Course Objective

The aim of this course is to introduce various numerical techniques and their applications in solving simple to complex problems of chemical engineering. A wide variety of mathematical equations are involved in the design and analysis of various chemical equipment and processes. Choice of a suitable numerical technique to simulate a chemical process requires prior knowledge of various numerical techniques and their practical implementations. This course is intended to provide detailed principles and working of such numerical techniques for simulating a specific chemical processes on computational platform.

Instructing Faculty members

IIT Jodhpur faculty will deliver the lectures in online mode.

Who can apply?

- Students (UG, PG, & Ph.D.)
- Faculty
- Industry fellows

Course Contents

Process models and simulations involving

I. Non-linear equations; applications to equations of state, calculation of friction factor, calculation of mass and energy balances and steady state compositions in continuousflow reactors.

II. Simultaneous linear equations; applications to steady state solutions of systems of ordinary differential equations.

III. Ordinary differential equations: Initial value problems; applications to dynamical systems, reaction kinetics.

IV. Ordinary differential equations: Boundary value problems; applications to solutions of temperature distribution in a slab, concentration profiles in catalyst pallet.

V. Partial differential equations: parabolic problems; applications to solution of heat equation in two and three dimensions.

VI. Partial differential equations: Elliptic problems; application of finite element techniques for steady state solution of temperature distribution in two and three dimensional slabs.

An e-Short Term Course on

Applied Numerical Analysis with MATLAB: Theory & Hands-on Practice

(Online mode)

July 22-24, 2025

A Continuing Education Programme of Indian Institute of Technology Jodhpur

Organized by

Department of Chemical Engineering
Indian Institute of Technology Jodhpur
Jodhpur, Karwar-342030
Rajasthan

General Information

Modern engineers and scientists across all disciplines are frequently faced with challenging mathematical models to handle, with their solutions not always handy. As technology continues to evolve, most of these problems require applications of advanced mathematical concepts more than ever before. Unfortunately, analytical mathematics taught as a part of the majority of engineering and science undergraduate programs render the handling of niche problems very difficult. A clear and practical connection between abstract mathematical concepts and real-life engineering problems can be brought about by numerical analysis of the allied mathematical models. The proposed short term course is intended to detail the numerical analysis of some important and highly applied topics of applied mathematics, and demonstrate the working solutions via the use of MATLAB.

Course Fee

Registration type	Fees (+ 18% GST)
Students (UG, PG, & Ph.D.)	1,000
Faculty/Postdoctoral fellow/scientists	2,000
Industry personnel	10,000

How to Apply?

Step 1: Payment link
https://form.qfixonline.com/iitheroyform
Step 2: Register here
https://forms.gle/nGjeppR3AKXhwdKB9

Inst Name: IIT Jodhpur
Branch Name:
IIT JODHPUR-Theory & Hands On Practice
TID:76060579

Scan QR for Payment

Scan QR for Registration

Faculty members

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