

**REPORT OF THE STTP (SHORT TERM TRAINING PROGRAMME) ON**  
**'APPLICABLE MATHEMATICS AND STATISTICAL TECHNIQUES FOR ENGINEERS'**  
**JANUARY 2, 2018 TO JANUARY 6, 2018**

**Day 1: January 2 2018**

10:00 am: **Inauguration**

Venue: Fr. Santino Mondini Hall, Don Bosco Institute of Technology, Kurla (W)

The STTP was inaugurated around 10:00 am. The Keynote speaker was Dr. Prabhu Ramachandran, IIT(Mumbai). The Principal Dr. Prasanna Nambiar explained to the audience the need of this STTP. The coordinator Dr. Revathy Sundararajan detailed the objectives of the STTP and the schedule of the STTP

[Venue for the remaining technical sessions was the AutoCad lab, Ground Floor, A wing]

11:30 am - 1:15:00 pm

Session: **Bayes' Theorem and Applications**

Speaker: Dr. Revathy Sundararajan, Don Bosco Institute of Technology, Kurla (W)

The speaker introduced to the audience the origins of probability, conditional probability and Bayes' Theorem and its applications in engineering and real life.

2:00 pm to 5:00 pm

Session: **R-programming basics and Applications in Statistics**

Speaker: Dr. Amiya Bhowmick, Institute of Chemical Technology (ICT), Mumbai

The participants were taught the basics - creating variables, vectors, operations among variables etc. in R-programming. Statistical measures and how to find them were also taught. The technique of using Central Limit Theorem was also discussed.

**Day 2: January 3 2018**

9:00 am to 11:00 am

Session: **Integral Transforms**

Speakers: Prof. Pranjalee Kurundkar and Prof. Pallavi Mahadik, Don Bosco Institute of Technology, Kurla(W)

The speakers introduced the concept of Integral transforms - the integral, kernel and explained about the Laplace Transforms and Fourier Transforms and their applications in engineering.

11:15 am - 1:15:00 pm

Session: **Probability distributions and their applications**

Speaker: Dr. Revathy Sundararajan, Don Bosco Institute of Technology, Kurla(W)

Bernoulli, Binomial, Poisson Probability distributions and their applications were explained.

2:00 pm to 5:00 pm

Session: **Probability distributions and their applications** (contd.)

Speaker: Dr. Revathy Sundararajan, Don Bosco Institute of Technology, Kurla(W)

Normal (Gaussian) Probability distributions and their applications were explained. Area property of Normal distribution was explained using the probability table.

### **Day 3: January 4 2018**

9:00 am to 11:00 am

Session: Statistical Quality Control

Speaker: Prof. Prasad Padalkar, Don Bosco Institute of Technology, Kurla(W)

The speaker explained to the participants the different stages through which the concept of 'quality' has been considered in the industry, about process control and product control and the statistical techniques used in quality control.

11:15 am - 1:15:00 pm

Session: Differential Equations and their applications

Speakers: Prof. Pranjalee Kurundkar and Prof. Pallavi Mahadik,  
Don Bosco Institute of Technology, Kurla(W)

Different types of ordinary differential equations and their methods of solutions were explained with their areas of applications in engineering. Partial differential equations and their methods of solutions were done with applications

2:00 pm to 4:00 pm

Session: **Latex software**

Speaker: Prof. Sonali Jabare, Don Bosco Institute of Technology, Kurla(W)

The methodology of using the LATEX software to write technical articles – including equations, tables, figures, graphs were explained

4:10 pm to 5:00 pm

Session: **Test**

To evaluate how much the participants have gained from the above sessions so far, an objective test was conducted.

### **Day 4: January 5 2018**

9:00 am to 11:00 am

Session: Speech Processing and use of R-tools

Speaker: Prof. Pratibha Dumane, Don Bosco Institute of Technology, Kurla(W)

Various aspects of speech and methods of analysing were discussed. The participants were able to generate different sounds using the R-tool

11:15 am - 1:15:00 pm

Session: Theory of computation

Speaker: Prof. Uday Nayak, Don Bosco Institute of Technology, Kurla(W)

P and NP problems were explained. Logic for acceptance state of different types of machines under various conditions were discussed

2:00 pm to 3:15 pm

Session: **Softwares for Statistical Computation**

Speaker: Prof. Anagha Shastri, Don Bosco Institute of Technology, Kurla(W)

The use of SPSS and other statistical softwares available were explained

3:30 pm to 5:00 pm

Session: **Vector Calculus**

Speaker: Prof. Shirly Chacko, Don Bosco Institute of Technology, Kurla(W)

Concepts of dot product, cross product, divergence and curl and their applications in engineering were discussed

### **Day 5: January 6 2018**

9:00 am to 1:00 pm

Session: R- Programming - Graphics

Speaker: Dr. Joanne Gomes, St. Francis Institute of Technology, Mumbai

Defining variables and shapes and plotting graphs were extensively explained and practised using R-Studio in R-Tools

2:00 pm to 3:15 pm

Session: **Change of coordinate systems**

Speaker: Prof. Sameer Hadkar, Don Bosco Institute of Technology, Kurla(W)

The methods of locating and plotting points on 2-dimensional and 3-dimensional planes using Cartesian, Polar, Cylindrical and Spherical coordinates were explained using models

3:30 pm to 5:00 pm

Session: **Valedictory**

Invitees: Dr. S. Krishnamoorthy, Advisor, Dr. Prasanna Nambiar, Principal, Prof. Imran Mirza, Don Bosco Institute of Technology, Kurla(W)

Feedback from participants regarding the sessions and their suggestions for improvement were taken. The invitees shared their thoughts on how this programme can be used to equip the faculty towards better designing abilities

Prepared by: Revathy S.