Linear Algebra MATH 3311-001  
Department of Mathematics and Statistics  
Spring 2017

A. COURSE INFORMATION  
Course Number/Section: MATH 3311-001  
Class hours: MW 5:30 pm–6:45 pm  
Class room: CI 107  
Course Website: https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION  
Instructor: Pritha Chakraborty  
Office: CI 358  
E-mail: pritha.chakraborty@tamucc.edu  
Office hours: MW 12:00 pm–2:30 pm or by appointment

C. COURSE DESCRIPTION  
Catalog Course Description  
Fundamentals of linear algebra and matrix theory. Topics include vectors, matrix operations, linear transformations, fundamental properties of vector spaces, systems of linear equations, eigenvalues and eigenvectors. Applications.

D. PREREQUISITES FOR THE COURSE  
Prerequisites  
MATH 2413 (Calculus I)

Corequisites  
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES  
Required Text  

Optional Textbook(s) or Other References  
None

Supplies  
None

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT  
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the courses student learning outcomes that describe what students are expected to learn to
be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning. At the end of the course, students should be able to:

1. Make calculations as needed with vectors and matrices using addition, scalar multiplication, matrix multiplication and inner (dot) products.
2. Solve general linear systems of equations using inverses, the Gauss-Jordan method (from row operations to LDU factorization) and other methods.
3. Understand and apply concepts of vector spaces including defining properties, linear independence, spanning, basis, dimension and subspaces (especially null- and column-).
4. Understand and apply orthogonality to find projections, least square solutions and orthogonal bases.
5. Find eigenvalues and eigenvectors using determinants or other means as needed. If time permits, understand and apply the Spectral Theorem.
6. If time permits, understand and apply linear transformations.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning and demonstrations. Most class meetings will be centered around lecture.

H. MAJOR COURSE REQUIREMENTS AND GRADING
The expected learning outcomes for the course will be assessed by homework assignments, three mid terms, and a comprehensive final exam.

Homework: Homework will be assigned weekly. Students will be informed by the instructor and via email (on the @tamucc.edu address) about the homework, which should be completed before the given deadline (generally not more than a week).

Final grade: Homework and tests are counted towards the final grade with weights as follows:

1. Homework - 25%,
2. Mid Terms - 45% (15% each), and
3. Final exam - 30%.

Raw score (including all the homeworks, exams and final):

1. Grade A: 90 - 100
2. Grade B: 80 - 90
3. Grade C: 70 - 80
4. Grade D: 60 - 70
5. Grade F: Below 60
I. COURSE CONTENT/SCHEDULE

Important Dates:

- **Mid term I**: Wednesday, February 22
- **Spring Break**: Monday–Friday, March 13–17
- **Mid term II**: Wednesday, March 22
- Last day to drop a class: Friday, April 7
- **Mid term III**: Wednesday, April 19
- Last class day: Tuesday, May 2 (for this course Monday, May 1)
- **Final Exam**: Wednesday, May 10, 4:30 pm–7:00 pm

Course Outline:

<table>
<thead>
<tr>
<th>Week of</th>
<th>Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 16</td>
<td>Section 1.1</td>
</tr>
<tr>
<td>Jan 23</td>
<td>Sections 1.2, 2.1</td>
</tr>
<tr>
<td>Jan 30</td>
<td>Sections 2.2, 2.3</td>
</tr>
<tr>
<td>Feb 6</td>
<td>Sections 2.4, 2.5</td>
</tr>
<tr>
<td>Feb 13</td>
<td>Review and <strong>Mid term I</strong>: Wednesday, February 22</td>
</tr>
<tr>
<td>Feb 20</td>
<td>Sections 2.6, 2.7</td>
</tr>
<tr>
<td>Feb 27</td>
<td>Sections 3.1, 3.2</td>
</tr>
<tr>
<td>Mar 6</td>
<td>Sections 3.3, 3.4</td>
</tr>
<tr>
<td>Mar 13</td>
<td>Spring Break!</td>
</tr>
<tr>
<td>Mar 20</td>
<td>Review and <strong>Mid term II</strong>: Wednesday, March 22</td>
</tr>
<tr>
<td>Mar 27</td>
<td>Sections 3.5, 3.6</td>
</tr>
<tr>
<td>Apr 3</td>
<td>Sections 4.1, 4.2</td>
</tr>
<tr>
<td>Apr 10</td>
<td>Review and <strong>Mid term III</strong>: Wednesday, April 19</td>
</tr>
<tr>
<td>Apr 17</td>
<td>Sections 4.3, 4.4</td>
</tr>
<tr>
<td>Apr 24</td>
<td>Sections 6.1, 6.2</td>
</tr>
<tr>
<td>May 01</td>
<td>Review</td>
</tr>
</tbody>
</table>

*FINAL EXAM: Wednesday, May 10, 4:30 pm–7:00 pm*

Note: Changes in this course schedule may be necessary and will be announced to the class by the instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

This course moves very fast. If you fall behind, even by one section, you may not be able to catch up, since each section generally depends very heavily on the ones before. You must attend every class. If you miss a class, it is your responsibility to find out what you missed (announcements, assignments, notes, . . . ).

**Attendance:** Attendance is mandatory! Students with less/equal than 3 missed classes for the entire semester will receive a bonus of 3 points towards their final score in the course. Absences due to observation of religious holidays, officially approved trips and illness or death of close family will be handled separately in accordance with the university policies.
Late Work and Make-up Exams: Homework is not accepted after the deadline. There are no make ups for the in-class examinations, except for reasons of illness, stated in writing by the medical doctor, or observance of a religious holiday. Usually, no other reasons are accepted (events, plane tickets, weddings, etc. . . . ). If you have to miss an exam, it is your responsibility to contact me no later than the day of the exam. Failure to contact me on or before the exam day results in a grade of 0 points for the exam. This also applies to the final exam. For missed final exams due to an acceptable excuse, the university rules about I (Incomplete) grades apply and the make-up is at the instructor’s convenience early in the next long semester. Only extreme emergencies or official university business are acceptable reasons to miss exams and documentation will be required. Car trouble, routine doctor’s appointments, family reunions or graduations of siblings etc. are not valid reasons to miss exams. If your reason to miss the exam is not a valid one, your exam score is 0 points. Be sure to check before missing an exam whether your reason is acceptable.

Extra Credit: There is no extra credit in this class.

Calculator: Use of calculators and formula sheets in all the exams is not permitted. Electronic devices which can store formulas, including cell phones, should be turned off and stored during the exams.

Cell Phone Use: Cell phones and such must be turned of before class. If this happens multiple times with the same student, the student will be asked to leave the classroom.

Laptop Use: You may use a laptop to take notes during lecture. Distracting other students by surfing the web is not an acceptable behavior.

Food in Class: No food in class (except during the final).

Missed Exam: See “Late Work and Make-up Exams” above.

Grading: On mid terms and final, partial credit for correct steps will be awarded even if the final answer is wrong. Full credit will be given only if the final answer and all intermediate steps are correct. A correct final answer per se does not guarantee any credit.

Participation: Participation is not part of the grade, but you learn more by interacting, than by watching passively.

K. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University): University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

• Classroom/Professional Behavior: Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructors ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• Statement of Civility: Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational
experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University):** The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar at [http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering):** As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html) and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816. [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

- **Statement of Academic Continuity:** In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University-Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.
L. OTHER INFORMATION

• Academic Advising: The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The Colleges Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.