

**MAS 3114**  
SPRING 2022

## **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.

We expect the students to attend live lectures according to the course schedule.

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**  
Office Hours: **M, W, F** period 8 (3pm–3:50pm) at LIT 380  
or by Appointment (via Zoom or in-person)  
E-mail: [lwill@ufl.edu](mailto:lwill@ufl.edu)  
Webpage: <https://people.clas.ufl.edu/lwill/>

**Teaching Assistant/Grader: Mehrdad Alvandipour**  
Office Hours:  
In-person: **R** period 8 (3pm – 3:50pm) at LIT 483  
Via Zoom: **T** period 8 (3pm - 3:50pm) (the link is posted on Canvas Welcome page)  
or by Appointment (via Zoom or in-person)  
Email: [m.alvandipour@ufl.edu](mailto:m.alvandipour@ufl.edu)

**Office Hour Appointment has to be requested at least 48 hours in advance.**

E-Learning (Canvas): <https://elearning.ufl.edu/>  
E-MAIL: **Preferred way of communication is e-mail via Canvas Inbox tool.**

## Course Calendar

Spring 2022	Monday	Tue	Wed	Thursday	Friday
January	3	4	5 M1 L	6	7 M2 L
	10 M3 L	11	12 M4 L	13 HW&LC M1-3 Skill Survey Quiz	14 M5 L
	17 Holiday	18	19 M6 L	20 HW&LC M4-5	21 Review1 L
	24 HW&LC M6 Review1 LC due <b>Exam1:M1-M6</b>	25	26 M7 L	27	28 M8 L <b>Project 0 due</b>
February	31 M9 L	1	2 M10 L	3 HW&LC M7-9	4 M11 L <b>Project 1 due</b>
	7 M12 L	8	9 M13 L	10 HW&LC M10-12	11 M14 L
	14 Review2 L	15	16 <b>Exam2: M7-M14</b>	17 HW&LC M13-14 Review2 LC due	18 M15 L
	21 M16 L	22	23 M17 L	24 HW&LC M15-16	25 M18 L <b>Project 2 due</b>
March	28 M19 L	1	2 M20 L	3 HW&LC M17-19	4 M21 L
SPRING BREAK: March 5 – March 13					
	14 Review3 L	15	16 <b>Exam3: M15-M21</b>	17 HW&LC M20-21 Review3 LC due	18 M22 L
	21 M23 L	22	23 M24 L	24 HW&LC M22-23	25 M25 L <b>Project 3 due</b>
April	28 M26 L	29	30 Review4 L	31 HW&LC M24-26 Review4 LC due	1 <b>Exam4: M22-M26</b>
	4 M27 L	5	6 M28 L	7 HW&LC M27	8 M29 L
	11 M30 L	12	13 M31 L	14 HW&LC M28-30	15 M32 L <b>Project 4 due</b>
	18 Review5 L HW&LC M31-32 Review5 LC	19 <b>Quiz: M27-M32</b>	20 <b>MakeUp Exam</b>	2 Reading Day	3 Reading Day

## Delivering Content

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

**Linear Algebra and Its Applications**, 5<sup>th</sup> 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 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 have a print text, you may purchase it at the bookstore.

**\*\*Please see Course Tools & Technology → Course Materials & Registration Instructions on E-Learning (Canvas) for complete information on obtaining access code through UF All Access and registration with MyLab and Mastering.**

LECTURE NOTES: Lectures in this course are delivered using Lecture notes shells which can be printed from each Module on Canvas or from the Canvas page “Lecture Notes”. The Lecture notes shells make note taking easier and are required in the course. The whole set of 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 before or after the lecture and before doing homework on MyLab or taking the quiz on Learning Catalytics (see On-line Homework and Lecture Participation Quizzes in this Syllabus). The pages of the textbook that match content of the lectures are listed on Canvas Modules.

## Course Structure

**The Course Management System is E-Learning (Canvas):** <https://elearning.ufl.edu/>

Course material is divided into **5 units** with a total of 32 conceptual Modules (M01-M32):

<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

LECTURES: We expect the students to attend live lectures on the dates indicated in the Course Calendar as “M# L” or “Review# L”. If you miss a live lecture, you can watch it from the corresponding Module on Canvas. Lecture Participation will be taken (see Lecture Participation Quizzes below).

**MODULES & DUE DATES:** It is advisable to start working on a Module no later than on the date indicated in the Calendar as “M# L” or “Review# L”, when the corresponding live lecture is delivered, so that you can stay on track and avoid having too many Modules to complete by the Due Date. Working on M01-M32 requires watching the Lecture and completing MyLab assignments which include Online Homework (HW) and Learning Catalytics quiz (LC). Working on a Review module, which is the last one in each Unit, will help you to prepare for an Exam or the Quiz. The MyLab assignment required to be completed for each Review Module is a LC quiz (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.

