Course Content and Goals

Linear algebra is a valuable tool in many areas of mathematics and science. A primary goal of this course is for students to develop a conceptual understanding of the fundamental ideas of linear algebra. MATH 2114 covers topics in Linear Algebra such as systems of linear equations, vector equations, basis, vectors in two- and three-dimensional space, matrix algebra, linear transformations, and eigenvalue problems. A second goal of the course is for students to become more mathematically sophisticated thinkers through mathematical investigation, argumentation, and the creation of personally meaningful solutions to problems. This involves engaging in mathematical discussions with peers, explaining one’s mathematical thinking (both verbally and in writing), questioning and challenging the mathematical thinking of others, and developing a sense of what constitutes an acceptable mathematical justification.

Course Format

Class meetings will frequently involve working in small groups on challenging problems, presenting your progress on these problems, however tentative, and providing others with questions and comments on their presentations. It is your responsibility as a learner and as a member of this class to participate, rather than being just a passive observer or note-taker. In addition to working together in class, you are encouraged to find study partners or to form study groups outside of class. Any student who feels that he/she may need an accommodation because of a disability (learning disability, attention deficit disorder, psychological, physical, etc.), please make an appointment to see your instructor.

Prerequisites

MATH 1226 or a grade of at least a B in 1225.

Requirements


Software: MATLAB can be purchased from The Software Distribution Office located in 3240 Torgersen Hall. Engineering students will have MATLAB in their software bundle. Otherwise, it is roughly $45 for the MATLAB license (valid while enrolled at VT). It can also be found in many computer labs and at the Empo. For more info see: http://www2.ita.vt.edu/software/student/products/mathworks/matlab/

Examinations

There will be two in-class exams announced at least a week in advance. The tentative dates are September 23 and November 11. If a student fails to take an exam, his/her score is zero unless the reasons for the failure are serious, unavoidable, and beyond the student's control. It is to the student's advantage to inform the instructor BEFORE the exam. The instructor, after consultation with the student, will decide how to handle a missed exam. The final exam, as dictated by the university, is Tuesday, December 16th, 1:05 – 3:05 pm. The final exam is a required class meeting that will not be rescheduled for discretionary reasons, including conflicts with work schedules and with classes and exams at other colleges.
**Homework**

Homework is vital to your success in this class and will be assigned weekly. Written homework will typically be collected on Tuesdays at the beginning of class. You may turn in hard copies or send it via email by class time. Your assignments should be organized and legible, and all work must be shown to earn full credit. Online homework must be completed by midnight on Tuesdays/Thursdays. Late homework will not be accepted. The assignment with the lowest grade will be dropped at the end of the semester.

**Portfolio**

Your course portfolio is a selection of materials from the course that documents your mathematical development, provides a mechanism for you to reflect on your previous work as you prepare for each exam, and provides your instructor with valuable insight into your mathematical thinking. The portfolio will be turned in at the time of each exam, including the final. For each of the selected problems in your portfolio, develop a rationale that explains why you selected the problem and what you learned through your work on it. Expected length of a rationale statement is 300-600 words. More information is posted on Scholar.

**Reflections**

On non-exam days, the last 5 minutes of class may be spent answering a short reflection question of varying types. These will be graded Credit/No Credit. Credit will only be given for thoughtful and well-explained responses, regardless of correctness. These will factor into your participation grade.

**Project**

The application project will give you a chance to explore a topic related to our class and of interest to you personally. Detailed information will be posted to Scholar in Mid-October.

**Attendance Policy**

Regular attendance is required and will factor into your participation grade. You are permitted 1 unexcused absence without penalty. Please notify your instructor by email ahead of time if you know you must miss a class. You must provide documentation of absence for it to be considered excused.

**Evaluation**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class examinations (2)</td>
<td>30%</td>
</tr>
<tr>
<td>Homework and Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Project</td>
<td>10%</td>
</tr>
<tr>
<td>Portfolio (3)</td>
<td>10%</td>
</tr>
<tr>
<td>Reflections</td>
<td>5%</td>
</tr>
<tr>
<td>Final exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

- 92%-100% = A
- 88% - 89% = B+
- 80% - 81% = B
- 72% - 77% = C
- 68% - 69% = D+
- 60% - 61% = D
- below 60% = F

**Academic Integrity**

The Virginia Tech Honor Code applies to all graded work in this course. Students are responsible for understanding and adhering to the Honor Code. Among other things the Honor Code prohibits giving or receiving unauthorized aid, assistance, or unfair advantage on academic work, and it prohibits plagiarism. Under the Honor Code it is the responsibility of each student to consult with his/her teacher, if necessary, to ensure that the student understands exactly how the Honor Code applies to each piece of graded work.

http://www.honorsystem.vt.edu/