

INTRODUCTION

Usually, in Linear Algebra course, problems that are solved are either in two dimensional- plane or in three- dimensional space. In an attempt to solve any non- trivial problem involving more than three variables, numerical techniques are required. The proposed course on Numerical Linear Algebra aims to make the participants familiar with these techniques.

COURSE OBJECTIVES

The course will enable a participant to gain a practical knowledge of modern computational techniques for numerical solution of Linear Algebra problems using MATLAB as vehicle for computation. The course consists of a unified presentation of computation, analysis of basic algorithms, and the numerical techniques.

COURSE OVERVIEW

Review of Vector space, Linear transformation, Inner product spaces. Vector norms for vectors and matrices. Direct and Iterative Methods, Residual correction, Ill-condition, error-analysis. Conjugate-gradient method and pre-conditioning, condition number and stability. Basic theory of eigenvalue problems, power method and its extension- inverse iteration, Rayleigh quotient method, Transformation methods involving Givens and Householder methods. Sturm sequences, The Lanczos method for symmetric matrices and error analysis, singular value decomposition, generalized inverses and applications .Best approximation, Best approximate solutions (Least Squares) Applications.

COURSE DURATION

The course duration is six days starting **from 19th March to 24th March, 2018.**

RESOURCE PERSONS

Faculty from IIT Madras and from other IIT's.

ELIGIBILITY & REGISTRATION

Engineering college teachers from AICTE approved colleges are eligible to apply. Eligible teachers are requested to register for the course by submitting the filled in application along with the sponsorship certificate to the coordinator on or before **29th January, 2018.** Faculty from **Mathematics, Electrical Engineering and Computer Science** disciplines are welcome to participate. In particular, those who have good basic knowledge in Linear Algebra and Numerical Methods are encouraged to apply.

REGISTRATION FEE

There is **no course fee** for the participants from AICTE approved engineering colleges. However, the short listed candidates after hearing from the coordinator, need to pay a refundable deposit of Rs. 500/-. This amount shall be paid through a demand draft drawn in favour of *IIT Madras*, payable at Chennai. This deposit will be refunded in cash/DD to the course participants at the end of the course.

TRAVEL SUPPORT

All the course participants are eligible for 3- Tier AC train fare, for both onward and return journey, by the shortest route on submitting the copies of the train tickets.

BOARDING AND LODGING

Boarding and lodging facilities, on twin sharing basis, will be provided to the interested participants of the course at the Taramani Guest House, IIT Madras for the entire duration of the course.

AICTE Sponsored QIP Short Term Course on

NUMERICAL LINEAR ALGEBRA

19– 24 March, 2018

APPLICATION

Name (in BLOCK letters):

Designation:

Department:

Address of the College:

Academic Qualification:

Experience (in years):

Communication Address:

Office/Residence Phone:

Mobile:

E-mail:

Do you need accommodation?:

Date:

Signature of the Applicant

SPONSORSHIP CERTIFICATE

It is certified that Dr./Shri./Smt.

.....

is a faculty of our institute and is being sponsored hereby for attending the QIP short term course on “Numerical Linear Algebra” to be conducted at IIT Madras from **March 19, 2018 to March 24, 2018.**

Signature of Sponsoring Authority
(with date and seal)

Please scan the filled in application and send the same by Email to stciitmna@gmail.com and also post the hard copy.

DEPARTMENT OF MATHEMATICS, IIT MADRAS

The Department of Mathematics, IIT Madras was set up in 1960 and offers M.Sc/Ph.D programs in Mathematics and M.Tech in Industrial Mathematics and Scientific Computing. The department keeps in pace with the advances in technology, by providing separate and state-of-the-art computer facilities for its students.

RELEVANCE OF THE COURSE

The reliable and computationally efficient numerical techniques for basic tasks in Linear Algebra taught in this Numerical Linear Algebra course are highly useful in solving large matrices that are typical in several applications.

IMPORTANT DATES

Last date for applications: **29-01-2018**

Intimation of selection: **12-02-2018**

Confirmation by participants: **19-02-2018**

For further details, please contact:

Prof. R.Usha

Department of Mathematics
Indian Institute of Technology Madras
Chennai – 600 036

Tel. : +91 - 44 –2257 4611

Fax : +91 - 44 - 2257 4602

E-mail: stciitmna@gmail.com

AICTE Sponsored QIP Short Term Course on

Numerical Linear Algebra
19 – 24, March, 2018

Coordinators

Prof. R.Usha
Prof. S.H.Kulkarni



Organized by

Department of Mathematics
Indian Institute of Technology Madras
Chennai - 600 036

URL: <https://mat.iitm.ac.in>