

McLennan
C O M M U N I T Y
COLLEGE

WACO, TEXAS

COURSE SYLLABUS
AND
INSTRUCTOR PLAN

Linear Algebra

Math 2318.15

Peter Blaskiewicz

NOTE: This is a 16-week course.

COVID 19 Notice:

McLennan Community College is committed to providing you with every resource you need to reach your academic goals including your safety. We will continue to monitor the evolving situation with COVID 19 and adjust our safety guidelines to make sure we offer a safe environment for you and our faculty. Please make sure to consult your faculty and the MCC website on any changes to these guidelines.

Course Description:

Introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their geometric significance; representing and solving systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion; matrices; determinants; linear transformations; quadratic forms; eigenvalues and eigenvectors; and applications in science and engineering.

Prerequisites and/or Corequisites:

Successful completion of, or concurrent enrollment in, MATH 2414 (Calculus II)

Course Notes and Instructor Recommendations:

MyMathLab (MML) will be used extensively for posting course notes, assignments, grades, testing, and other communications. Students are expected to check their MML, Brightspace, and MCC email accounts often.

Please do not, under any circumstances, come to class if you are even slightly sick or have any symptoms that make you think you might possibly be sick, no matter what type of illness. Let me know, and I will make arrangements for you to be able to get the material that is being covered on the day that you are out due to illness.

I will be available for individual Zoom chat sessions / ‘office hour’ by arrangement, especially if you cannot come to one of the regular class sessions. I request that you first watch any available video over the missed class, so that we are not reinventing the wheel. The best way to arrange a Zoom meeting is by emailing me with a suggestion of a time or two that would work for you; if you call me, a voice message would go to my email box anyway.

Instructor Information:

Instructor Name: Peter Blaskiewicz

MCC E-mail: pblaskiewicz@mclennan.edu

Office Phone Number: (254) 299-8869

Office Location: MATH 213

Office/Teacher Conference Hours:

MW 9:45-10:45 a.m.; TTh 1:30-2:30 p.m.; other times by arrangement

(Office Zoom: <https://mclennan.zoom.us/j/2542998869> by prior email arrangement)

Required Text & Materials:

Required: MyMathLab website access (978-0-321-19991-1)

(Note: The entire textbook is available electronically inside MyMathLab.)

A graphing calculator. The TI-84 or TI-89 or TI N-Spire are the models of choice for this course

Optional: *Linear Algebra and its applications* (5th edition) by David C. Lay (2016 Pearson Addison-Wesley) ISBN: 978-0-321-98261-2

MCC Bookstore Website: <http://www.mclennan.edu/bookstore/>

Methods of Teaching and Learning:

Lecture in face-to-face classroom meetings, with student participation in example problems; homework submitted online through MyMathLab at www.mymathlab.com; tests written in class or taken in MyMathLab.

Course Objectives and/or Competencies:

Upon successful completion of this course, students will:

- Be able to solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion.
- Be able to carry out matrix operations, including inverses and determinants.
- Demonstrate understanding of the concepts of vector space and subspace.
- Demonstrate understanding of linear independence, span, and basis.
- Be able to determine eigenvalues and eigenvectors and solve problems involving eigenvalues.
- Apply principles of matrix algebra to linear transformations.
- Demonstrate application of inner products and associated norms.

Course Outline or Schedule:

The schedule is subject to change. Should a change become necessary, students will be notified about changes verbally, during class. In the event school is closed for illness, weather, or any other unscheduled reason on the day a test is scheduled, the test will be given during the next class meeting.

