

**MAS 3114**  
FALL 2016

## **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 that is the computational nature of topics. These 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:** experience with a scientific programming and a grade of a C or better in MAC 2312: Calculus 2 (or in MAC 2512 or in MAC 3473)

**INSTRUCTOR:** **Dr. Larissa Williamson**  
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**E-learning (Canvas):** <https://lss.at.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

**FINAL EXAM:** M01 – M32

## Course Calendar

### MAS 3114 – Section 5065

Fall 2016	Monday	Tue	Wed	Thursday	Friday
August	22 M1	23	24 M2	25	26 M3
September	29 M4	30	31 M5	1 Modules 1-4 due	2 M6
	5 Labor Day	6	7 Review 1	8 Modules 5-6 due	9 <b>Exam 1: M1-6</b>
	12 M7	13	14 M8	15 Module 7 due	16 <b>Project 0 due</b> M9
	19 M10	20	21 M11	22 Modules 8-10 due	23 <b>Project 1 due</b> M12
	26 M13	27	28 M14	29 Modules 11-13 due	30 Review 2
October	3 <b>Exam 2: M7-14</b>	4	5 M15	6 Module 14 due	7 Homecoming
	10 M16	11	12 <b>Project 2 due</b> M17	13 Modules 15-16 due	14 M18
	17 M19	18	19 M20	20 Modules 17-19 due	21 M21
	24 Review 3	25	26 <b>Exam 3: M15-21</b>	27 Modules 20-21 due	28 M22
November	31 M23	1	2 <b>Project 3 due</b> M24	3 Modules 22-23 due	4 M25
	7 M26	8	9 Review 4	10 Module 24-26 due	11 Veterans Day
	14 <b>Exam 4:</b> <b>M22-26</b>	15	16 M27	17	18 M28
	21 M29	22	23 <b>Thanks</b>	24 <b>giving</b>	25 <b>Holiday</b>
December	28 M30	29	30 <b>Project 4 due</b> M31	1 Modules 27-30 due	2 M32
	5 Review 5 Modules 31-32 due	6 <b>Quiz</b> <b>M27-</b> <b>M32</b>	7 <b>Final Exam:</b> <b>M1-M32</b>	8 No Class	9 No Class

TEXTBOOK & ACCESS CODE:

1) 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\*

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

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

**You must authorize charges on or before 11:59PM on Friday, September 2, 2016. If you do not wish to authorize charges to your student financials account or if it is after 11:59PM on Friday, September 2, 2016, you may purchase an access code at the bookstore instead.**

\* 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 through authorizing charges to your student financial account.

LECTURE NOTES: Lecture note shells make the note taking easier and are required in the course. They can be printed from Canvas at <https://lss.at.ufl.edu/> (under **Lecture Notes**) or purchased at Target Copy (1412 W University Ave, Gainesville, FL 32603).

MODULES & DUE DATES: It is advisable to complete 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 at least 1 week prior to the date marked M# in the Calendar and will be closed on the Due Date at 11:59 pm ET. The assignments, which are required to be completed for each Module, include On-line Homework within MyLab & Mastering.

REVIEW: The dates indicated in the calendar as “Review” are the due dates for Review Modules. Working on the Review modules will help you to prepare for exams and the quiz.

EXAMS & QUIZ: There will be four Unit Exams, one Quiz, and an optional Final Exam offered during the term. Each Unit exam covers the corresponding Unit, the Quiz covers Unit 5, and the optional Final is cumulative – it covers Units 1-5. All exams for this course will be given on the date indicated in the calendar during the regular class time in the lecture hall. The Quiz is mandatory and has to be completed within MyLab and Mastering on the date indicated in the Calendar. All exams are multiple-choice and will be machine graded on a scale from 0 to 60. The Quiz is also multiple-choice and will be graded by the software upon submission on a scale from 0 to 60 points.

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 FINAL EXAM** will be given on the last day of classes. The best 4 out of 5 exam scores will count.

**MAKEUP POLICY ON EXAMS:** If you are missing a Unit Exam due to legitimate documented circumstances, you have an option either to take the Final Exam as a MakeUp or, if you wish to make it up before the last days of classes and save the Final for another test, you can schedule a makeup earlier: please contact Dr. Williamson ([lwill@ufl.edu](mailto:lwill@ufl.edu)) and provide the documentation at least a week prior to the test or immediately afterwards if you were sick. Late excuse documentation will not be accepted. No makeups will be given at the end of the term. Missing the Quiz or Final exam without appropriate documentation and taking a makeup for it will result in deduction of points at the instructor's discretion.

**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 in Canvas.

**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 viewing 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 in Canvas.

**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 and on MyLab Assignments page and **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.**

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

**PROJECTS:** 5 computer projects will be assigned during the semester and have to be submitted in Canvas before the due dates indicated in the Calendar. All projects are to be completed by using MATLAB software. Please visit the link "MATLAB Projects" on the Canvas homepage for more information. Project 0 is worth 10 points and each of the Projects 1 – 4 is worth 30 points. Thus, up to 130 points can be earned on the Projects.

**IMPORTANT NOTE:** Homework, exams, and projects will not be reviewed, offered, and/or accepted for grading after the end of the term. We will not accept any late excuse documentation. You have to present to your Instructor an appropriate documentation **before you miss an Exam or right after you came back to school if you were sick** to be eligible for a makeup. You can discuss a Unit Exam, project, or homework within one week and the Final exam – within 2 days with your instructor if there is a grading error or any other problem.

LECTURE PARTICIPATION: Starting the second week of classes, lecture participation will be taken in the lecture hall during a live lecture or review session. The students are required to register with **MyLab & Mastering** in order to use Pearson's Learning Catalytics system and get points for participation. They will access this system from Canvas by clicking on the link **MyLab & Mastering** on the left-hand panel. An active session will be shown on the MyMathLab Course Home page. The students simply click on the active session 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 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 a student answers both questions correctly, he/she receives 2 points for the session, which includes 0.25 bonus. **The three lowest scores for participation will be dropped at the end of the term** to compensate for occasional absences, device failures, etc.

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

SPECIAL ACCOMODATIONS: Students with learning disabilities should request accommodations according to the UF policy. Please check on the current status with DRC.

COURSE GRADE: The course grade is based on 572.5 points accumulated as follows:

30	Lecture Participation	@	52.5 points	9.17 %
30	On-line homework	@	90 points	15.72 %
5	Projects	@	130 points	22.71 %
1	Quiz	@	60 points	10.48 %
4	Exams	@	<u>240 points</u>	<u>41.92 %</u>
	<b>Total:</b>		572.5 points	100 %

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

Passing Grades	Minimum %	Non-passing Grades	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: A passing grade in the course is a C or better.**

GRADE POSTING: All grades will be posted in a timing manner on E-Learning (Canvas) at <http://lss.at.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.

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