

GUJARAT
TECHNOLOGICAL
UNIVERSITY

BRIDGE COURSE MATHEMATICS

Gujarat Technological University

BRIDGE COURSE Course Duration: - 6 Week Mathematics

Course Objectives:

Students will

- improve their ability to think critically
- analyze a real problem
- Solve problems by using a wide array of mathematical tools.

The course is designed in such a way that it can be covered comprehensively in a course of 24 hours activity based learning by assigning tutorials/projects.

Course Outcome:

Students will be able to

- differentiate the simple functions and implicit functions in well defined domain.
- find maximum and minimum values of functions in domain.
- know geometrical meaning of Mean Values Theorems.
- integrate the simple functions and rational functions
- draw parametric curves
- find area of known curves
- solve simple differential equations

Course Organization:-

List of Activities

Sr. No.	Activity
1	Standard Graphs and their properties
2	Concepts of existence of limit
3	Understanding of continuity and Intermediate Value Property
4	Understanding of derivative
5	Applications of derivative
6	Mean Value Theorems
7	Concepts of Maxima and Minima
8	Curves defined by Parametric equations
9	Concepts of Integration
10	Find the area of shaded region
11	Application of differential equations – real world problems
12	Solution of simultaneous linear equations by matrix

Note: Teachers are advised to encourage students to perform the activity in group of 6 students for conceptual understanding by geometrically, numerically and algebraically.

Perception:

Students entering in the engineering course can be classified in to two groups as A Level and S Level based on the MCQs test to be conducted by GTU.

- ✓ **S LEVEL STUDENTS:** Top ten percent students on the basis of the result of MCQ test can be put in S level. Such students shall be leaders of formed group and coordinate with faculty and students. They will be basic monitoring persons in entire training process.
- ✓ **A LEVEL STUDENTS:** Remaining 90% students on the basis of the result of MCQ test will be put in A level. They shall be provided activities designed above.

Evaluation Pattern:

- Weekly MCQs test on the activities done during the week
- At the end, MCQs test of 50 Marks.

Reference Books:

The course is covered in general from any one of the following books.

- Calculus with Early Transcendental Functions, James Stewart, Cengage Learning
- Thomas' Calculus, Maurice D. Weir, Joel Hass, Frank R. Giordano, Pearson Education
- Calculus – Single and Multivariable, Hughes – Hallett et al., John-Wiley and Sons.
- Calculus, Robert T. Smith & Ronald B. Minton, McGraw-Hill.

Video Lectures:

The above mentioned contents can be referred through:

- NPTEL – Mathematics I: Calculus by Prof. Swagato K. Ray, Department of Mathematics, Indian Institute of Technology Kanpur.
Link: http://utubersity.com/?page_id=735&tubepress_page=1
- MIT Open Courseware: <http://ocw.mit.edu/courses/mathematics/18-01-single-variable-calculus-fall-2006/video-lectures/>