| Week (Dates) | Section | Topic |
|-------------------|------------------|---|
| 1 (Aug 23-29) | 1.1 – 1.4 | Systems of Linear Equations; Row Reduction and Echelon Form |
| 2 (Aug 30-Sept 5) | 1.5, 1.7 | Vector and Matrix Equations; Linear Independence |
| 3 (Sept 6-12) | 1.8 - 1.9; 2.1 | Linear Transformations; Matrix Operations |
| 4 (Sept 13-19) | 2.2-2.3, 2.8-2.9 | Test 1 (Chapter 1) ; Inverse of a Matrix; Characteristics of Invertible Matrices |
| 5 (Sept 20-26) | 2.3; 3.1 - 3.2 | Subspaces; Dimension and Rank; Determinants |
| 6 (Sept 27-Oct 3) | 3.3; 4.1 | Cramer's Rule; Vector Spaces; Test 2 (Chapters 2-3) |
| 7 (Oct 4-10) | 4.2 - 4.3 | Subspaces; Null Spaces, Column Spaces, and Linear Transformations |
| 8 (Oct 11-17) | 4.4 - 4.6 | Linearly Independent Sets; Bases; Coordinate Systems |
| 9 (Oct 18-24) | 4.7 – 4.9 | The Dimension of a Vector Space; Rank; Change of Base; Markov Chains; Test 3 (Chapter 4) |
| 10 (Oct 25-31) | 5.1 – 5.2 | Eigenvectors and Eigenvalues; Characteristic Equations |
| 11 (Nov 1-7) | 5.3 - 5.5 | Diagonalization; Eigenvectors and Linear Transformations; Complex Eigenvalues |
| 12 (Nov 8-14) | 5.6 | Applications to Differential Equations; Test 4 (Chapter 5) |
| 13 (Nov 15-21) | 6.1 - 6.4 | Inner Product, Length, and Orthogonality; Orthogonal Sets; Orthogonal Projections; The Gram-Schmidt Process |

Linear Algebra

Math 2318.15

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| 14 (Nov 22-28) | 7.1-7.2 | Diagonalization of Symmetric Matrices; Quadratic Forms |
| 15 (Nov 29-Dec 5) | | Review for Final Exam |
| 16 (Dec 8) | | Final Exam -- cumulative |

Course Grading Information:

Your course grade will be based on homework submitted in MyMathLab, work in class, chapter tests, and a cumulative exam. The relative weights of each of these factors is as follows:

| | |
|--|-----|
| Homework (online at www.mymathlab.com) | 15% |
| Class participation and class problems | 5% |
| Tests 4 @ 15% (projected; if other, the weights will total 60%) | 60% |
| Final Exam (Wednesday, Dec. 8) | 20% |

We will be covering chapters 1 - 7 of the text, theory with selected applications. Each test will be over one or two chapters; some of them may possibly be part take-home tests.

The final exam will be cumulative.

The letter grade received in this course will be based on the customary 90-80-70-60 scale.

Late Work, Attendance, and Make Up Work Policies:

Homework over a unit (one or two chapters) is due the day of the test over those chapters. Since one of the primary purposes of the homework is to prepare you for the test, late homework will be penalized 2% per day of the credit on the problems submitted late. (The penalty will not be applied to any problems in a set that are submitted on time, but only to problems in the set that are submitted late.)

If you have to miss one test for one of the reasons given in MCC's General Catalog, and you have provided a documented excuse for doing so, the exam will also count as your make-up test for that unit. If it is necessary for you to miss more than one test, you should discuss the situation with me. Unexcused absences from tests will not be made up.

If you are absent from 25% (eight) of the scheduled class meetings by the deadline for student-initiated drops (October 22, 2021), you will be dropped from the class. If we need to shift to Zoom meetings at any time during the semester, those meetings would be at the same time as our scheduled face-to-face meetings, with presence and participation counted the same as for face-to-face lectures. If the absence limit is reached after the deadline for student-initiated drops, you will be kept on the roll, and the grade that you earn for the semester is the grade you will receive.

Student Behavioral Expectations or Conduct Policy:

Students are expected to maintain classroom decorum that includes respect for other students and the instructor. Students should demonstrate an attitude that seeks to take full advantage of the education opportunity. For more details of College Conduct Policy, see the [Highlander Student Guide](#)

Students are expected to be courteous and respectful of their classmates and of instructors at all times. This includes, but is not limited to, the following.

