



## SYLLABUS

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Teaching Language
MAT	113	Calculus (1)	4	3	0	2	6		1 <sup>1</sup>	English

### A. Course Description

This course describes the most important ideas, theoretical results, and examples of limit, continuity, differentiation, integration and its techniques 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 able to be familiar with basics of differentiation and Integration and their applications which are essential to proceed to next courses in all programs.

### C. References

#### Required Textbook

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

#### Other references:

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

<sup>1</sup> B.Sc. in Computer Science.



## D. Topics Outline

- Limits and Continuity:** The Concept of Limit, Computation of Limits, Continuity and its Consequences, Limits Involving Infinity, Asymptotes.
- Differentiation:** Tangent Lines and Velocity, The Derivative, The Power Rule, The Product and Quotient Rules, The Chain Rules, Derivatives of Trigonometric Functions, Implicit Differentiation, The Mean Value Theorem, Derivatives of Exponential and Logarithmic Functions, Derivatives of Inverse Trigonometric Functions.
- Applications of Differentiation:** Indeterminate Forms and Hopital's Rule, Maximum and Minimum Values, Increasing and Decreasing Functions, Concavity and the Second Derivative Test, Linear Approximations.
- Integration:** Anti-derivatives, Integration by Substitution, Area, Integration by Parts, The Definite Integral, The fundamental Theorem of Calculus.

## E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

## 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 & Homeworks:** 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)

