REPORT ON MATH SATURDAY SERIES
(COVERS 3 SESSION OF THE MONTH SEPTEMBER 2015)

EXPERIMENTAL PILOT PROJECT FOR
1st YEAR DEGREE ENGINEERING STUDENTS FOR
CALCULUS (Subject code: 2110014)
BY GUJARAT TECHNOLOGICAL UNIVERSITY

Under its Initiative "Active Learning"

ABOUT GTU

Gujarat Technological University (GTU) is India's most innovative affiliating type University established by Government of Gujarat vide Gujarat Act No. 20/2007. The University caters to the entire field of engineering, pharmacy, business studies (MBA programs) and Computer Applications (MCA) in Gujarat. Today the University has about 500 Colleges, 17,000 plus faculty members, 4 lakh students, a large number of Master's programs and a robust doctoral program. Gujarat Technological University has set up 14 Postgraduate Research Centers to foster research activities. Under the visionary leadership of Vice Chancellor **Dr. Akshai Aggarwal,** many initiatives are taken up at GTU such as GIC Sankuls, Student Start-up Policy and a spine of six Design Engineering courses. Many of these courses are being followed by other Universities of India.

ABOUT ALVCOM

Gujarat Technological University had started the live Video Lecture Telecasting series known as ALVCOM from Saturday, 1st September 2012. This venture of GTU was supported with the help of technical facility from BISAG – Bhaskaracharya Institute for Space Applications and Geo-Informatics situated at Gandhinagar. It was started with a vision of enabling students of GTU affiliated colleges especially from far flung areas to have an access to video lectures from eminent faculties all over and thus creating a platform of knowledge sharing. GTU had invited all the professors, lecturers and faculty members, those who are interested to participate in this project and up till now GTU was successful in live broadcasting of nearly **800 lectures** of **15 subjects**.

ABOUT MATHEMATICS

Math is the key subject in every sphere of life. Be it solving complex equations, bargaining, natural phenomenon or simple house hold work, everywhere math plays its essential role. The conventional methods of solving problems involve high end calculations and complex concepts. Many times without understanding the actual problem, we follow and apply the mathematical concepts mechanically. Mathematics has often been termed the "gatekeeper" of success or failure for high school graduation and career success. It is essential that mathematics . . . become a pump rather than filter in the pipeline. So with an aim to remove the abstractness and improve the results, ***GTU has initiated a pilot project especially for the subject "CALCULUS"(Subject code: 2110014)whereby we would***:-

- ✓ Conduct classes for 12 Saturdays at BISAG, Gandhinagar.
- ✓ Each session will be of 3 hours duration. In total 36 hours teaching programme.
- ✓ The programme will cover the entire syllabus of CALCULUS.

- ✓ Designed for all 1st Year Degree Engineering students. Limited seats of 25. Students should bring their own Laptop.
- ✓ GTU will certify students at the end of the ***Math Saturday Series*** programme.

COURSE CONTENT IN BRIEF

Engineering Mathematics

- ✓ Infinite Sequences and Series
- ✓ Curve Sketching
- ✓ Indeterminate Forms and Improper Integral
- ✓ Applications of Integration
- ✓ Partial Derivatives
- ✓ Multiple Integrals

The first Saturday of the **"Math Series"** started with welcoming all the students from different colleges by Ms Roma Thakur. She revealed the purpose of these series, to be able to develop Mathematics as a tool for the upcoming engineers and thus improving their results. Mathematics is the language of engineers. She also Introduced Mr Chanchal Dass, FIE, expert of this series, and he emphasized on practical demonstrations to be showed to the students in a class through a video, excel, simulations etc and thus making the class more interesting.

