College of Engineering

Civil Engineering Department

Semester: Fall / 2020

About The Course

Course Title: Engineering Mathematics   **Class**: 3
Course No: 901301
Credit Hours: 3   **Lecture Room**: ---
Obligatory/ Optional: Obligatory

Text Book:

- CALCULUS, Stephen Davis, Irl C. Bivens, Howard Anton.

   10th Edition, 2012.

- Engineering Mechanics Statics (13th Edition), R.C. Hibbeler, 2013.

The Instructor

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Course Description

Introduction to fundamental basics of engineering mathematics, understanding functions and drawing curves, learning limits and continuity m Solving problems of Differentiability and related rates, integrals and extreme values, and studying first and second moment area and center of gravity.

Course Objectives

1. To introduce fundamental basics of engineering mathematics

2. Make sure that students can understand and be able to deal with functions and draw graphs

3. Revise most types of functions and study continuity

4. Solving problems of Differentiability and related rates

5. Knowing how to find the center of gravity and calculate first moment area

Learning Outcome

1. Use statistical concepts and applications in traffic Engineering
2. Identify traffic stream characteristics
3. Understand elements of highway safety and approaches to accident Studies.
4. Design a pre-timed signalized intersection, and determine the signal splits.
5. Identify level of services for arterials
6. Understand Warrants and ability to use them to evaluate Intersections
7. Making students aware of how language works to convey meaning as its basic function

Course Outline and Time schedule

Week	Course Outline
1st week	Review of Cartesian coordinates
2nd week	Functions domain and range
3rd week	Limits and continuity
4th week	Derivation and its Applications
5th week	**First Exam**
6th week	Related rates
7th week	Integrations and its Applications
8th week	**Second Exam**
9th week	Cartesian vector formulas for solving statics problems
11th week	Centroid and center of gravity
12th week	Parallel Axis Theorem for Moment of Inertia
15th week	**Final exam**

Presentation methods and techniques

Methods of teaching varied according to the type of text, student and situation. The following techniques are usually used:

1- Lecturing with active participations.

2- Problem solving.

3- Cooperative learning.

4- Discussion.

5- Learning by activities.

6- Connecting students with different sources of information

Assessment Strategy and its tools

The assigned syllabus is assessed and evaluated
Through: feedback and the skills that are acquired by the students

The tools:
1- Diagnostic tests to identify the students level and areas of weakness
2- Formal (stage) evaluation
    a) Class Participation
    b) Ist Exam
    c) 2nd Exam
    d) Activity file

Tool & Evaluation

Tests are permanent tools & assessment, in addition to the activity file which contains curricular and the co-cussiculor activities, research, report papers and the active participation of the student in the lecture.

The following table clarifies the organization of the assessment schedule:

Test	Date	Grade
1st Exam	According to the department schedule	20%
2nd Exam	According to the department schedule	20%
Activities & Participation	Students should be notified about their marks	20%
Final Exam	According to the department schedule	40%

Activities and Instructional Assignment

1- Practical assignments to achieve the syllabus objectives.

2- Weekly Pop quiz and Homeworks

Regulations to maintain the Teaching-Learning Process in the Lecture:

1- Regular attendance.

2- Respect of commencement and ending of the lecture time.

3- Positive relationship between student and teacher.

4- Commitment to present assignments on time.

5- High commitment during the lecture to avoid any kind of disturbance and distortion.

6- High sense of trust and sincerity when referring to any piece of information and to mention the source.

7- The student who absents himself should submit an accepted excuse.

8- University relevant regulations should be applied in case the student's behavior is not accepted.

9- Allowed Absence percentages is (15%).

Internet websites

1. https://arslanhelpyoucom.files.wordpress.com/2016/05/calculus-early-transcendentals-10th-ed-howard-anton-iril-bivens-stephen-davis-ebook.pdf

2. http://civilittee-hu.com/uploads/1/Static/book14th.pdf

References:

1. CALCULUS, Stephen Davis, Irl C. Bivens, Howard Anton. 10th Edition, 2012.

2. Engineering Mechanics Statics (13th Edition), R.C. Hibbeler, 2013.

Syllabus Classification

Objectives	Learning outcomes	Assessment tools
1-	Students are able to identify engineering problems	Assignments, projects, and exams
2-	Students are able to design a component to meet certain constraints	Assignments, projects, and exams
3-	Students are able to use modern engineering tools for engineering practice	Assignments, projects, and exams
4-	Students are able to recognize the impact of engineering solutions in an mathemarical context	Assignments, projects, and exams
5-	Students are able to formulate a collective solution to a Problem	Assignments, projects, and exams