

**A Report
TEQIP III Sponsored
Student development program
On**

“Importance of Mathematics in Science & Engineering”

(Online)

13th February 2021

12:00 pm to 1:30 pm



Organized by

**Department of Mathematics
BVM Engineering College
(An Autonomous Institution)
Vallabh Vidyanagar – 388120**

EVENT

Event Name	Importance of Mathematics In Science & Engineering
Date	13 th February 2021
Duration	12:00 pm to 01:30 pm
Event Coordinator	Prof.(Dr.)M.E.Shimpi & Prof. N.C.Sonara
Number of Participants	362
Sponsored by	TEQIP III

Objective:

- Awareness of importance of Mathematics in Science & Engineering

About the Program:

Mathematics Department, B.V.M had organized a TEQIP III sponsored Student Development Program (SDP) on “Importance of Mathematics in Science & Engineering” on a virtual mode on 13th February 2021. The event was organized for students of First Year B.Tech. The program was coordinated by Prof. (Dr.) M.E.Shimpi & Prof. N.C.Sonara, Mathematics Department.

Opening Ceremony:

The webinar started with the welcome speech of Prof. N.C.Sonara, Department of Mathematics, BVM Engineering College. Dr. R. B. Gandhi, I/C HOD Mathematics Department, BVM Engineering College explained the relevance and importance of Mathematics in Science & Engineering and he has conveyed his best wishes to students. Prof. (Dr.) M.E.Shimpi gave a brief introduction of Dr.BrajeshKumar Jha, the expert, to the participants. Dr.BrajeshKumar Jha has completed his Ph.D. in Mathematics from the S. V. National Institute of Technology, Surat in 2013. He is currently working as Assistant Professor at the School of Technology, Pandit Deendayal Energy University, Gandhinagar (Gujarat) since December 2013. He concentrates on research areas such as Mathematical Modelling and Simulation of Ca²⁺ Distribution in Astrocytes, Finite element modelling of Physiological problems, Fractional differential

equations and its Applications, etc. Besides, he has presented and published more than 40 research papers at national & international conferences. Sir also supervises doctoral thesis act as a guide. Currently, Sir is an active member of the Indian Society of Theoretical and Applied Mechanics (ISTAM), Member of International Association of Engineers (IAENG), Indian Society of Technical Education (ISTE) (LM-87829), Computer Society of India (I1501602), APCBEES: (201821), Gwalior Academy of Mathematical Science, Forum for Interdisciplinary Mathematics (VICE PRESIDENT OF GUJARAT CHAPTER), FATER. (DY. SECRETARY OF GUJARAT CHAPTER).

Webinar Expert:

Dr. Brajeshkumar Jha
School of Technology, PDEU, Gandhinagar

Contents:


- Why mathematics is compulsory for Engineering?
- Mathematician around the world.
- Interdisciplinary area: Today's requirement.
 - Role of Mathematics in Electrical Engineering
 - Role of Mathematics in Civil Engineering
- Use of Calculus in real life
- Finding Area of region bounded by curves
- Enzyme Reaction
- Modelling-free Oscillation , Diffusion Equations

He concluded the session by thanking the programme committee and the faculty members. A question and answer session was conducted after that. The webinar concluded with a vote of thanks by Prof. N.C.Sonara.


Program Outcomes:

- Students of the first year make aware of different types of applications of Mathematics mentioned above.


Glimpse:



Department of Mathematics
Birla Vishvakarma Mahavidyalaya Engineering college
[An Autonomous Institution]
Vallabh Vidyanagar -388120




"Importance of Mathematics in Science & Engineering"




Dr. Brajeshkumar Jha
SCHOOL OF TECHNOLOGY, PDEU, GANDHINAGAR

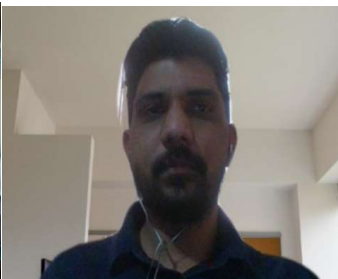
13 February 2021
12:00PM - 1:30 PM

Moderator
Dr. R.B.Gandhi
I/C Head, Associate Professor,
Department of Mathematics

 : [Click here](#)

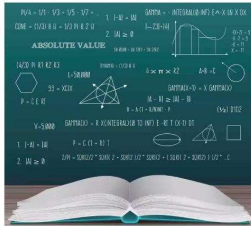
 : [Click here](#)

Coordinators
Prof. (Dr.) M.E.Shimpi
Mr.N.C.Sonara




WHY MATHEMATICS IS COMPULSORY FOR ENGINEERING?

- Mathematics has always been a tough subject to study and the students are always struggling with a fear factor associated with mathematics.
- Although practice makes a man perfect hold truth in many typical tasks it also hold true for study as well. Mathematics has been too complicated for majority of students.



The Role of Mathematics in Civil Engineering

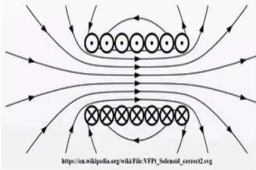
- For Civil engineering algebra is used on a daily basis and they work exclusively on **differential equations in engineering mathematics**, statistics, and calculus. Civil engineers use mathematics equation to study the chemistry of materials.
- In order to use the right material for the project, engineers measure the strength of the material and apply chemical equations to judge the strength of the material.
- Mathematical trigonometry is used for surveying the structure, where land elevation and various angel measurement of the structure are considered.



The role of mathematics in electrical engineering

- The differential equations in mathematics find importance in electrical engineering for solving circuit equations.
- There is another subject in electrical engineering related to electromagnetic theory which involve mathematical concepts on calculus, and building sound knowledge-base on learning triple integrals and integration over a closed surface.
- Mathematical linear algebra is inter connected with the electrical engineering concepts of circuit theory and signal processing.

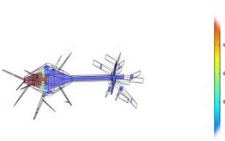
History of electromagnetic theor



https://en.wikipedia.org/wiki/File:VTPV_Schubert_circuit.png

Calcium Signaling


- Calcium signaling in neuron cell



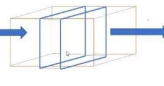
Spring- Mass System

What is spring-Mass System ?

➤ A mass m attached to a spring of spring constant k exhibits simple harmonic motion in closed space. The equation $T = 2\pi\sqrt{m/k}$ shows that the period of oscillation is independent of both the amplitude and gravitational acceleration. The above equation is also valid in the case when a constant force is being applied on the mass, i.e. a constant force can not change the period of oscillation.



Diffusion Equation

$$\frac{\partial u}{\partial t} = D \frac{\partial^2 u}{\partial x^2} + f$$


Solution:

$$u(x, t) = \frac{M}{\sqrt{4\pi Dt}} \exp\left(-\frac{x^2}{4Dt}\right) \quad u = M\delta x$$

Programme Committee:

Convener

Dr.R.B.Gandhi

Coordinators

**Prof. (Dr.) M.E.Shimpi
Prof. N. C.Sonara**