For face-to-face meetings:

- Masking and social distancing will be ***highly*** encouraged in our classroom. Not taking other people around you into consideration and respecting their expectations of a safe environment will be grounds for you being required to leave. It would be best if you would continue to follow the masking and social distancing guidelines that have been in place for the past several months.
- If you are ill or have any symptoms of ***any*** illness (not limited to Covid), do not come to school. If you are at all sick, or think you might be, **stay home**. (The lessons will be recorded and posted in Brightspace; catch up there.) If you feel like you are coming down with something while on campus, please leave right away if you can safely do so, or else go to one of the designated quarantine rooms on campus until arrangements can be made to get you home. If you let me know, I will make arrangements for you to be able to get the material that is being covered on the day that you are out due to illness.
- Arrive in the classroom on time; be as unobtrusive as possible if tardy.
- Silence or turn off cell phones and other communication devices during all regular class periods. (During tests, these devices should not be present at all. If you access your phone during a test, you are automatically finished with your test and must turn it in immediately.)
- Save private conversations with other students for before/after class lectures.
- Do not bring children to class nor leave them unattended on campus. To do so is contrary to school policy.
- Do not use excessive amounts of fragrance. Doing so is grounds for being required to leave.
- You may not share calculators on a test.

For Zoom meetings, if we have any:

- Familiarize yourself with Zoom's features
- Please do participate in the class meetings. It's fine to have your mic on and ready for interaction, but mute yourself if the dog or children or other background noise would disrupt us.
- Please use your webcam if you have one. Let me, as well as your fellow classmates, know who is in this course with us. But be mindful of your surroundings

when your webcam is on. If necessary or desirable, use a non-distracting virtual background; Zoom provides that option.

- Dress appropriately for class.
- Once the lecture gets going, stick to the topic at hand, just as you would for a face-to-face lecture class. Avoid doing other tasks, checking email, being on the phone, or the like.
- Do not use coarse or foul or offensive language, nor offensive or questionable imagery. Violation of this would be grounds for disciplinary action, including (but not limited to) being dropped from the course.

Remember that the session is being recorded.

[* Click Here for the MCC Academic Integrity Statement](#)

(www.mclennan.edu/academic-integrity)

The link above will provide you with information about academic integrity, dishonesty, and cheating.

Collaboration on out-of-class homework or projects is encouraged, but at no time should work belonging to one student be in the possession of another student. Likewise, students are not to engage in cheating in any form during or in preparation for tests or the final exam. All students involved in a cheating incident, whether in providing or receiving assistance, will receive grades of 0 for that assignment, be reported to Student Development, and find their names placed in the MCC database for cheating incidents. If there is a second incident, all students involved will be given grades of F for the course and listed as repeat offenders in the database.

[Click Here for the MCC Attendance/Absences Policy](#)

(<https://www.mclennan.edu/highlander-guide/policies.html>)

Click on the link above for the college policies on attendance and absences.

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COLLEGE

ACADEMIC RESOURCES/POLICIES

Student Support/Resources:

MCC provides a variety of services to support student success in the classroom and in your academic pursuits to include counseling, tutors, technology help desk, advising, financial aid, etc. A listing of these and the many other services available to our students is available at <http://www.mclennan.edu/campus-resource-guide/>

College personnel recognize that food, housing, and transportation are essential for student success. If you are having trouble securing these resources or want to explore strategies for balancing life and school, we encourage you to contact a Success Coach by calling (254) 299-8226 or emailing SuccessCoach@mclennan.edu. Students may visit the Completion Center Monday-Friday from 8 a.m.-5 p.m. to schedule a meeting with a Success Coach and receive additional resources and support to help reach academic and personal goals. Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff based on household size. Text (254) 870-7573 to schedule a pantry appointment. The Completion Center and pantry are located on the Second Floor of the Student Services Center (SSC).

