

**MAS 3114**  
SPRING 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 algebra, 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)

In FALL 2014, you are assigned to the following course meeting time:

MAS 3114 07HF COMP. LINEAR ALGEBRA MWF10 CSE A101

INSTRUCTOR: **Doctor Larissa Williamson**  
Office: Little 380, Tel. 352-294-2341  
Office hours: M9, W8-9, F9 or upon appointment  
E-mail: [lwill@ufl.edu](mailto:lwill@ufl.edu)

**E-learning (Canvas):** <https://lss.at.ufl.edu/>

**Course website:** <http://people.clas.ufl.edu/lwill/>

The course is divided into **4 units**:

<u>Unit I</u>	L01 – L07	Systems of Linear Equations & Matrices
<u>Unit II</u>	L08 – L14	Determinants & Vector Spaces
<u>Unit III</u>	L15 – L21	Subspaces & Eigenvalues
Unit IV	L22 – L28	Inner Product & Orthogonalization

FINAL EXAM: L1 – L32

## Course Calendar

### MAS 3114

Spring 2015	Monday	Tue	Wednesday	Thursday	Friday
JANUARY	5	6	7 L1	8	9 L2
	12 L3	13	14 L4	15 HW:L1-L3	16 L5
	19 Martin Luther King	20	21 L6	22 HW:L4-L5	23 L7
	26 <b>Review</b>	27	28 <b>Exam1:L1-L7</b>	29 HW:L6-L7	30 L8
FEBRUARY	2 L9	3	4 L10	5 HW:L8-L9	6 <b>Project1 due</b> L11
	9 L12	10	11 L13	12 HW:L10-12	13 L14
	16 <b>Review</b>	17	18 <b>Exam2:L8-14</b>	19 HW:L13-L14	20 L15
	23 L16	24	25 L17	26 HW:L15-L16	27 <b>Project2 due</b> L18
MARCH	SPRING BREAK: March 1 – 8				
	9 L19	10	11 L20	12 HW:L17-L19	13 L21
	16 <b>Review</b>	17	18 <b>Exam3:L15-21</b>	19 HW:L20-L21	20 L22
	23 L23	24	25 L24	26 HW:L22-L23	27 <b>Project3 due</b> L25
APRIL	30 L26	31	1 L27	2 HW:L24-L26	3 L28
	6 <b>Review</b>	7	8 <b>Exam4:L22-28</b>	9 HW:L27-L28	10 Drop deadline L29
	13 L30	14	15 L31	16 HW:L29-L30	17 <b>Project4 due</b> L32
	20 HW:L31-L32 <b>Review</b>	21	22 <b>Final Exam</b> <b>L1-L32</b>	23 No class	24 No class

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

1. The Course Pack **Linear Algebra plus MyLab & Mastering Access Kit, by Lay**  
**ISBN: 9780321399144**

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 registration through Canvas (see Registration instructions posted on Canvas homepage).

### **IMPORTANT NOTES:**

1. You can use only one of the options listed above, not both.  
2. 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.

3. If you have purchased a **used textbook**, you are also required to purchase a student access code on-line during the registration with MyMathLab & Mastering through Canvas (see **option 2** above).

4. Please see the instructions on **Registration with MyLab & Mastering through Canvas** on the Canvas Homepage under the link **MyLab & Mastering - Registration**

LECTURE NOTES: Lecture notes shell makes the note taking easier and is required in the course. It can be printed from Canvas at <https://lss.at.ufl.edu/> (under the **Course Materials**) or purchased at Target Copy: 1412 W University Ave, Gainesville, FL 32603

LECTURES: The lectures will be delivered on the dates marked with L in the Calendar. It is important that you should have a hard copy of the lecture notes in class in order to follow the lecture presentations and work out problems with the lecturer during the presentations.

REVIEW: On the dates indicated in the calendar as “Review”, the lecturer will complete unfinished lectures and discuss the material for the upcoming test. The students are required to have a Review sheet in class. Exam Review sheets can be found under the Lecture Notes in Canvas. Participation in these sessions is very important and attendance will be taken.

UNIT EXAMS: Exams will be offered on the dates indicated in the Calendar – there is also a reference to the lectures that are covered on each exam. Total of 4 unit exams will be given during the term. The unit exams are multiple-choice and will be machine graded on a scale from 0 to 60. 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 Exam. For these reasons, an **OPTIONAL FINAL EXAM** will be given on the last day of classes. The best 4 of 5 exam scores will count. **All Exams will be administered during the normal class time.**

**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 see **Dr. Williamson in LIT 380** during her office hours 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 Exams. To view Homework, go to Course Materials on Canvas.

**ON-LINE HOMEWORK:** Each on-line **Homework** assignment is a set of problems assigned in MyLab and numbered according to the lectures covered. Each HW assignment is due on the date indicated in the Calendar and MyLab. HW assignment is worth 3 points and has to be completed before the due date which is 11:59 pm on the day listed in the Calendar. **The HW will be closed after the due date. The 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.** Thus, 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 afterwards if you were sick. Late documentation will not be accepted. No extensions will be given after the due date without an appropriate documentation.

**FINAL EXAM:** The Final Exam is **OPTIONAL** and will be given on the last day of classes **during the normal class time.** The final is accumulative all multiple-choice questions and worth 60 points. The best 4 out of total 5 term exam scores will count. If you are satisfied with your grades on the 4 Unit exams, you do not need to take the Final.

**PROJECTS:** 4 computer projects will be given during the semester and collected on the dates indicated in the Calendar in the lecture hall. All projects are to be completed by using MATLAB software. Links to MATLAB resources are available to the students at <http://people.clas.ufl.edu/lwill/courses/mas-3114/matlab-resources/> The students will be working in groups up to six people and submitting a single report for their projects. The students are expecting to work in these groups for entire semester. Each project is worth 30 points. **One lowest score on the projects will be dropped.** Thus, up to 90 points can be earned on the computer projects.

Note: the grade for Project 4 will not be available until after the final exam due to the grading time required.

**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 come 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 Final exam – within 2 days with your instructor if there is a grading error or any other problem.

LECTURE PARTICIPATION: Starting on Wednesday, January 14, lecture participation will be taken. The students are required to register with **MyLab & Mastering** through Canvas in order to get points for participation. We will be using Pearson's Learning Catalytics system that comes with MyLab & Mastering. 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 homepage in MyLab. 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 34 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. Each session will count out of 1.75 points. The students get a full credit by answering both questions and one of them correctly. If a student answers both questions correctly, he/she receives 2 points for the session, which includes 0.25 bonuses. **The two 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 476 points accumulated as follows:

32	Lecture Participation	@	1.75 points	56	11.76 %
30	On-line homework	@	3 points	90	18.91 %
3	Projects	@	30 points	90	18.91 %
4	Exams	@	60 points	<u>240</u>	<u>50.42 %</u>
			<b>Total:</b>	476	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 can access your grades on E-Learning by logging in with you Gatorlink Username and Password.

**HELP:** In addition to attending your class regularly and visiting your Instructor during her office hours, the following aids are available:

a) **Broward Teaching Center**: The OIR tutoring center located in SE Broward Hall is open during the day and in the evening. Further information and hours of operation are posted on-line at [www.teachingcenter.ufl.edu](http://www.teachingcenter.ufl.edu)

b) **Private Tutors**: If, after availing yourself of these aids, you feel you need more help, you may obtain from the Mathematics Department Office (358 Little) a list of qualified tutors for hire. This list is also posted on the department web page <http://www.math.ufl.edu/>