



## SYLLABUS

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Teaching Language
MAT	105	Calculus (1)	4	3	0	2	5		1 <sup>1</sup>	English

### A. Course Description

This course describes the most important ideas, theoretical results, and examples of limit, continuity, differentiation and integration for functions with one variable. The course includes the essential fundamentals of these topics. The emphasis is on calculations, and some applications are mentioned.

### B. Course Outcomes

At the end of this course the student will be familiar with the basic understanding of differentiation, Integration, and its applications that is essential to proceed to next courses in all programs.

### C. References:

#### Required Textbook

*Calculus*, R. T. Smith, R. B. Minton, McGraw-Hill, 4<sup>th</sup> Edition; 2012.

#### Other references

- *Essential Calculus with Application*, Richard A. Silverman, Dover Publications, 1989.
- *Calculus*, O. Swokowski, et al, PWS Pub. Co.; 6<sup>th</sup> Edition, 1994.
- *Calculus: Early Transcendentals*, C. Henry Edwards, David E. Penney, Pearson Prentice Hall, 7<sup>th</sup> Edition; 2008.
- *Schaum's Outline of Calculus*, Frank Ayres, Elliott Mendelson, McGraw-Hill, 6<sup>th</sup> Edition; 2013.

<sup>1</sup> B.Sc. of Engineering.



#### D. Topics Outline

- Limits and Continuity:** Review Preliminaries; Concept of Limit, Computation of Limits, Continuity and Its Consequences, Limits Involving Infinity.
- Differentiation:** The Derivative, Tangent Lines and Velocity Computation of Derivatives, The Power Rules, The Product and Quotient Rules, The Chain Rule, Implicit Differentiation, Derivatives of Inverse Functions, Derivatives of Exponential and Logarithmic Functions, Derivatives of Trigonometric and Inverse Trigonometric Functions.
- Application of Differentiation:** First Derivative Test, Maximum and Minimum Values, Increasing and Decreasing Functions, Concavity and The Second Derivative Test, Overview of Curve Sketching, Linear Approximation, Newton's Method, Optimization.
- Integration:** Anti-Derivatives, Indefinite Integral, Area, The Definite Integral, The Fundamental Theorem of Calculus, Area Between Curves, Integration by Substitution, and Integration by Parts.

#### E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of

#### F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6<sup>th</sup> or 7<sup>th</sup> week.
- **Midterm 2:** 11<sup>th</sup> or 12<sup>th</sup> week.
- **Quizzes & Homework:** During the semester.
- **Final Exam:** 16<sup>th</sup> week.

Your course grade will be based on your semester work as follows:

<b>Midterm 1:</b> 20 %	<b>Midterm 2:</b> 20 %	<b>Final Exam:</b> 40 %
<b>Quizzes, Homework, Attendance &amp; Participation:</b> 20 %		

The grading distribution:

A <sup>+</sup>	A	B <sup>+</sup>	B	C <sup>+</sup>	C	D <sup>+</sup>	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)



### G. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. (“Immediate family” is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

[Executive Rules for Study Regulations and Exams](http://goo.gl/ykm7t3)  
[goo.gl/ykm7t3](http://goo.gl/ykm7t3)

