

# McLennan

C O M M U N I T Y

# COLLEGE

WACO, TEXAS

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## **COURSE SYLLABUS**

## **AND**

## **INSTRUCTOR PLAN**

**Linear Algebra**

**Math 2318.15**

**Peter Blaskiewicz**

**NOTE: This is a 16-week course.**

**NOTE: This is a Blended/Hybrid course.**

### **COVID 19 Notice:**

McLennan Community College is committed to providing you with every resource you need to reach your academic goals. We are also concerned for your safety. We are working through COVID-19 guidelines to make sure we offer a safe environment for you and our faculty. This will include smaller class sizes to manage social distancing and proper cleaning techniques. You will have the advantage of a physical classroom experience but may also need to work part of the time online as we adjust to limited classroom capacity. This will also allow us the flexibility to move online if so directed by federal, state and/or local COVID 19 guidelines. Faculty and staff are preparing now to ensure that you have the best experience in the midst of these uncertain times.

**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* and MCC email accounts often.

You will need MyMathLab access that lasts at least through the second week of December. If your access from Calculus II is still active, you might have purchased a plan that extends that long; if not, you would need to get at least another 18 weeks of access once that runs out.

**\*\*\* Note about this hybrid/blended version of the class \*\*\***

Many/most of our class sessions will be held in Zoom. They will be at the announced regular class time each week, MW, from 1:15 p.m. till 2:40 p.m. The URL with the Meeting ID will be posted in this course's Brightspace shell. I strongly encourage you to attend and be an interactive class, for several reasons. For one thing, it will help make the material more immediate and relevant, and you can get your questions resolved right away if you are there 'as it happens.' Also, I will be able to tailor the lessons to your level of understanding if I have an audience to 'read.'

The Zoom sessions will be recorded, and links to each video will be posted in Brightspace soon after the class meeting is over (hopefully within 15 minutes or so, but in any case by later that afternoon). If you miss a class meeting, it is expected that you will watch the video later that day and try your hand at the homework assignment, so that you are ready for the next lesson and don't get behind. (The material does build on itself.)

In Zoom class meetings, please attend with your microphone and webcam. Your active participation in those meetings is expected, just as they would be in a face-to-face class meeting.

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 the video over the missed class, so that we are not reinventing the wheel. The best way to arrange a Zoom meeting outside my regular office hour 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

Other Instruction Information:

**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* (5<sup>th</sup> edition) by David C. Lay (2016 Pearson Addison-Wesley) ISBN: 978-0-321-98261-2

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

**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, we encourage you to contact a success coach by calling (254) 299-8226. Students can visit the Completion Center Monday-Friday from 8:00 a.m.-5:00 p.m. to meet with a success coach and receive additional resources and support to help reach academic and personal goals. Paulanne's Pantry (MCC's food pantry) is open 12:00 p.m.-1:00 p.m., Monday-Friday, without an 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 [here](https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf) ([https://www.mclennan.edu/foundation/docs/Emergency\\_Grant\\_Application.pdf](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 contacted/notified through 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.

\* **[Click Here for the Minimum System Requirements to Utilize MCC's D2L|Brightspace \(https://www.mclennan.edu/center-for-teaching-and-learning/Faculty%20and%20Staff%20Commons/requirements.html\)](https://www.mclennan.edu/center-for-teaching-and-learning/Faculty%20and%20Staff%20Commons/requirements.html)**

Click on the link above 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 her/his 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.

**Forwarding Emails:**

You may forward the 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 become lost or placed in junk or spam filters.

