

MAS 3114
FALL 2015

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 (4 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 2015	Monday	Tue	Wed	Thursday	Friday
August	24 M1	25	26 M2	27	28 M3
September	31 M4	1	2 M5	3 Modules 1-4 due	4 M6
	7 Labor Day	8	9 Review 1	10 Modules 5-6 due	11 Exam 1: M1-6
	14 M7	15	16 M8	17 Module 7 due	18 M9
	21 M10	22	23 M11	24 Modules 8-10 due	25 Project 1 due M12
October	28 M13	29	30 M14	1 Modules 11-13 due	2 Review 2
	5 Exam 2: M7-14	6	7 M15	8 Module 14 due	9 M16
	12 M17	13	14 M18	15 Modules 15-17 due	16 Project 2 due M19
	19 M20	20	21 M21	22 Modules 18-20 due	23 Review 3
	26 Exam 3: M15-21	27	28 M22	29 Module 21 due	30 M23
November	2 M24	3	4 M25	5 Project 3 due Modules 22-24 due	6 Homecoming
	9 M26	10	11 Veterans Day	12 Module 25-26 due	13 Review 4
	16 Exam 4: M22-26	17	18 M27	19	20 M28
	23 M29	24	25 Thanks	26 giving	27 Holiday
December	30 M30	1	2 M31	3 Modules 27-30 due	4 Project 4 due M32
	7 Review 5 Modules 31-32 due	8 Quiz: M27- M32	9 Final Exam: M1-M32		

TEXTBOOK & ACCESS CODE: **You have several options of purchasing the textbook and MyMathLab access code:**

1. The Course Pack **Linear Algebra and Its Applications plus MyMathLab with Pearson eText -- Access Code Card**, 5/E

Authors: **David C. Lay, Steven R. Lay, Judi J. McDonald**

ISBN: 9780321989925

can be purchased on Campus bookstore or on-line directly from PEARSON at

<http://www.mypearsonstore.com/>

2. **MyLab & Mastering Student Access Code (includes E-Book)** can be purchased on-line during the MyLab and Mastering registration process within Canvas. See the Registration instructions on the course main page in Canvas under the **Course Tools & Technology**.

IMPORTANT NOTES:

1. You can use only one of the options listed above, not both.
2. If you have already purchased a **used textbook**, you are also required to purchase a student access code during the registration with MyMathLab & Mastering within Canvas (see **option 2** above).
3. We **strongly recommend not to purchase** the Course Pack or MyLab access code on-line at Amazon.com, EBay, or other resellers rather than UF bookstore or PEARSON because most of the times the codes are already expired or have been redeemed by other students.

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 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 and Lecture participation quizzes in Learning Catalytics.

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 day of classes and save the Final for another test, you can schedule a makeup earlier: please contact **Dr. Williamson** (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.

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 work completed.** There will be total of 32 assignments offered and the **2 lowest scores will be dropped.** A maximum of 90 points can be earned on HW.

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: 4 computer projects will be assigned during the semester and 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. Each project is worth 30 points. Thus, up to 120 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 in second week of classes, the lecture participation will be taken in lecture hall during each live lecture and review session. The students are required to register with **MyLab & Mastering** within Canvas in order to use Pearson's Learning Catalytics system and get points for participation. You will access this system from Canvas by clicking on the link **MyLab & Mastering** on the left-hand panel. The 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 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 1.5 points and the grade will be assigned as 75% for participation and 25% for correctness. A student will get a full credit by answering both questions and one of them correctly. If a student answers both questions correctly, he/she receives 3 points for the session, which includes 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 not allowed on the exams.

SPECIAL ACCOMODATIONS: Students with learning disabilities requesting accommodations must first register with the Dean of Students Office. The Dean of Students Office will provide the student with documentation which must be turned in to the Instructor when requesting accommodations.

COURSE GRADE: The course grade is based on 588.75 points accumulated as follows:

30	Lecture Participation	@	78.75 points	13.38 %
30	On-line homework	@	90 points	15.29 %
4	Projects	@	120 points	20.38 %
1	Quiz	@	60 points	10.19 %
4	Exams	@	<u>240 points</u>	<u>40.76 %</u>
Total:			588.75 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.