Course Syllabus   MTH 331   Section201   Spring 2016

CourseTitle:	LinearAlgebra
CourseNumber:	MTH 331 -- Section 201 -- CRN 4077 -- Credit: 4Hours
Textbook:	Linear Algebra with Applications, 5E by Otto Bretscher
SectionsCovered:	1.1-1.3, 2.1-2.4, 3.1-3.4, 4.1-4.3, 5.1-5.4, 6.1-6.3,7.1-7.5
Course Description:	Vector Spaces, matrices and determinants, systems of linear equations, linear transformations, eigenvalues, eigenvectors, andapplications.
Calculator:	TI-83 or higher, graphing calculators may not be allowed for some problems in some exams.
Prerequisites:	PR or CR: MTH 300 with "C" or higher
MeetingTime:	MTWR: 11:00 – 11:50 AM
Classroom:	Smith Hall 518
Instructor:	Dr. BasantKarna
Office:	Smith Hall715
OfficeHours:	MW 10:00-11:00 AM, TR 1:00-2:00 PM, F 11:00-12:00 PM, others by appointment
Phone/Email:	Phone: (304) 696-4332, Email: karna@marshall.edu
Course Objectives:	Students successfully completing this course will: learn about vector spaces, matrices and their operations, determinants and applying them to solve system of linear equations, linear transformations, eigenvalues and eigenvectors and their applications.
CourseContents:	• Linear Equations • Linear Transformations • Subspaces of R^n and Their Dimensions • Linearspaces • Orthogonality and Least Squares • Determinants • Eignevalues and Eigenvectors
AttendancePolicy:	Attendance is required and you must come with your text. Attendance will be taken every class day either by sign-in-sheet or byquiz/homework. Absences which can be excused include illness, emergencies, or participation in another university activity. Documentation from an outside source must be provided.
GradingPolicy:	A. *Attendance*: 25 points. See attendance policyabove B. *Quizzes*: Throughout the semester, there will be 11 quizzes given during the last 15 minutes of the class on every Thursday. Problems in quizzes will be given from assigned homework problems (textbook will not be allowed). The lowest quiz score will be dropped. C. *Exams:* There will be 2 exams given in class during the semester. D. *Homework Problems:* Six homework assignments will be collected on regular basis. You are responsible for reading the text, working the exercises, coming to office hours for help when you're stuck, and being aware of the dates for the major exams. E. *Final Exam:* There will be a two-hour final exam on May 3.

Points Distribution:	Attendance 25Pts Quizzes(10) 100Pts Homework(6) 60Pts 2 Exams 200Pts Final Exam 115 Pts -- Total Pts: 500Pts
Grades	The semester grade will be based on the percentage of the 500 total possible points, using the following scale. A: 90 -100 % , B: 80 - 89 %, C: 70 - 79 %, D: 60 - 69 %, F: 0 - 59% Note: The class score will be posted on MUOnline.
Make-ups:	*Quizzes*: For unavoidable missed quizzes with valid documentation, I will give you make up quiz within a week of the original quiz date (up to two quizzes). *Homework Assignments*: I expect you to submit me the homework assignments on time. *Exams*: Making up a missed exam is possible only if you receive prior permission from me and only for serious and unavoidable circumstances. *Final*: If you don't take final exam, you will receive "F" for theclass.
ExamDates:	Exam 1 - February18, Exam 2 - April 7 (Thursdays) Quizzes: Q1-J14, Q2-J21, Q3-J28, Q4-F4, Q5-F11, Q6-F25, Q7-M3, Q8-M10, Q9-M17, Q10-M31, Q11-A14, Q12-A21 (Thursdays) Final Exam: May 3 @ 10:15 AM(Tuesday)
ImportantDates:	• January 18, Monday – MLK, Jr. Holiday – No Class • January 19, Tuesday – "W" Withdrawal period begins • March 18, Friday – Last day to drop • March 21, Monday – March 26, Saturday – Spring Break- No Class • April 29, Friday – Last class day
CellPhones:	All electronic devices should be shut off during class. **No TextMessaging!**
University Policies:	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802 Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment
DisableStudents:	The Disabled Student Services web site is now available. You may visit it at http://www.marshall.edu/disabled . Students seeking special accommodations need to follow the university policy detailed at this web site. It is their responsibility to initiate the process for receiving accommodations based upon their disability. If you have any questions or comments, please contact Sandra Clements, the Director of Disabled Student Services.
ComingLate:	Students should come on time and stay in the class for entire class. If you are late by more than 5 minutes, you will be considered to beabsent.

