This course satisfies the University of Texas at Arlington core curriculum requirement in mathematics.

This course will address three objectives:

- Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication.
- Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Instructor: xxx
Office Number: xxx
Office Telephone Number: xxx
Email Address: xxx
Office Hours: xxx
Time and Place of Class Meetings: xxx

Description of Course: Broad introduction to the profession of engineering and its different disciplines, through the process of applying the principles of mathematics to solve real life engineering problems and technical writing assignments. Math topics are presented within the context of engineering applications, reinforced through examples from engineering courses. Also introduces algorithm development through the engineering analysis software MATLAB.

Learning Outcomes: After completing the course, students should be able to demonstrate the following competencies:

1. Students will be able to: set up engineering problems from written problem statements; use units and significant digits properly; present solutions in acceptable engineering formats; and develop graphs of data and simple models of relationships.

2. Students will be able to use mathematics to solve engineering problems.

3. Students will be able to communicate technical information in writing.

4. Students will be able to use Matlab and basic programming to solve engineering problems.


Descriptions of major assignments and examinations and grading:

- Examinations: Two exams counting 40% of total grade.
- Signature assignments: 30% of total grade. This must be passed in order to receive a grade in the class.
- One signature assignment will involve estimation. You will receive a picture of a large structure such as a water tower or bridge with a person in the frame. The goal is to estimate how much paint would be required to paint the structure, and create a “bid” for the job. This requires creative thinking and analysis of information, as there are many layers to the problem – estimating dimensions, calculating surface area of many different types of shapes, estimating how much paint is required to cover a given area, etc. In addition to critical thinking, this clearly involves the manipulation and analysis of numerical data.
Another signature assignment will be to write a significant MATLAB program to solve an engineering problem given written problem statements. You must first analyze the problem statement to determine exactly what the requirements are and then design an algorithmic solution. This requires creative thinking and analysis of information. You will then build the MATLAB program, using appropriate units, data structures, conditional statements, looping statements, and processing of input/output. You will be required to build graphs to display the data in appropriate ways. This involves manipulation and analysis of numerical data.

A third signature assignment will be to write a hypothetical reference letter from the point of view of your instructor. You must select a scholarship for which they might apply and then write a letter matching the scholarship criteria to their activities as seen by the instructor. Critical thinking is required to choose specific examples to match scholarship requirements. This assignment requires that you critically assess your own skills and activities and familiarize yourself with the skills and personal traits expected of successful engineering scholarship candidates. The letter will follow accepted formal correspondence format and have a one page length limitation, forcing you to be selective and concise.

Weekly quizzes/homework. (30%) Homework and/or reading will be assigned at most class sessions. Homework may be collected the next class session or a pop quiz may be given over the assigned material. Name and student ID must be printed on any papers handed in. It's your responsibility to get them in class or from another student if you miss class.

Missed exam: There is a single comprehensive makeup exam at the end of the semester if one exam is missed by an excused absence. You must notify me before the exam if you are unable to take it on the scheduled date.

Missed daily quizzes/homework: No makeup for daily quizzes or homework. One or two daily quizzes/homework with the lowest score(s) will be dropped.

Late homework/project: Once the class starts, late homework or project assignments that come in during the class will have a minimum of 20% docked. Late homework will not be accepted after two class periods past the due date.

Signature Assignment Assessment: There will be 3 signature assignments for this class. The Learning Outcomes listed on this syllabus will be assessed in these assignments.

Topics Covered:
- Engineering Essentials
  - Engineering Overview
  - Engineering Communication
  - Estimation
  - Problem Solving with Engineering Applications
- Numbers
  - Fundamental Dimensions and Base Units
  - Universal Units
  - Dimensionless Numbers
- Engineering Mathematics
  - Analytical Solutions
  - Graphical Solutions
  - Models and Systems
- Programming in MATLAB
- Technical Writing

Tentative Schedule Dates: As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. TBD

Attendance and Drop Policy: You are responsible for the material presented in class when you are absent. You must provide advanced notice if you will be out for an exam. You may drop this course through the University published last day to drop.

General Policies/Guidelines:
If you require an accommodation based on disability, please meet with me in the privacy of my office, during the first week of the semester, to make sure you are properly accommodated.

All tests and quizzes are open book, closed notes (1 formula sheet 8.5 x 11” is allowed for tests). The formula sheet may not include worked problems. You must turn in your formula sheet with your exam. Please bring your UTA ID card to all tests.

Students must work alone on tests and quizzes. No sharing of any materials may occur during tests and quizzes including books, calculators, formula sheets, etc.

Selected exercises from the text will be assigned as homework. A subset of these homework assignments may be collected and graded. When homework is assigned, you will be told whether it will be collected and graded. Recommendation: Do the homework – it will help you learn.

Students need to individually turn in homework assignments, e.g. one assignment turned in per student with your name on it. However, homework can be worked jointly with other students.

If you miss an exam, you must have an approved excuse (i.e. from a medical doctor with contact information indicating you were too ill to sit for an exam or have gotten permission from the instructor at least a couple of days in advance of the exam).

Cell Phones / pagers / etc. should be turned off or set to vibrate during class. Any necessary calls and communication should be made outside the class. Please be courteous to the instructor and your fellow classmates.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 6 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student’s responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://www.uta.edu/ses/fao).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law “Title IX” such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleix.

Academic Integrity: All students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.
Instructors may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at [http://www.uta.edu/oit/cs/email/mavmail.php](http://www.uta.edu/oit/cs/email/mavmail.php).

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit [http://www.uta.edu/sfs](http://www.uta.edu/sfs).

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at [www.uta.edu/resources](http://www.uta.edu/resources).

**The English Writing Center (411LIBR):** Hours are 9 am to 8 pm Mondays-Thursdays, 9 am to 3 pm Fridays and Noon to 5 pm Saturdays and Sundays. Walk In Quick Hits sessions during all open hours Mon- Thurs. Register and make appointments online at [http://uta.mywconline.com](http://uta.mywconline.com). Classroom Visits, Workshops, and advanced services for graduate students and faculty are also available. Please see [www.uta.edu/owl](http://www.uta.edu/owl) for detailed information.
Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911.