

**MAS 3114**  
FALL 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. The course is delivered 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**  
Office Hours: By Appointment (via Zoom)  
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Teaching Assistant (Grader): **Christie Mauretour**  
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E-Learning: <https://elearning.ufl.edu/>

## Course Calendar

Fall 2020	Monday	Tue	Wed	Thursday	Friday
September	31 M1	1	2 M2	3	4 M3
	7 Labor Day	8	9 M4	10 HW&LC M1-M3 due Skill Survey Quiz	11 M5
	14 M6	15	16 Review1	17 HW&LC M4-M6 due Review1 LC due	18 M7 <b>Exam1:M1-6</b>
	21 M8	22	23 M9	24 HW&LC M7-M8 due	25 M10 <b>Project 0 due</b>
October	28 M11	29	30 M12	1 HW&LC M9-11 due	2 <b>Project 1 due</b>
	5 M13	6	7 M14	8 HW&LC M12-13 due	9 Review 2
	12 M15 HW&LC M14 due Review2 LC due	13 <b>Exam2: M7-14</b>	14 M16	15 HW&LC M15 due	16 M17
	19 M18	20	21 M19	22 HW&LC M16-18 due	23 M20 <b>Project 2 due</b>
	26 M21	27	28 Review 3	29 HW&LC M19-21 due Review3 LC due	30 M22 <b>Exam3:M15-21</b>
November	2 M23	3	4 M24	5 HW&LC M22-23 due	6 M25
	9 M26	10	11 Veterans Day	12 HW&LC M24-25 due	13 Review 4 <b>Project 3 due</b>
	16 M27 HW&LC M26 due Review4 LC due	17	18 M28 <b>Exam4: M22-26</b>	19 HW&LC M27 due	20 M29
	23 M30	24	25 Holiday	26 Thanks	27 giving
December	30 M31	1	2 M32 <b>MakeUp Exam</b>	3 HW&LC M28-31 due	4 Review 5 <b>Project 4 due</b>
	7 HW&LC 32 due Review5 LC due	8 <b>Quiz: M27-32</b>	9	10 Reading Day	11 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 & 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 E-Learning (Canvas) for complete information on obtaining an access code to MyLab by authorizing charges to your student financials account through UF All Access program.**

LECTURES & LECTURE NOTES: Lectures for this course are pre-recorded and can be viewed from the corresponding Modules on Canvas. Lecture notes shells are located in each Module – they make the note taking easier and are required in the course – they can also be printed from Canvas page **Lecture Notes**. The whole set of Lecture notes is available at Target Copy– the Course Pack can be either purchased at the location (1412 W University Ave, Gainesville, FL 32603) or ordered online (<http://target-copy.com/>).

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 taking the quiz on Learning Catalytics (see Lecture Participation Quizzes in this Syllabus) or doing homework on MyLab. Pages of the textbook matching content of lectures are listed in Canvas Modules.

## Course Structure

**The course is delivered on E-Learning (Canvas):** <https://elearning.ufl.edu/>

It 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 Modules. It is advisable to complete a module on the date indicated in the Course Calendar as “M#”, so that you would stay on track and avoid having too many Modules to complete by the Due Date. Working on a Module requires viewing the Lecture and completing MyLab assignments which include online Homework (HW) and Learning Catalytics (LC) quiz (please read sections On-line Homework and Lecture Participation Quizzes of the current Syllabus). Each MyLab assignment will become available at least 10 days prior to the due date and will be closed on the due date at 11:59 pm ET.

REVIEW MODULES: The dates indicated in the Course Calendar as “Review# LC due” are the due dates for the Review Modules. Review Module is the last one in each Unit. Working on Review modules will help you to prepare for Exams/Quiz. The assignment required to be completed for each Review Module is a quiz on **Learning Catalytics** (there is no homework 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. Lists of recommended Textbook Homework problems are located in Canvas Modules.

## 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. The 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 in 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 recorded lectures (available on Canvas) and analyzing them is considered the 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. There is a quiz on LC for each Module – students are supposed to join the corresponding LC session and answer the questions. Your LC quizzes responses will be graded and the scores will show in MyLab Gradebook after the deadline. A total of 37 LC sessions will be offered. There are 2 questions per session. Each question is in “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 in the Calendar as “Review# LC due”. **For more information on Learning Catalytics quizzes, please visit the Canvas page Course Tools and Technology → Course Materials & Registration Instructions.**

EXAMS & QUIZ: During the term, there will be four Unit Exams and an optional MakeUp Exam – they are offered on Canvas, and Unit 5 Quiz – offered on MyLab & Mastering. 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 are proctored through Honorlock and have to be taken on Canvas on the dates indicated in the Calendar.**

**Each Exam opens on Canvas** at 12 am on the date of the exam and closes at 11:59 pm on the same day. Each exam 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, an eraser, and scratch paper while the exam is in progress.

**The Unit 5 Quiz has to be completed within MyLab and Mastering on the date indicated in the Calendar.** The 60-minute MyLab Quiz is mandatory, but it does not require proctoring. The Quiz 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). Review of the completed Quiz will become available after the due date and can be accessed from MyLab Gradebook.

**An optional MakeUp Exam will be given for 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 Canvas through Honorlock on the date indicated in the Calendar – no documentation or signing-up is needed to take it. **You can make up (take or 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 the same as the format of the corresponding Unit Exam.

**Important:** No calculators are allowed on Exams! While taking your exam with the 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, 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 in 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 – 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 missed the due date for a homework assignment and/or LC quiz on a legitimate and documented reason (which include: being sick, being away on the UF business, family emergency), you may request an extension prior to the due date or within three (3) days after the due date by presenting valid documentation to Dr. Williamson.

**Adjustment due Covid-19:** The students may request an extension on a HW and/or LC quiz using the above guidelines but without presenting documentation.

**MAKEUP POLICY ON EXAMS AND QUIZ:** If you are missing an Exam due to legitimate documented circumstances (which include: being sick, being away on the UF business, family emergency), you have an option to take the MakeUp Exam at the end of the term. However, if you wish to make it up earlier in the semester and save the MakeUp for another test, you need to send your request to **Dr. Williamson** ([lwill@ufl.edu](mailto:lwill@ufl.edu)) and provide documentation prior to the test or within three (3) days after the deadline for the test. Important: an early make-up exam has to be scheduled **within three (3) days** from the time of sending a request and/or presenting a document, otherwise, a student will take the regular MakeUp.

Missing the Quiz without a legitimate documented reason and making it up at a later date may result in a deduction of points at the instructor's discretion.

**Adjustment due Covid-19:** The students may request to re-schedule an Exam or the Quiz according to the guidelines above but without presenting documentation.

**IMPORTANT NOTE:** Homework, exams, quizzes, and projects will not be reviewed, offered, and/or accepted for grading at the end of the term. You can discuss with your Instructor a graded Exam, Homework assignment, LC quiz, Quiz, and Project **within three (3) days** upon receiving the grades if there is a grading error or any other problem. **We will not accept late excuse documentation and/or late requests.**

Any issue with Canvas, MyLab & Mastering, Honorlock, UF Apps and MATLAB has 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'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 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.

**A Statement Informing Students of Privacy Related Issues:** “Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image.

Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.”