TeachingOutline

Week	Sections Covered andtopics
1	Section 1.1 (Introduction to LinearSystems) Section 1.2 (Matrices, Vectors, and Gauss-Jordan Elimination)
2	Section 1.3 (Solutions of Linear Systems; MatrixAlgebra) Section 2.1 (Introduction to Linear Transformations and Their Inverses)
3	Section 2.2 (Linear Transformations in Geometry) Section 2.3 (Matrix Products)
4	Section 2.4 (The Inverse of a Linear Transformation) Section 3.1 (Image and Kernel of a Linear Transformation)
5	Section 3.2 (Subspaces of $\mathbf{R}^n$; Bases and Linear Independence) Section 3.3 (The Dimension of a Subspace of $\mathbf{R}^n$)
6	Section 3.4 (Coordinates) & Review for Exam1 **Exam 1**: Sections: 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 3.1,3.2
7	Section 4.1 (Introduction to LinearSpaces) Section 4.2 (Linear Transformations and Isomorphisms)
8	Section 4.3 (The Matrix of a Linear Transformation) Section 5.1 (Orthogonal Projections and Orthonormal Bases)
9	Section 5.2 (Gram-Schmidt Process and *QR*Factorization) Section 5.3 (Orthogonal Transformations and Orthogonal Matrices)
10	Section 5.4 (Least Squares and Data Fitting) Section 5.5 (Inner Product Spaces)
11	**Spring Break – No Class**
12	Section 6.1 (Introduction to Determinants) Section 6.2 (Properties of the Determinant)
13	Section 6.3 (Geometrical Interpretations of the Determinant; Cramer's Rule) Review for Exam2 **Exam 2**: Sections: 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3,5.4
14	Section 7.1 (Dynamical Systems and Eigenvectors) Section 7.2 (Finding the Eigenvalues of aMatrix)
15	Section 7.3 (Finding the Eigenvectors of a Matrix) Section 7.4 (More on Dynamical Systems)
16	Section 7.5 (Complex Eigenvalues) Review for Final
17	**Final Exam**: May 3 @ 10:15AM (Tuesday)

HomeworkProblems

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----------------------------------------- HW 1 -----------------------------------------
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Section 1.1: 2, 3, 4, 7, 9, 10, 11, **15**, 17, 24, 25, 26, 29, 30, 31, 46, **48**
Section 1.2: 3, **5**, 8, 9, 10, 13, **15**, 17, 18, 31, 34, 35, 36, 37, **39**, **42**, 44, 45, 53,**55,68**, **72**, 74,76
Section 1.3: 1-5, 9, 10, 11, 12, **14**, 17, 18, 19, 20, 22, 30, 32, 35, **36**, 46, **55**, **56**, 57
Section 2.1: 1, **2**, **3**, **5**, 9 - 11, 13, 16, **17**, 19, **20**, 21,**22**, 25, **26**, 27 -29
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----------------------------------------- HW 2 -----------------------------------------
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Section 2.2: 1, **2**, 4, **5**, **6**, 7, 9, **10**, 11, 13, 15, 18, 19, **20**, **21**, 27, 28
Section 2.3: 1, **4**, 7, 14, **17**, 21, **33**, 37, 43, **49**, **55**, 57
Section 2.4: 1, 4, **5**, 7, 13, **14**, 16, 17, 19, **20**, 21, 22, 24, **29**, **32**, 33, **55,76**
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----------------------------------------- HW 3 -----------------------------------------
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Section 3.1: **1**, 2, 4, **5**, 6, **11**, 12, **15**, **16**, **17**, 18,**19**, 23, 24, 25, 41,44
Section 3.2: **1**, **2**, **3**, 7, 10, **11**, 14, **15**, 18, **19**, 20, 22, 23, 24, **28**, **29**, **32**, 33, **53**
Section 3.3: 1, 2, 3, **6**, 7, 11, **15**, **16**, 19, **21**, **24**, **27**, 28, **29**, 30, 32, **47**, 62, 63, 64, 86
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----------------------------------------- HW 4 -----------------------------------------
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Section 3.4: 1, 2, **5**, **8**, **9**, 12, **13**, **17**, 19, **20**, **22**, 25, **28**, 29, **31**, **59**, 60
Section 4.1: **1**, 2, **3**, 4, 6, **7**, **8**, **10**, 13, 14, **16**, 18, **20**, **21**, 25, 30, **31**, 33, **36**
Section 4.2: **1**, 2,**5**, 7, **9**, **13**, 18, **19**, **23**, 28,**30**, 33, **42**, 43, **51**, **56**, 60,75
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----------------------------------------- HW 5 -----------------------------------------
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Section 4.3: **5**, 6, **7**, **9**, 11, **13**, 14, **19**, **23**, 24, **28**, 41, 44, **46**
Section 5.1: 2, 3, **5**, 6, **8**, 9, 10, **12**, **15**, **16**, **17**, 22, 26, 27, **28**, 45
Section 5.2: **1**, **2**, **7**, 9, 10, **14**, **15**, **21**, 23, 27, **28**, **32**, 33, **35**, 36, **37**
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----------------------------------------- HW 6 -----------------------------------------
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Section 5.3: 1, **2**, **3**, **4**, **5**, **6**, **10**, **11**, **15**, **18**, **19**, **22**, 24, 25, **26**, 33, 34, **35**, 36, **37**, **40**,41
Section 5.4: 5, 9, 20, 21, 22, 25, 30, 31,32
Section 6.1: 1, 4, **5**, **8**, 10, **11**, 12, **17**, 18, **20**, **28**, **29**, **31**, 32, **35**, **38**, **42**, 44, 46
Section 6.2: **1**, **3**, **6**, **7**, **10**, **11**, **12**, 13, **15**, **16**, **17**, 18, **20**, **26**, **29**
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----------------------------------------- HW 7 -----------------------------------------
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Section 6.3: **1**, **2**, **3**, **7**, 8, **12**, **13**, **14**, **22**, **23**, **24**, 30, **31**, **32,35**
Section 7.1: **1**, 2, **3**, **4**, 6, **8**, **10**, **12**, 13, **15**, 16, 18, 20, 24, 25, 26, 29, 30
Section 7.2: **1**, **2**, 3, 4, 6, **9**, 10, **12**, **13**, **15**, 19, 20, 21, **32**, 34, **45**
Section 7.3: 1, 2, 4, 5, 6, 8, 10, 12, 14, 15, 17, 19, 21, 35, 36, 41, 45, 48, 49

Turn in at least **boldface** problems.
Due dates are **Mondays** after the Sections are covered.