MATH-3311, LINEAR ALGEBRA and ITS APPLICATIONS  
DEPARTMENT OF MATHEMATICS & STATISTICS  
SUMMER I 2020

A. COURSE INFORMATION

Course Number/Section: MATH 3311.001  
Class Meeting Time & Location: ONLINE  
Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. B. Veena S. N. Rao  
Office Location: CI-213A  
Office Hours: Online using WebEX  
Telephone: 361-825-3613  
e-mail: bv.rao@tamucc.edu  
Appointments: Contact me by e-mail to set up an appointment for WebEX meeting

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.

D. PREREQUISITES FOR THE COURSE

Prerequisites  
MATH 2413 (Calculus I).

Corequisites  
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)  
“Introduction to Linear Algebra”, 5th Edition by Gilbert Strang

Optional Textbook(s) or Other References  

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:

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

G. INSTRUCTIONAL METHODS AND ACTIVITIES

The whole course will be taught ONLINE with pre-recorded videos. The lecture videos will be posted to blackboard periodically. All homeworks and exams will be given online.

H. MAJOR COURSE REQUIREMENTS AND GRADING

The expected learning outcomes for the course will be assessed by assignments, two mid terms, and a comprehensive final exam.

**Homework:** Homework will be assigned periodically. Students will be informed by the instructor via Blackboard (https://bb9.tamucc.edu) about the homework, which should be completed before the given deadline. Late homework will **NOT** be accepted. Work on the problems daily. Your work should be legible and neat. If the work is not presentable, you will **NOT** receive credit for it. Write clear readable solutions, they will be of great value as a review. You need to show both your answer and the work leading
to it. NO credit for merely having the right answer.

**Final grade:** Homework, Midterms are counted towards the final grade with weights as follows:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
</tr>
<tr>
<td>Midterm</td>
<td>35%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
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</tbody>
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Based on the above, grades will be assigned according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Average</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
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</tbody>
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### I. COURSE CONTENT/SCHEDULE

**Important Dates:**

- **Midterm Exam-1:** Friday, June 12.
- **Midterm Exam-2:** Friday, June 26.
- **Final Exam:** Friday, July 3.

**Course Outline:**

- Week 1: Sections 1.1, 1.2, 2.1, 2.2
- Week 2: Sections 2.3, 2.4, 2.5, 2.6
- Week 3: Sections Midterm, 2.7, 3.1, 3.2, 3.3
- Week 4: Sections 3.4, 4.1, 4.2, 4.3
- Weeks 5: Sections 4.4, 6.1, 6.2, Review, Final Exam

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. Make to watch all lecture videos.

Late Work, Multiple Submissions, Missed Exams:
Homework is not accepted after the deadline. There are no make ups for the examinations, except for reasons of illness, stated in writing by the medical doctor. 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 instructors 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.

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

Calculator: Calculators are not required.

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.

Incompletes A grade of I (Incomplete) will only be given in exceptional circumstances, such as a death in the family or personal injury that might prevent someone from taking the final test. In this case, it is the responsibility of the student to notify me as soon as possible, preferably by e-mail, and to complete the required Incomplete Form available from the University Registrar. If this is not done, a score of 0% will be assigned for any incomplete tests and a final grade will be computed using the criteria described above.

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 instructor’s 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)
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic 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.C0.03, 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 required 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.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at (http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf). 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/

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 College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

M. CIVIL RIGHTS REPORTING INFO
Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at http://edcs.tamucc.edu/titleIX/

Limits to confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University’s student record policies.
However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me. These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center [https://counseling.tamucc.edu/](https://counseling.tamucc.edu/).

**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 and also by e-mail to the class.