AICTE Sponsored QIP Short Term Course on Numerical Linear Algebra in Applications to Data Sciences
(Online Mode)

Organized by
DEPARTMENT OF SCIENCES & HUMANITIES,
Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram, Chennai-600127
www.iiitdm.ac.in

From 7 to 12, March, 2022

Coordinators
Dr. Nachiketa Mishra
Dr. S Vijayakumar

About the Institute
Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram (IIITDM Kancheepuram) is a Centre

Important Dates

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<td>Last date for application</td>
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<td>Intimation of selection</td>
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<td>Confirmation of participation</td>
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For further details, please contact

Dr. Nachiketa Mishra
IIITDM Kancheepuram
Email: nmishra@iiitdm.ac.in
Phone: +91-9108682466

Dr. S Vijayakumar
IIITDM Kancheepuram
Email: vijay@iiitdm.ac.in
Phone: +91-44-27476345

of Excellence for technical education and research established in 2007 by the Ministry of Education, Government of India to pursue design and manufacturing oriented engineering education and research and to promote the competitive advantage of Indian products in global markets. The Institute is presently offering B.Tech programmes in Computer Science & Engineering, Electronics and Communication Engineering (Design & Manufacturing) and Mechanical Engineering (Design & Manufacturing), Dual Degree Programmes leading to B.Tech and M.Tech Degrees, postgraduate programmes for M.Tech as well as M.Des degrees and inter-disciplinary PhD programmes in core and applied areas of engineering. Like other streams, Mathematics stream under the Department of Sciences and Humanities also offers PhD programmes in both pure and applied mathematics.
**AICTE Sponsored QIP Short Term Course on**

**Numerical Linear Algebra in Applications to Data Sciences**

7 - 12, March, 2022

**Application Form**

Please fill the Google form link

![QR Code]

Click the form icon or scan the QR code

Eligible teachers are requested to submit the filled in application (Google form) along with the sponsorship certificate in the format given below on or before 25-02-2021.

**About the Course**

**Introduction:** Computational and data science research in both academia and industries is bringing the leading theoretical, computational and experimental researchers/experts to work together on different real life problems. A large amount of past data can predict the future trend of any evolution process; for example, Covid-19 spread, future health condition of a patient, stock market prediction, the evolution of microstructure in different composites or alloys, carbon dioxide restoration processes, and different fluid flow phenomena.

Especially, in the last decade the machine learning and deep learning methods have solved many such difficult problems in all the science and engineering fields to a great extent. Most of these successful methods and algorithms are inspired by methods in Numerical Linear Algebra (NLA). Hence better understanding of Numerical Linear Algebra will help to design faster and stable algorithms.

This course will cover the theory and algorithms of NLA, with a focus on data science applications. There will be hands-on sessions also to facilitate the participants to understand different applications and to train them for working on such computational methods for different data science problems. The course will only assume familiarity with an undergraduate course in Linear Algebra and some basic understanding of scientific programming. It has been seen that industrial experts and engineers have less understanding of the mathematics behind data science methods and, the same way, mathematics students and teachers have less understanding of the use of NLA methods in real life problems. This short term course is designed suitably for both mathematicians and engineers to bridge this gap.

**Course Objectives:** This short term course is focused on improving the understanding of applications of different topics in NLA and also to identify the importance of NLA in data science research. It will help the teachers of Mathematics to motivate their students to choose a career in data science and also to learn the concepts to pursue research in data science field. In a similar way, it will benefit the teachers of Engineering disciplines too.

**Course Overview:**

- Numerical Linear Algebra
- Machine Learning Techniques & Applications
- Low Rank Approximation & $\mathcal{H}$-Matrices
- Tensor & Decomposition Methods
- Matrix Sparsification and Compressed Sensing.
- Spectral Graph Theory & Applications

**Course Duration:** The course is of one week duration from 7 to 12 March, 2022.

**Resource Faculty:** The resource persons include experts from both leading mathematicians and computer scientists of India.

**Eligibility:** Engineering college teachers from AICTE approved colleges.

**Registration Fee:** There is no course fee for the participants.

**Mode:** The course will be online and the attendance during all the sessions is compulsory. The course link will be sent to shortlisted candidates (maximum 100) by March 03, 2022.
Certified that Dr./Sri./Smt. ____________________________ is a faculty of our Institute and is being sponsored hereby for attending QIP short term course on “Numerical Linear Algebra in Applications to Data Sciences” by Department of Sciences and Humanities, IIITDM Kancheepuram in online mode from 7th to 12th March, 2022.

Signature of Sponsoring Authority
(with date and seal)