

One week FDP on
Statistical Inference and Linear Algebra
December 9th-13th, 2019

Application form

1. Name in full : _____
2. Date of birth : _____
3. Designation : _____
4. Institution : _____

5. Whether the Institution is AICTE/UGC recognized: YES/NO
6. Highest Educational Qualification: _____
7. Experience in Years: Teaching/Research/ Industry: _____
8. Subjects Taught over last three years: _____

9. Demand Draft details: _____
10. Address for correspondence: _____

E-mail ID: _____
alternate email ID: _____
Mobile and Phone No.: _____

Declaration : The information provided above is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the course and shall attend the course for the entire duration. I also undertake to inform the Coordinators in case I am unable to attend the course, if selected.

Place: _____ Date: _____

Name and Signature of Applicant

Sponsorship Certificate

Mr./Ms. _____ is an employee of this Institute and is hereby sponsored to participate in the One week FDP on Fundamentals of Signal Processing.

Place: _____ Date: _____

Name and Signature of Head of Institution with seal

Please send completed application forms (with DD as detailed) to the coordinator on or before 1st December, 2019. (The coordinators may also be contacted for clarifications, if any).

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Statistical Inference and
Linear Algebra

December 9th-13th, 2019

Coordinator
Dr. Sanjay Nalbalwar
Department of Electronics &
Telecommunication Engineering

Patron
Prof. Vedala Rama Sastry
Hon'ble Vice-Chancellor

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Introduction

Statistical Signal Processing (SSP) basically refers to the analysis of random signals using appropriate statistical techniques. It is an area of Applied Mathematics and Signal Processing that treats signals as stochastic processes, dealing with their statistical properties. Statistics is used in the formulation of appropriate models to describe the behavior of the system, the development of appropriate techniques for estimation of model parameters, and the assessment of model performances. The goal of this FDP is also to provide state-of-the-art research on Linear algebra and its Applications in signal processing. This also provides a forum for academicians, students and researchers working in the emerging field of signal and image processing and its applications.

Almost every Electrical, Computers, IT and Electronics department in this country and abroad now started offering one or more courses on SSP and Linear Algebra at UG & PG levels. It is necessary to upgrade the faculty and research scholars with fundamentals of SSP and Linear Algebra since knowledge of this field is essential to carry out research in various discipline.

We expect that participant teachers will pass on the knowledge to the students in the years to come which in turn will motivate some of the students to make contributions to this field.

Objectives

- To provide in depth understanding of random nature of a signal using probability and random experiments.
- To prepare mathematical background for communication signal analysis.
- To provide in depth understanding of random processes and its characterization in terms of Correlation, moments, moment generating functions, pdf, CDF
- To create awareness about representation of signal using parametric and non-parametric models.
- To create awareness about the applications of linear algebra in statistical signal processing
- To promote research in the statistically matched multirate structure to the signal or its statistics which is emerging field

Course Content

- Review of Random Variables: Distribution and density functions, moments, independent, uncorrelated and orthogonal random variables; Central Limit theorem, Random processes, wide-sense stationary processes, autocorrelation and autocovariance functions, Spectral representation of random signals, Properties of power spectral density, Gaussian Process and White noise process. Random signal modeling: MA, AR and ARMA models.
- Linear Algebra: Field, Vector Spaces, Vector Subspaces, vector independence, basis, orthogonal basis, Inner product, norm, Schwarz Inequality Orthogonality principle in estimation, Vector-space representation of Random variables.
- Signal Estimation: Linear Minimum Mean-Square Error (LMMSE) Filtering: Wiener Hoff Equation, Wiener filter, Linear Prediction of Signals.
- Adaptive Filtering: Principle and Application, Steepest Descent Algorithm Convergence characteristics; LMS algorithm,
- This course will be conducted by the resource persons consist of experts from reputed industries, IITs and DBATU.

Eligibility and Selection Criteria

Faculty members / Research Scholars from AICTE approved Engineering Degree/Diploma colleges are eligible to participate. The number of participants is limited to forty and selection will be done on first- cum-first-served basis

About the University

Dr. Babasaheb Ambedkar Technological University, with its head quarters situated at Lonere, is now a statutory State Technical University established by Government of Maharashtra through special Dr. Babasaheb Ambedkar Technological University Act. The university has been accorded the status of an 'affiliating' university of the entire State of Maharashtra from March 2, 2016, by the Maharashtra Act No. XXIX of 2014. A total of 180 colleges offering Engineering and Technology, Pharmacy, Architecture, Hotel Management and Catering Technology courses from the state are affiliated to the University. The campus covers an area of 468 acres.

Department of Electronics & Telecommunication Engineering was established in the year 1995 and offering B.Tech, M.Tech and Ph.D programmes. The department has received handfull amount of funding from AICTE, UGC, TEQIP and State Government for various research projects. Department has state-of-the-art laboratories in various areas of Electronics & Communication Engineering. The focus of the department is to produce graduates & post graduates with strong fundamentals in Electronics and Communication domain. The University is surrounded by State Industrial areas (MIDC): Roha, Mahad, Lote Parshuram, Patalganga and Taloja. The University is about 160 km from Mumbai and 140 km from Pune. The University is well connected by road (Mumbai Goa Highway, No. NH -66, University is only 2 km off this highway) and on Konkan railway, Nearest stations: Veer (5 km) and Mangaon (12 km). The University is located at the lotus feet of Raigad Fort, where Shivaji Maharaj was coroneted. Mahabaleshwar and Panchgani are the nearest hill stations in the close vicinity.

Important Information

Submission of Registration Form: **On or before 1st December, 2019**

Outstation participants will be paid TA/DA as per AICTE norms.

The completed registration form with signature of Principal/Director and institute seal, is to be sent to Programme Coordinator.

Course Fees

Rs. 1000/- for Industry participants.

Rs. 1000/- for Faculty member and Rs. 500/- for Research Scholar (refundable after completion of STTP).

The participants will be provided shared accommodation on request at DBATU campus