# Linear Algebra

Math 2318.15

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## **Methods of Teaching and Learning:**

Lecture (much of it via Zoom meetings) with student participation in example problems; homework submitted online through MyMathLab at [www.mymathlab.com](http://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.*

<b>Week (Dates)</b>	<b>Section</b>	<b>Topic</b>
1 (Aug 24-30)	1.1 – 1.4	Systems of Linear Equations; Row Reduction and Echelon Form
2 (Aug 31-Sept 6)	1.5, 1.7	Vector and Matrix Equations; Linear Independence
3 (Sept 7-13)	1.8 - 1.9; 2.1	Linear Transformations; Matrix Operations
4 (Sept 14-20)	2.2-2.3, 2.8-2.9	<b>Test 1 (Chapter 1)</b> ; Inverse of a Matrix; Characteristics of Invertible Matrices
5 (Sept 21-27)	2.3; 3.1 - 3.2	Subspaces; Dimension and Rank; Determinants
6 (Sept 28-Oct 4)	3.3; 4.1	Cramer's Rule; Vector Spaces; <b>Test 2 (Chapters 2-3)</b>
7 (Oct 5-11)	4.2 - 4.3	Subspaces; Null Spaces, Column Spaces, and Linear Transformations
8 (Oct 12-18)	4.4 - 4.6	Linearly Independent Sets; Bases; Coordinate Systems
9 (Oct 19-25)	4.7 – 4.9	The Dimension of a Vector Space; Rank; Change of Base; Markov Chains; <b>Test 3 (Chapter 4)</b>
10 (Oct 26-Nov 1)	5.1 – 5.2	Eigenvectors and Eigenvalues; Characteristic Equations
11 (Nov 2-8)	5.3 - 5.5	Diagonalization; Eigenvectors and Linear Transformations; Complex Eigenvalues
12 (Nov 9-15)	5.6	Applications to Differential Equations; <b>Test 4 (Chapter 5)</b>
13 (Nov 16-22)	6.1 - 6.4	Inner Product, Length, and Orthogonality; Orthogonal Sets; Orthogonal Projections; The Gram-Schmidt Process
14 (Nov 23-29)	7.1-7.2	Diagonalization of Symmetric Matrices; Quadratic Forms
15 (Nov 30-Dec 6)		Review for Final Exam
16 (Dec 9)		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 <a href="http://www.mymathlab.com">www.mymathlab.com</a> )	15%
Class participation and class problems	5%
Tests 4 @ 15% (projected; if other, the weights will total 60%)	60%
Final Exam (Wednesday, Dec. 9, online)	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 26, 2019), you will be dropped from the class. If this limit is reached after that date, 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.

Whether we meet in Zoom or in a classroom:

- 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. 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.

For any class meetings on campus, the following conduct is also required:

- Face coverings **must** be worn at all times in the classroom and in all buildings (from the time you leave your vehicle till you get back in it). Both your mouth and your nose must be covered or shielded (mask, bandana, face shield). If you come without a mask or approved face covering, you will be required to leave right away.
- 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 to get you home.

**\* [Click Here for the MCC Academic Integrity Statement](https://www.mclennan.edu/academic-integrity)**  
([www.mclennan.edu/academic-integrity](https://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)**  
(<https://www.mclennan.edu/highlander-guide/policies.html>)

Click on the link above for the college policies on attendance and absences. Your instructor may have guidelines specific to this course.

Regular and punctual attendance is expected of all students, and each instructor will maintain a complete record of attendance for the entire length of each course, including online and hybrid courses. Students will be counted absent from class meetings missed, beginning with the first official day of classes. Students, whether present or absent, are responsible for all material presented or assigned for a course and will be held accountable for such materials in the determination of course grades.

### **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. Instructors should not provide accommodations unless approved by the Accommodations Coordinator. For additional information, please visit [mclennan.edu/disability](http://mclennan.edu/disability).

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

[disabilities@mclennan.edu](mailto:disabilities@mclennan.edu)

254-299-8122

Room 319, Student Services Center

### **\* Click Here for more information about Title IX**

**([www.mclennan.edu/titleix](http://www.mclennan.edu/titleix))**

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](mailto:titleix@mclennan.edu) or by calling Dr. Drew Canham (Vice President for Student Success) at 299-8645. Individuals also may contact the MCC Police Department at 299-8911 or the MCC Student Counseling Center at MCC by calling 299-8210. The MCC Student Counseling Center is a confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting the following website: <http://www.lighthouse-services.com/mclennan/>.

McLennan's Title IX webpage (<http://www.mclennan.edu/titleix/>) 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.

*\* You will need to access each link separately through your Web browser (for example: Firefox/Mozilla, Chrome, or Safari) to print each link's information.*