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

A. COURSE INFORMATION

Course Number/Section: MATH 3311. 001
Class Meeting Time & Location: TR 8.00am-9.15am, CI-128
Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. B. Veena S. N. Rao
Office Location: CI-213A
Office Hours: TR 9.30am - 11:00am, W 5.00-7.00pm; Online using Webex
Telephone: 361-825-3613
e-mail: bv.rao@tamucc.edu
Appointments: Contact me by e-mail to set up an 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.

D. PREREQUISITES FOR THE COURSE

Prerequisites
MATH 2413 (Calculus I).

Corequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
Elementary Linear Algebra by Larson, 8th edition, Cengage Learning with access to WebAssign. You can access the textbook as an e-book through the homework system by buying a WebAssign access code through webassign website or tamucc bookstore. You will have a grace period of up to 14 days, during which you can use WebAssign without purchasing access. After the grace period, you must either purchase access online or enter a valid access code (purchased through book store).

Optional Textbook(s) or Other References
Will be provided as needed.
Supplies
Laptops/Computers, Webcam, Network (regular access to high speed internet), cam-scanner app on mobile phones or any other gadget to scan quiz/exams. This course requires the use of Respondus LockDown Browser and a webcam to monitor the online exams. The LockDown browser will prevent you from accessing other websites or applications during an exam while ensuring the integrity of the exam. These systems require students to confirm their identity, and, during the exam, the system monitors students through video. The webcam can be the type that is built into your computer or one that plugs in with a USB cable.

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 course’s 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.

By the end of this course, students should be able to:

- 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

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs. 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 assignments, three mid terms, and a comprehensive final exam.

Assignments: Assignments will be assigned weekly. Students will be informed by the instructor via Blackboard (https://bb9.tamucc.edu) about the assignments, which should be completed before the given deadline (generally not more than a week). Do not wait until the due date to start your assignment. Work on the problems daily.

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

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>3 Midterms</td>
<td>60%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
</tbody>
</table>

Based on the above, grades will be assigned according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Average</th>
</tr>
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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>
</tr>
</tbody>
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I. COURSE CONTENT/SCHEDULE

Important Dates:

- Mid Term I Monday, 5.00pm-7.00pm, September 14
- Mid Term II Monday, 5.00pm-7.00pm, October 12
- Mid Term III Monday, 5.00pm-7.00pm, November 9
- Final Exam, Tuesday, 8.00am-10.30am, December 1

Course Outline:

- Week 1: Sections 1.1,1.2, 1.3
- Week 2: Sections 2.1, 2.2, 2.3
- Week 3: Sections 2.4, 3.1, 3.2
• Week 4: Review, Midterm -1
• Week 5: 3.3, 3.4, 4.1,
• Week 6: 4.2, 4.3, 4.4
• Week 7: 4.5, 4.6, 4.7
• Week 8: Review, Midterm -2
• Week 9: 5.1, 5.2, 5.3
• Week 10: 5.4, 6.1, 6.2
• Week 11: 6.3, 6.4, 6.5
• Week 12: Review, Midterm -3
• Week 13: 7.1
• Week 14: Review
• Week 15: 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

COVID-19
Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.

Class Pace: 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 sure to watch all lecture videos.

Late Work and Multiple Submissions:
Assignments 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 ex-cuse, 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. 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. So make sure to watch the video lecture. If you miss a class, it is your responsibility to find out what you missed (announcements, assignments, notes, . . .).

**Cell Phone Use:** Cell phones and such must be turned off or kept in silent mode before class. If disturbance happens multiple times because of the same student, the student will be asked to leave the classroom.

**Laptop Use:** You may use a laptop/ipads 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).

**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 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/](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/](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/

Civil Rights Complaints 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 Title IX/Sexual Assault/Pregnancy.

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.

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.

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.