National University

Of Computer & Emerging Sciences
Karachi Campus

Course Outlines of BS (CS) Degree Program

Course Instructor	Dr. Sadaqat Hussain, Mr. M. Ashhad Shahid, Mr. Abdul Basit	**Semester**	Fall 2017
Batch/Section(s)	Batch 2017 / SectionsA,B,C,D,E,F,G	**Year**	2017
Course Title	MT101-Calculus I	**Credit Hours**	3
Prerequisite(s)	None	**Course TA**	

Text Book(s)

Title of book	Calculus
Author(s)	Howard Anton

Reference Book(s)

1-Higher Engineering Mathematics by John Bird

2- Discrete Mathematics by Kenneth H. Rosen

Course Objective:

This is an introductory course of the Calculus . At the end of this course the students will be able to manipulate, differentiate, and integrate exponential functions, logarithmic functions, inverse trigonometric functions, and hyperbolic trigonometric functions. Apply L'Hôpital's rule to find limits of indeterminate forms, use integration by parts, trigonometric substitution, partial fractions, determine convergence and divergence of infinite series. Use Maclaurin and Taylor series to approximate functions, find power series and determine radius and interval of convergence.

Course Description:

Calculus is one of the basic course of mathematics that will define you the vision of mathematics where you can apply different logics and techniques to a real life problems not only related to engineering and also to the daily life.

Tentative Weekly Lectures Schedule:

Week	Theory Contents/Topics
1	Definition of set, set operations, Venn diagrams, DeMorgan's laws, Cartesian product
2	Relation, Properties of relation on a set, Function and their types,
3	Graph of some well-known functions, Translation.
4	Limit of functions
5	continuous and discontinuous functions with graphical representation.
6	**1st Mid Term Exam**
7	Introduction to differentiation, Techniques of Differentiation, L Hopital rule , Leibnitz theorem
8	Taylor and Maclaurin series with their application
9	Extreme values of a function of one variable using first and second derivative test
10	Asymptotes of a function
11	Curvature and radius of curvature of a curve
12	**2nd Mid Term Exam**
13	Indefinite integrals and their computational techniques
14	Reduction formulae, definite integrals and their convergence. Beta and Gamma functions and their identities, applications of integration
15	Applications of integration
16	**Final Exam**

Grading Criteria:

Marks Distribution:

Particulars	**% Marks**
1. Assignments	10
2.Quizzes	10
3. First Mid Exam	15
5. Second Mid Exam	15
6. Final Exam	50
Total:	**100**

Important Instructions to be followed for this Course

- Be in classroom on time. Any student who arrives more than 5 minutes late in the class would be marked LATE. Anybody coming to classmore than 15 minutes late will be marked ABSENT.
- All students are required to maintain 80% of attendance. In case students fail to maintain 80% of attendance, they become ineligible to take the final exam and are awarded "F" grade. **This is a ZERO tolerance policy.**
- Turn off your cell phones or any other electronic devices before entering the class.
- Maintain the decorum of the class room all the time.
- Avoid a conversation with your classmates while lecture is in progress.
- Submit your assignments on time, no assignment will be accepted after the deadline.

Instructions / Suggestions for satisfactory progress in this course:

- On average, most students find at least three hours outside of class for each class hour necessary for satisfactory learning.
- Chapters should be read and homework should be attempted before class.
- Do not get behind. You are encouraged to work with other students. Plus, I am always available during office hours to help you.
- The homework assigned is a minimum. You may always work extra hours on your own.
- Use the few minutes you usually have before the start of each class to review the prior meetings' notes and homework. This will save us valuable in-class time to work on new material.
- Develop a learning habit rather than memorizing.
- Work in groups, whenever appropriate.
- Apply the learned principles and gained knowledge.
- Be creative in thinking, but stick to the topic assigned for discussions, assignments and presentations.
- Always bring your Work Book with you in the class.

Note: Students are welcome all the time to get help from the Teacher.

Signature: _____ Date:25-08-2017