MCC Foundation Emergency Grant Fund:

Unanticipated expenses, such as car repairs, medical bills, housing, or job loss can affect us all. Should an unexpected expense arise, the MCC Foundation has an emergency grant fund that may be able to assist you. Please go to <https://www.mclennan.edu/foundation/scholarships-and-resources/emergencygrant.html> to find out more about the emergency grant. The application can be found at https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf.

Minimum Technical Skills:

Students should have basic computer skills, knowledge of word processing software, and a basic understanding of how to use search engines and common web browsers.

Backup Plan for Technology:

In the event MCC's technology systems are down, you will be notified via your MCC student email address. Please note that all assignments and activities will be due on the date specified in the Instructor Plan, unless otherwise noted by the instructor.

Minimum System Requirements to Utilize MCC's D2L|Brightspace:

Go to <https://www.mclennan.edu/center-for-teaching-and-learning/Faculty%20and%20Staff%20Commons/requirements.html> for information on the minimum system requirements needed to reliably access your courses in MCC's D2L|Brightspace learning management system.

Email Policy:

McLennan Community College would like to remind you of the policy (<http://www.mclennan.edu/employees/policy-manual/docs/E-XXXI-B.pdf>) regarding college email. All students, faculty, and staff are encouraged to use their McLennan email addresses when conducting college business.

A student's McLennan email address is the preferred email address that college employees should use for official college information or business. Students are expected to read and, if needed, respond in a timely manner to college emails.

Instructional Uses of Email:

Faculty members can determine classroom use of email or electronic communications. Faculty should expect and encourage students to check the college email on a regular basis. Faculty should inform students in the course syllabus if another communication method is to be used and of any special or unusual expectations for electronic communications.

If a faculty member prefers not to communicate by email with their students, it should be reflected in the course syllabus and information should be provided for the preferred form of communication.

Email on Mobile Devices:

The College recommends that you set up your mobile device to receive McLennan emails. If you need assistance with set-up, you may email Helpdesk@mclennan.edu for help.

Forwarding Emails:

You may forward emails that come to your McLennan address to alternate email addresses; however, the College will not be held responsible for emails forwarded to an alternate address that may be lost or placed in junk or spam filters.

MCC Academic Integrity Statement:

Go to www.mclennan.edu/academic-integrity for information about academic integrity, dishonesty, and cheating.

Accommodations/ADA Statement:

Any student who is a qualified individual with a disability may request reasonable accommodations to assist with providing equal access to educational opportunities. Students should contact the Accommodations Coordinator as soon as possible to provide documentation and make necessary arrangements. Once that process is completed, appropriate verification will be provided to the student and instructor. Please note that instructors are not required to provide classroom accommodations to students until appropriate verification has been provided by the Accommodations Coordinator. For additional information, please visit www.mclennan.edu/disability.

Students with questions or who require assistance with disabilities involving physical, classroom, or testing accommodations should contact:

disabilities@mclennan.edu

254-299-8122

Room 319, Student Services Center

Title IX:

We care about your safety, and value an environment where students and instructors can successfully teach and learn together. If you or someone you know experiences unwelcomed behavior, we are here to help. Individuals who would like to report an incident of sexual misconduct are encouraged to immediately contact the Title IX Coordinator at titleix@mclennan.edu or by calling Dr. Drew Canham (Chief of Staff for Diversity, Equity & Inclusion/Title IX) at (254) 299-8645. Individuals also may contact the MCC Police Department at 299-8911 or the MCC Student Counseling Center at MCC at (254) 299-8210. The MCC Student Counseling Center is a confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting <http://www.lighthouse-services.com/mclennan/>.

Go to McLennan's Title IX webpage at www.mclennan.edu/titleix/. It contains more information about definitions, reporting, confidentiality, resources, and what to do if you or someone you know is a victim of sexual misconduct, gender-based violence or the crimes of rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, or domestic violence.

Disclaimer:

The resources and policies listed above are merely for informational purposes and are subject to change without notice or obligation. The College reserves the right to change policies and other requirements in compliance with State and Federal laws. The provisions of this document do not constitute a contract.