TOPICS COVERED DURING 3 SESSIONS OF SEPTEMBER 2015

As mentioned above, the syllabus of the first year Calculus is mainly divided into six topics. First four topics are related to the functions of single variable. These topics are mainly concentrated on the use of differential and integral calculus. The prerequisite of these is that the student should be able to graph elementary functions and solve both linear equations and inequalities. Students entering in Calculus should have a firm grasp of algebra and trigonometry, trigonometric functions, inverse trigonometric functions and their properties, exponential and logarithmic function. Continuity and Differentiability of functions, Derivatives of Functions in Parametric Forms, Mean Value Theorem, Rate of Change of Quantities, Increasing and Decreasing Functions, Tangent, Normal and Maxima and Minima of single variable function. Integrals, Integration as an Inverse Process of Differentiation, Integrals of some Particular Functions, Integration by Partial Fractions, Integration by Parts, Definite Integral, Fundamental Theorem of Calculus, Evaluation of Definite Integrals by Substitution, Properties of Definite Integrals, Area under Simple Curves and Area between Two Curves by integration. The first three sessions have been devoted to prepare foundations for the main topics on calculus. In this experimental pilot project on calculus, it is felt that focusing calculus in isolation will not build confidence among students and an integral approach, covering few related topics, have been demonstrated.

PARTICIPANTS

This ***"Math Series"*** was mainly targeted for 1st Year Degree Engineering students. A total of **60 participants responded** for attending 1st three sessions that were declared on GTU's website. But considering the limitation of attending large number of participant at TV studio during workshop, **only 36 (Thirty Six) participants** were confirmed for participation in the 1st session. The participants were from different geographical areas like Ahmedabad, Basna, Bhavnagar, Gandhinagar, Khatraj, Kalol,

Mehsana, Patan, Rajkot, Savli, Surat, Tuwa,. Mr Dass also insisted to limit the workshop **for 20 participants** only as participants are required to do hands on practice of many mathematical concepts in excel and run simulation. Within one week of publication of the circular for registration, the registrants crossed sixty and the circular was withdrawn. A total **of 9 students** participated in 1st session (Dt 12/09/2015), **10 students** in 2nd session (Dt 19/09/2015) and **11 students** in the 3rd session (Dt 26/09/2015).

FEEDBACKS

The participants were asked to rate the expert as well as the GTU's initiative of "Math Series". **Average score for the expert was 9.66 and the workshop was 9.11 out of 10.** All these scores indicate the math series as excellent one. The scores of the Math Series along with number of respondents are given below:

1st Session, Saturday 12/09/2015	
Score	**Number of Respondent**
10 out of 10	7
9 out of 10	1
8 out of 10	1
Total	**9**

Few Comments from Participants of First Session:

1. Yes. I purely believe that this "Math series" will help me to understand concept better and I will be able to score better.

   Romit Mehta,
   Atmiya Institute of Technology & Science, Rajkot

2. It will make us easy to understand basic concepts but tips to learn the formula of calculation which we can understand and remember for long term can be included.

   Ritu Bansa,
   VGEC, Chandkheda

3. GTU should also start "EG Series", "CPU Series" and of all other branches.

   SoniParth,
   GEC, Bhavnagar

4. It will help a bit but more is expected.

   Uday Posia,
   Apollo Institute of Engineering & Tech. Ahmedabad




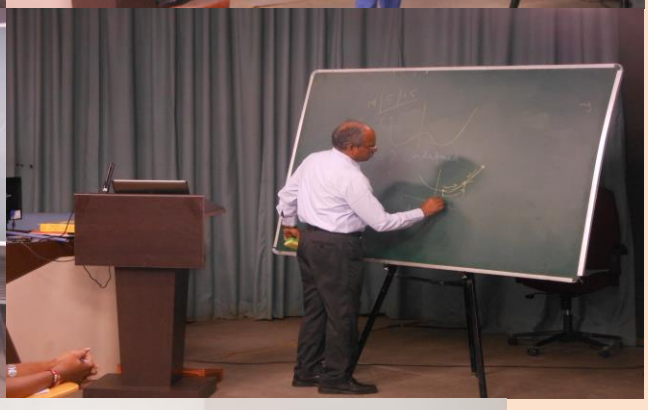


Photo Gallery of the 3 Sessions at BISAG in the month of September 2015

Contact Us on:-

Facebook:-https://www.facebook.com/gtuactivelearning
YouTube:-http://www.youtube.com/channel/UChNAV4wMyIEu3QtV_QuKhig
Report Prepared By:-Mr.ChanchalDass and Ms Roma Thakur
Email Id of the Expert| cdass01@gmail.com|