

## Engineering Analysis II : MECH 3352

**Class Meeting:** (3:45 – 4:50 pm) MTWRF

**Location:** College of Business Admin. 301

**CRN:** 34730

**Instructor:** Methaq S. Abed, Ph.D., P.E.

**Office:** Engineering Building, room A 226

**Phone:** 747-6435

**Email:** [msabed@utep.edu](mailto:msabed@utep.edu)

**Office Hours:** 10:45 to-11:15 am &  
2:30 -3:00pm , MTWR.  
**Or by appointment.**

**Teaching Assistant:** to be announced

**Prerequisites:** Successful completion *Engineering Analysis I (Differential Equations)* or equivalent.

### Textbooks and Electronic media

**Required:** SC Chapra, “Applied Numerical Methods with MATLAB for Engineers and scientists”, 4<sup>th</sup> Edition, 2018, McGrawHill.

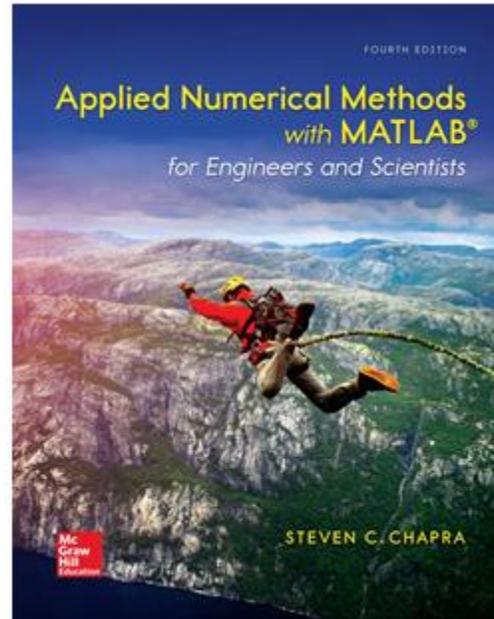
**Required:** Computer with an access to the UTEP network and Matlab software  
References materials:

- H Moore. “MATLAB for Engineers”, 2nd Edition, Prentice Hall
- DV Griffiths and IM Smith. “[Numerical Methods for Engineers](#)”, 2nd Edition, Chapman & Hall/CRC
- Online materials as provided by the instructor

### Course Objectives

The primary goal is to provide engineering majors with a basic knowledge of numerical methods including: root-finding, elementary numerical linear algebra, solving systems of linear equations, curve fitting, and numerical solution to ordinary differential equations, and numerical integration. An advanced programming tool (e.g. MATLAB) will be used for implementation and application of these numerical methods. The numerical techniques learned in this course enable students to work with mathematical models of technology and systems. By the end of this course, the students should be able to do the following:

- Structured programming: Understand basic structured programming concepts involving decision making, loops, functions, and parameter passing implemented within the MATLAB programming environment.





- Numerical methods: Understand the most common numerical methods used in engineering analysis, when to use each method, and how to implement basic methods in a structured manner using MATLAB’s programming language.
- Numerical accuracy: Estimate the amount of error inherent in different numerical methods.
- Numerical efficiency: Assess the efficiency of a selected numerical method when more than one option is available to solve a certain class of problem.

**ABET Program Outcomes Impacted**

This class significantly addresses the following ABET Objectives (From [ABET](#) on page 3):

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (e) An ability to identify, formulate, and solve engineering problems
- (i) Recognize the need for engaging in lifelong learning
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**Class Materials**

- Class Notes
- Presentations and Online Materials
- Exams, Quizzes and Homework

**Grading**

There will be several assignments at regular intervals during the semester. You are required to submit the assigned work by the deadline. **Late submission of the assigned work will not be allowed** unless medical and extraordinary emergency reasons exist. The following percentages of the assignments, exams, and project will constitute the basis for the assigning of the final grade in the course:

Grade distribution:

Assessment mode	Description	Overall weight
1) Take-home exercises (home works)	Assessments assigned outside of the class-period will be considered as 'take home' exercises.	40%
2) In-class exercises (quizzes)	Unannounced quizzes will be assigned during the class period.	30%
3) Exam 1	Exam 1	10%
4) Exam 2	Exam 2	10%
5) Exam 3	Exam 3	10%



Project	(20%) to replace two of tests' score from Exam 1-3	

Note: If conducting any of the exams gets badly affected due to unforeseen events (e.g., inclement weather, total computing infrastructure failure, etc.), the instructor will use one of the officially assigned days (e.g., class period or final exam time) to re-conduct the affected exam(s). If none of the officially assigned dates are available, the instructor will prorate the best exam to replace the score for the affected exam. There will be no-make up (see make-up policy for more) for any of these.

Letter grade – percentage score conversion method:

Letter grade	Overall percentage score
A	88% < Your score
B	78% < Your score < 88%
C	68% < Your score < 78%
D	58% < Your score < 68%
F	Your score < 58%

**Academic Misconduct**

Students are encouraged to work together to discuss the subject, however, all graded materials must represent the student individual work. Scholastic dishonesty is the attempt of any student to present as his or her own work of another, or any work which he/she has not honestly performed, or attempting to pass any examination by improper means. Scholastic dishonesty is a serious offense and will not be accepted. Academic misconducts will be handled according to the current university policy.

**Accommodation**

Any student in this course who has disability that may prevent him or her from demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodation necessary to ensure full participation and facilitate your educational opportunities.

**Make-up policy**

There will be **NO** make-up exams, quizzes or for any other evaluation methods. Under exceptional conditions (usually medical conditions), however, you may be allowed to have make-up exams or quizzes. In this case, the instructor will require appropriate supporting materials. Additionally, you must participate in at-least 75% of all the scheduled in-class assessments to qualify for any make-up exams or quizzes.

Special provision: If you miss any of the mid-term exams for any reasons, you must take the final exam.

**Class Environment**

In-class conversation will only be allowed during the class-discussion session as allowed by the instructor. No other form of conversations will be allowed during the class period.



**External Resources**

Students are encouraged to make use of external resources in order to expand and improve their learning experience. Attached is a list of links that will be useful during the course.

<b>Name</b>	<b>Hyperlink</b>
Dynamic Learning Framework	<a href="http://dlf.utep.edu/">dlf.utep.edu/</a>
Engineering Technology Center	<a href="http://etc.utep.edu/">http://etc.utep.edu/</a>
Mathworks Online Documentation	<a href="https://www.mathworks.com/help/matlab/?requestedDomain=www.mathworks.com">https://www.mathworks.com/help/matlab/?requestedDomain=www.mathworks.com</a>
Vanderbilt University Online Course	<a href="https://www.youtube.com/watch?v=VheLmG7rh9w">https://www.youtube.com/watch?v=VheLmG7rh9w</a>

**Expected Exams Dates:**

Exam#1: Friday, June 23<sup>rd</sup>

Exam#2: Monday, July 10<sup>th</sup>

Exam#3: Monday, July 24<sup>th</sup>

Project : Tuesday, August 1<sup>th</sup>