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Scientific Computing using Matlab

By Prof. Mani Mehra, Prof. Vivek K. Aggarwal | IIT Delhi

Learners enrolled: 6551

intro

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In the first week of this course, an introduction to Matlab is introduced with hands on Matlab software. In the subsequent weeks, topics will be introduced followed by hands on to write the Matlab code of the same topics. This course is very useful for the students who wants to do research projects using numerical techniques to handle data or to solve differential equations.

INTENDED AUDIENCE : UG/PG students
PREREQUISITES : Some knowledge of any programming language
INDUSTRIES SUPPORT   : Not Applicable

Summary

Course Status :	Completed
Course Type :	Core
Duration :	12 weeks

Category :   Mathematics
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Credit Points :   3

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Level :   Undergraduate/Postgraduate

Start Date :   14 Sep 2020

End Date :   04 Dec 2020

Enrollment Ends :   25 Sep 2020

Exam Date :   19 Dec 2020 IST

Note: This exam date is subjected to change based on seat availability. You can check final exam date on your hall ticket.

This is an AICTE approved FDP course

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Course layout

Week 1: Introduction to Matlab
Week 2: Error estimation and methods of roots finding
Week 3: Order of convergence of various methods
Week 4: Solving System of Linear Algebraic equations
Week 5: Continuing...Solving System of Linear Algebraic equations
Week 6: Curve fitting and Interpolation
Week 7: Continuing... Curve fitting and Interpolation
Week 8: Continuing... Curve fitting and Interpolation
Week 9: Numerical differentiation
Week 10: Numerical Integration
Week 11: Numerical solution to ordinary differential equations (ODE's)
Week 12: Continuing with numerical solution to ODE's

Thanks to the support from MathWorks, enrolled students have access to MATLAB for the duration of the course.

Books and references

(1) Applied Numerical Analysis by Gerald & Wheatley, Pearson- 7th Edition, 2003.

(2) Elements of Numerical Analysis by R.S. Gupta, second edition, Cambridge university press, 2015

(3) Numerical Methods Using MATLAB by Mathew & Fink, Pearson, 1998.

(4) Getting started with Matlab: A quick introduction for scientist & engineers by Rudra Pratap, Oxford, 2010.

Instructor bio

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Prof. Mani Mehra

IIT Delhi

Dr. Mani Mehra is presently working as an Associate Professor in the department of Mathematics, IIT Delhi. She earned her PhD from IIT Kanpur in 2005.

Prof. Vivek K. Aggarwal

Dr. Vivek Kumar Aggarwal is presently working as an Assistant Professor dept. of Applied Mathematics, DTU Delhi. He earned his PhD in Mathematics from IIT Kanpur in 2005.

Course certificate

• The course is free to enroll and learn from. But if you want a certificate, you have to register and write the proctored exam conducted by us in person at any of the designated exam centres.

• The exam is optional for a fee of Rs 1000/- (Rupees one thousand only).

• **Date and Time of Exams: 19 December,2020**, Morning session 9am to 12 noon; Afternoon Session 2pm to 5pm.

• Registration url: Announcements will be made when the registration form is open for registrations.

• The online registration form has to be filled and the certification exam fee needs to be paid. More details will be made available when the exam registration form is published. If there are any changes, it will be mentioned then.

• Please check the form for more details on the cities where the exams will be held, the conditions you agree to when you fill the form etc.

CRITERIA TO GET A CERTIFICATE:

• Average assignment score = 25% of average of best 8 assignments out of the total 12 assignments given in the course.

• Exam score = 75% of the proctored certification exam score out of 100

• Final score = Average assignment score + Exam score

YOU WILL BE ELIGIBLE FOR A CERTIFICATE ONLY IF AVERAGE ASSIGNMENT SCORE >=10/25 AND EXAM SCORE >= 30/75.

• If one of the 2 criteria is not met, you will not get the certificate even if the Final score >= 40/100.

• Certificate will have your name, photograph and the score in the final exam with the breakup.It will have the logos of NPTEL and IIT Madras. It will be e-verifiable at nptel.ac.in/noc (http://nptel.ac.in/noc)

• Only the e-certificate will be made available. Hard copies will not be dispatched.

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Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:3
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

Elite

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for successfully completing the course

Scientific Computing Using Matlab

with a consolidated score of **64** %

Online Assignments	22.19/25	Proctored Exam	42/75

Total number of candidates certified in this course: **500**

Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

Sep-Dec 2020
(12 week course)

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

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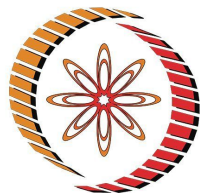
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Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:3
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This certificate is awarded to

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for successfully completing the course

Scientific Computing Using Matlab

with a consolidated score of **78** %

Online Assignments	24.38/25	Proctored Exam	54/75

Total number of candidates certified in this course: **500**

Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

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