

**MAS 3114**  
SPRING 2021

## **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.

The students of the face-to-face Section 07HF (16509) are expected to attend live Lectures (which will not be recorded) two days a week, Monday and Wednesday, 5:10 pm – 6 pm at CSE A101 (no live Lecture on first Monday, 01/11), and view the rest of the Lectures online through Canvas. All lectures in our course are pre-recorded. For the students of the online Section 0909 (27200), the course is delivered entirely online in asynchronous mode.

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: By Appointment (via Zoom)  
E-mail: [lwill@ufl.edu](mailto:lwill@ufl.edu)  
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Teaching Assistant/Grader: **Christie Mauretour**  
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E-Learning (Canvas): <https://elearning.ufl.edu/>  
E-MAIL: The preferred tool of communication is **Canvas e-mail**.

## Course Calendar

### MAS 3114 – Sections 07HF, 0909

Spring 2021	Monday	Tue	Wed	Thursday	Friday
January	11 M1 L	12	13 M2 L	14	15 M3 L
	18 Holiday	19	20 M4 L	21 HW&LC M1-3 due Skill Survey Quiz	22 M5 L
	25 M6 L	26	27 Review1 L	28 HW&LC M4-6 due Review1 LC due	29 <b>Exam1:M1-6</b>
February	1 M7 L	2	3 M8 L	4 HW&LC M7 due	5 <b>Project 0 due</b>
	8 M9 L	9	10 M10 L	11 HW&LC M8-9 due	12 <b>Project 1 due</b>
	15 M11 L	16	17 M12 L	18 HW&LC M10-11	19 M13 L
	22 M14 L	23	24 Review2 L	25	26 <b>Exam2:M7-14</b> HW&LC M12-14 Review2 LC due
March	1 M15 L	2	3 M16 L	4 HW&LC M15 due	5 M17 L <b>Project 2 due</b>
	8 M18 L	9	10 M19 L	11 HW&LC M16-18	12 M20 L
	15 M21 L	16	17 Review3 L	18 HW&LC M19-21 Review3 LC due	19 M22 L <b>Exam3:M15-21</b>
	22 M23 L	23	24	25 M24 L HW&LC M22-23	26 M25 L <b>Project 3 due</b>
April	29 M26 L	30	31 Review4 L	1 HW&LC M24-26 Review4 LC due	2 <b>Exam4: M22-26</b>
	5 M27 L	6	7 M28 L	8 HW&LC M27	9 M29 L
	12 M30 L	13 <b>MakeUp</b> (optional)	14 M31 L	15 HW&LC M28-30	16 M32 L <b>Project 4 due</b>
	19 Review5 L HW&LC M31-32 Review5 LC	20 <b>Quiz:</b> <b>M27-32</b>	21	22 Reading Day	23 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 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 Canvas page “Lecture Notes”. The Lecture note 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 after (or before) viewing Part I or Part II of a lecture and before doing homework on MyLab or taking the quiz on Learning Catalytics (see “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
<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 no later than on the date indicated on the Course Calendar as “M# L”, so that

you will 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 below “Lectures”, “On-line Homework”, and “Lecture Participation Quizzes”). Each MyLab assignment will become available at least 10 days prior to the due date and will close on the due date at 11:59 pm ET.

The dates marked on the Calendar as “Review# L” indicate the dates no later than on which the students are advised to start working on a Review Module. A Review Module is the last one in a 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:** We expect the students of the face-to-face Section 07HF to attend live Lectures two days a week, Monday and Wednesday, and view the rest of the Lectures online. The students of the online Section 0909 will view all Lectures online. Lectures are recorded and available at any time in each Module on Canvas; however, to stay with the course flow, it is recommended viewing each Lecture no later than on the date marked on the Calendar “M# L” or “Review# 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 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 the Lectures (in class or online) and analyzing them is considered Lecture Participation and required in the course. Your Lecture Participation will be monitored by Pearson’s Learning Catalytics (LC) software, which you can access from MyLab & Mastering after registering with the site. For each Module, there is a quiz on LC: the students will join the corresponding LC 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, 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.**

Important: The due dates for M1-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 four Unit Exams, one Quiz, and an optional MakeUp Exam offered on MyLab & Mastering during the term. Each Unit Exam covers the corresponding Unit, the mandatory Quiz covers Unit 5, and an optional MakeUp Exam will be given for one of the four Unit Exams.

**All exams and the Quiz have to be taken on MyLab & Mastering on the dates indicated on the Calendar.** Review of a completed Exam or Quiz will become available after the due date and can be accessed from MyLab Gradebook.

**All exams are proctored through Honorlock.** Each MyLab Exam is **password protected** and Honorlock will insert the password on your screen from the Proctoring window. An Exam opens on MyLab at 12 am on the date of the exam and closes at 11:59 pm on the same day. It contains 12 five-point multiple-choice questions and 5 one-point true/false bonus questions – the total score will be counted out of 60 points. The student will have 55 minutes to complete each exam and is only permitted access to pencils, pens, eraser, and scratch paper while exam is in progress. **The 60-minute MyLab Quiz** is mandatory, but does not require proctoring. It contains 12 multiple-choice questions and will be graded out of 12 points on MyLab, which is equivalent to 60 points on the Course Grading scale (see section “Grades” below).

**An optional MakeUp Exam will be given on one of the four Unit Exams.** It may be necessary to miss an 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 given on MyLab and Mastering (and proctored through Honorlock) on the date indicated on the Calendar – neither documentation nor signing-up 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. The format of a MakeUp is similar to the format of the corresponding Unit Exam.

**Important:** Calculators are not allowed on Exams! While taking your exam with Honorlock, 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 Honorlock will send an Incident Report to the Instructor.

**For more information on Exams, Quiz, and Honorlock, please visit the link “Exam Information” on Canvas.**

PROJECTS: 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 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.**

**For more information on 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 did not meet the due date 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 prior to the due date or within three (3) days after the due date for the assignment – late requests will not be accepted.

**MAKEUP POLICY ON EXAMS AND QUIZ:** **If you are missing an Exam due to legitimate circumstances** (being sick, being away on the UF business, or family emergency), you can either take the regular MakeUp Exam at the end of the term, or, if you wish to make it up earlier in the semester and save the regular MakeUp, you will need to send your request to **Dr.**

**Williamson** ([lwill@ufl.edu](mailto:lwill@ufl.edu)) either prior to the test or within three (3) days after the deadline for the test. We will not accept any late requests.

**Important:** an early make-up exam has to be scheduled for a closest possible date which has to be set **within three (3) days** upon sending a request. If an early make-up has not been scheduled in a timing manner, the student will take the regular MakeUp at the end of the term. 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, homework assignment, LC quiz, Quiz, or Project **within three (3) days** upon receiving the grades if there is a grading error or any other problem. **Late requests for re-grading will not be accepted!**

**All issues with Canvas, MyLab & Mastering, Honorlock, UF Apps and MATLAB have to be reported immediately 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 %
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:

	<b>Minimum %</b>		<b>Minimum %</b>
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 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.ua.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.ua.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.