## Assessments

**ON-LINE HOMEWORK:** Each online **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. Each 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 deadline.** A credit for a HW will be given according to the percent value of the correct work completed. Review of a completed HW is available through MyLab gradebook; however, a non-attempted HW cannot be reviewed after the deadline. 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:** Watching the lectures, analyzing them, and taking Learning Catalytics quizzes is considered Lecture Participation and required in the course. Learning Catalytics (LC) software, which is built within MyLab and Mastering, will monitor your Lecture Participation. 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, after the deadline for the quiz, 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. The grade will be assigned as 75% for participation and 25% for correctness. Each quiz grade will be counted out of 1.75 points – thus, the student earns the full credit for attempting both questions and answering one of them correctly, and the student earns 2 points for answering both questions correctly, which includes 0.25-point bonus. **The 5 lowest scores on LC quizzes will be dropped at the end of the term.**

**Important:** The due dates for M01-M32 LC quizzes are the same as for the corresponding HW. The due dates for the Review LC quizzes 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 four Unit Exams, one Quiz, and an optional MakeUp Exam offered during the term. Each of the Exams 1-4 covers the corresponding Unit, the mandatory Quiz covers Unit 5, and an optional MakeUp Exam will be given on one of the four Unit Exams.

**All exams in our course will be given in the lecture hall during the regular class time on the dates indicated in the Calendar.** An exam duration is 50 minutes. Each exam contains 12 five-point multiple-choice questions and 5 one-point true/false bonus questions. The maximum score earned on exam, including bonus, is 65 points, but the grade will be calculated out of 60 points.

**The 60-minute Quiz** on Unit 5 will be offered on **MyLab and Mastering** on the date indicated in the Calendar: it opens at 12 am and closes at 11:59 pm on the same date. The Quiz is not proctored. It is an open notes quiz that contains 12 multiple-choice questions (no bonus). The Quiz will be graded out of 12 points, which is equivalent to 60 points on the course Grading scale (see section Grades below). Review of the completed Quiz will become available after the deadline and it can be accessed from MyLab gradebook.

**An optional MakeUp can be taken on one of the four Unit Exams.** It may be necessary to miss a Unit Exam during the term or you may not be satisfied with your grade earned on Exams. For these reasons, an **OPTIONAL MakeUp** Exam will be offered on the date indicated in the course Calendar – no documentation is needed to take it. **You can take/retake only one of the four Unit Exams.** The grade on the MakeUp will replace your grade on the corresponding Unit 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 Unit Exam.

**Important:** Calculators are not allowed on Exams!

**For more information on Exams and Quiz, please visit the link Exam Information on the Canvas course main page.**

**PROJECTS:** Five (5) computer projects will be assigned during the semester. All projects must be completed using MATLAB software. A project has to be submitted for grading through the Canvas page **Assignments** before the due date 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 it 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 for a Project, two peer reviews will be assigned to each student individually. Not completing peer reviews within 2 days results in deduction of points for that student from the Rubric’s score.

**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#.**

## **Make-up Policy**

**MAKEUP POLICY ON ON-LINE HOMEWORK AND LC QUIZZES:** If you are not meeting the deadline for a homework assignment and/or LC quiz on a **legitimate reason** (being sick, being away on the UF business, family emergency, or religious holidays), you may send an email to Dr. Williamson via **Canvas Inbox** tool either prior to the deadline or within three (3) days after the deadline and request an extension on the assignments – **late requests will not be accepted.**

MAKEUP POLICY ON EXAMS AND QUIZ: **If you are missing a Unit Exam due to a legitimate reason** (being sick, being away on the UF business, family emergency, or religious holidays), you can either take the regular MakeUp at the end of the term or you can request to take an early make-up and save the regular MakeUp. To take an early make-up, you need to send a request to Dr. Williamson **via Canvas E-mail** either prior to the Exam or immediately afterwards – **we will not accept any late requests**. In your request, you have to indicate on which days and times of the week following the exam you are available for an early make-up: the instructor will check on the room availability and notify you on the date/time of the make-up. Missing the Quiz without a legitimate reason and making it up at a later date may result in a deduction of points at the instructor’s discretion.

**IMPORTANT NOTE:** You can discuss with your Instructor/Grader a graded Exam, Quiz, HW, Project, or LC quiz **within 3 days** upon receiving the grades if there is a grading error or any other problem. **Late requests will not be considered!**

**All issues with Canvas, MyLab & Mastering, and UF Apps/MATLAB have to be reported immediately to be eligible for an extension or a retake.**

## Grades

COURSE GRADE: The course grade is assigned based on the student’s 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 %
4	Exams	@	<u>240 points</u>	<u>41.7 %</u>
<b>Total:</b>			576 points	100 %

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

**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 your 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 the link Resources & Help 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.