



Eshan College of Engineering

Approved by AICTE, New Delhi and Affiliated to AKTU (Formerly UPTU) & BTE, Lucknow

Detailed Report

Workshop on- "Applications of Calculus in Engineering"

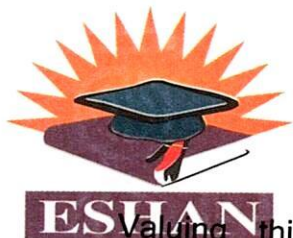
Subject Area- Research Methodology

Organized by- Department of Applied Sciences and Humanities

Over the span of a couple of years, mathematics has contributed to bringing up new innovative ideas that are now widely accepted around the globe. Various fields such as engineering, medicine, biological research, economics, architecture, space science, electronics, statistics, and pharmacology all benefit from the use of calculus. The application of calculus in research and development has paved the way for manufacturing, data management and other service industries to grow exponentially. Based on collected data, companies can optimize their output, productivity, and efficiency, which improves the industry's quality and revenue.

Our faculty came to agreement that calculus is concerned with two basic operations, differentiation and integration, and is a tool used by engineers to determine such quantities as rates of change and areas; in fact, calculus is the mathematical 'backbone' for dealing with problems where variables change with time or some other reference variable and a basic understanding of calculus is essential for further study and the development of confidence in solving practical engineering problems. Hence, it is very important to make students aware of its practical aspects other than academics.





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Valuing this perspective of industry demand, the Department of Applied Sciences and Humanities, under the guidance of our Director Dr. Ghanshyam Srivastava, organized a workshop on **"Applications of Calculus in Engineering (Research Methodology)"** on 16/11/2019 to make students more efficient and competent enough. 45 students participated in the workshop. It is necessary to make students understand the concept of a limit and its significance in rate of change relationships due to which the following objectives of this workshop were addressed-

- Use calculus notation for describing a rate of change (differentiation) and understand the significance of the operation.
- Solve engineering problems involving rates of change.
- Understand what is involved in the calculus operation of integration.
- Solve engineering problems involving integration.

We were honoured that Dr. Shailendra Kumar, AP, ASH agreed to become the speaker and enriched students with-

- Basic functions and derivations of calculus,
- Product, chain and quotient rule,
- Linearity in differentiation and
- Valuating integrals among other vital components.



He also conveyed that Many engineers see calculus as just a gateway to getting an engineering degree but it is so much more. Calculus is the math of the universe, explaining how all things interface together. Calculus is the foundation to even begin to understand physics, thermodynamics, materials,





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fluid mechanics, electronics and statistics. Without calculus, mechanical engineering wouldn't exist.

