLAB Projects on Canvas and read the instructions for each Project located under the Assignments, Project#.

Makeup Policy

MAKEUP POLICY ON ON-LINE HOMEWORK AND LC QUIZZES**:** If you didn't meet the deadline for a homework assignment and/or LC quiz on a legitimate reason (being sick, being away on the UF business, or family emergency), you may send an email to Dr. Williamson and request an extension either <u>prior to the due date</u> or <u>within three (3) days after the due date </u>for the assignment – late requests will not be accepted.

MAKEUP POLICY ON EXAMS AND QUIZ: **If you are missing an Exam due to <u>legitimate circumstances</u>** (being sick, being away on the UF business, or family emergency), you may have an option of taking the regular MakeUp at the end of the term or you can take an <u>early make-up</u> and save the regular MakeUp. <u>To take an early make-up</u>, you need to send your request to Dr. Williamson **via Canvas E-mail** either <u>prior to the exam</u> or <u>immediately afterwards</u> – we will not accept any late requests. Upon receiving student's request for an <u>early make-up</u>, the student will be informed that **one-week testing window** from the date of the actual exam has been set on the ProctorU and MyLab – the student has to make an appointment on the ProctorU and complete the early make-up within that window. Missing the Quiz without a legitimate reason and making it up at a later date may result in deduction of points at the Instructor's discretion.

IMPORTANT NOTE: You can discuss with your Instructor/Grader a graded Exam, homework assignment, LC quiz, or Project **within 3 days** and the MakeUp/Quiz **within 1 day** upon receiving the grades if there is a grading error or <u>any other problem</u>. **Late requests will not be considered!**
<u>All issues</u> with Canvas, MyLab & Mastering, ProctorU, UF Apps, and MATLAB have to be reported <u>immediately</u> in order to be able to request an extension or a retake.

Grades

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

32	Lecture Participation	@	56 points	9.7 %
30	On-line homework	@	90 points	15.6 %
5	Projects	@	130 points	22.6 %
1	Quiz	@	60 points	10.4 %
2	Exams	@	<u>240 points</u>	<u>41.7 %</u>
	Total:		576 points	100 %

The course grade is the grade satisfying the conditions below and <mark>**will be adhered**</mark> to:

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

<u>Note</u>: 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 they are not required in the course and they 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.