

## COURSE STRUCTURE

**Module 1:** Existence and uniqueness results for ordinary differential equations arising from mathematical modeling.

**Module 2:** Classification of PDE's and related properties, theoretical study of PDEs in mechanics of solid and fluid, seismology, nature of linear and non-linear wave propagation in anisotropic heterogeneous media.

**Module 3:** Application of differential equation in mechanical vibrations, electrical circuits, electricity and magnetism, atomic and molecular spectroscopy.

**Module 4:** Applications of differential equation in biology: application of PDE in drug discovery, molecular dynamics, Fokker-Planck equation and its applications, exponential and logistic growth models, predator-prey model, population dynamics.

## ABOUT THE PROGRAM

Many phenomena in Applied Mathematics, Physics, Chemistry, Biology and Engineering involve entities which change as a function of one or more variables. The movement of a car along a road, the propagation of waves, the path an airplane takes, electrical circuit design, population biology, option trading in share market and many such processes can all be modeled and described as differential equations. Course participants will learn the topics

through lectures and tutorials. Also case studies and assignments will be shared to stimulate research motivation of participants. Participants are motivated by a focus on the relevance of differential equations through their applications in various science and engineering disciplines.

## PROGRAM OBJECTIVES

This short term course aims to cover basics of differential equations along with several examples of their applications in various branches of science and engineering. The course content assumes that the participants have an exposure to Mathematics at the Undergraduate level. The course is designed to impart problem solving skills to the participants. It provides a forum for lectures and discussions by expert speakers in this area combining inter-disciplinary subjects.

## TEACHING FACULTY

- Dr. Antony Vijesh, IIT Indore
- Dr. Santanu Manna, IIT Indore
- Dr. Sudeshna Chattopadhyay, IIT Indore
- Dr Parimal Kar, IIT Indore

## WHO SHOULD ATTEND

- Undergraduate & Postgraduate students
- Research Scholars
- Faculty Members from Colleges, Universities and Institutes
- Industry Personnel

## SEATS

Limited seats are available.

Indian Institute of Technology Indore  
(Under Continuing Education Program)

Short Term Course  
on

Differential Equations: Theory,  
Computation and Applications

11-14 December 2017



## PROGRAM ORGANIZING COMMITTEE

- ❖ Dr. Santanu Manna, IIT Indore
- ❖ Dr Parimal Kar, IIT Indore
- ❖ Dr. Antony Vijesh, IIT Indore
- ❖ Dr. Sudeshna Chattopadhyay, IIT Indore

website: <https://goo.gl/NjiPsN>

Venue: IIT Indore, Simrol, Khandwa Road,  
Indore 453552, India

## ABOUT IIT INDORE

Indian Institute of Technology Indore (IIT Indore) is one of the eight new IITs established by the Ministry of Human Resource Development (MHRD), Government of India in 2009. IIT Indore has positioned itself as a vibrant center for outstanding research. The institute has been promoting multi-disciplinary research, focusing on basic and applied research, development of technology and innovation. The larger commitment of the institute to socio-economic development is evident in its multi-dimensional approach to social problems and is engraved in its motto, which makes this institution one of its kind and it stands out even within the distinguished IIT family. Recently, IIT Indore is ranked 15<sup>th</sup> amongst all engineering universities and institutions in India, and a very impressive 5<sup>th</sup> in teaching and resource category by MHRD (NIRF-2017).

## PROGRAM COORDINATORS

### Dr. Santanu Manna,

Discipline of Mathematics, IIT Indore, SIC, Maths-Faculty-Office 2, Simrol, Khandwa Road, Indore, M.P.-453552, India.

E-mail: [smanna@iiti.ac.in](mailto:smanna@iiti.ac.in)

Contact No.: 0731-2438-924 / 8878095886

### Dr. Parimal Kar,

BSBE, IIT Indore, SB-314, Simrol, Khandwa Road, Indore, M.P.-453552, India.

E-mail: [parimal@iiti.ac.in](mailto:parimal@iiti.ac.in)

Contact No.: 0732-4306-550 / 9893721207

## COURSE FEE

The registration fee for this course is Rs. 20,000/- including GST.

However, there are

**80% rebate in registration fee for student participants**

and

**60% rebate in registration fee for teachers/faculties.**

The fees should be paid by a crossed demand draft drawn in favor of: “**The Registrar, IIT Indore**”, payable at Indore.

**For online payment/ Bank transfer**

Bank Name : State Bank of India

Branch : Khandwa Road, Indore

Account Number : 317 02 1515 77

IFS Code : SBIN0011779

Course Fees include registration kit, lecture materials, tea, lunch and dinner during the course.

## LAST DATE OF REGISTRATION

24<sup>th</sup> November, 2017

[Demand draft or online transfer details along with the registration form should be sent to the address of program coordinator and e-mail to [smanna@iiti.ac.in](mailto:smanna@iiti.ac.in) / [parimal@iiti.ac.in](mailto:parimal@iiti.ac.in)]

## ACCOMMODATION

Accommodation can be provided on request in hostel @ Rs. 250 per day subject to the availability. Please mention your requirement for accommodation in the registration form.

## REGISTRATION FORM

CEP course on

**Differential Equations: Theory, Computation and Applications**

**11-14 December 2017**

**Indian Institute of Technology Indore**

**(Fill in Block Letters)**

.....  
Name \_\_\_\_\_

Designation: \_\_\_\_\_

Organization: \_\_\_\_\_

Mailing address: \_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Qualifications / Discipline: \_\_\_\_\_

Experience: \_\_\_\_\_ Years \_\_\_\_\_ Months

Area of your work: \_\_\_\_\_

Sex: \_\_\_\_\_ (M / F); Age: \_\_\_\_\_ years

Do you need accommodation (tick): \_\_\_\_\_ (Yes) \_\_\_\_\_ (No)

Payment Details:

DD/Ref No. \_\_\_\_\_ Date \_\_\_\_\_ Rs. \_\_\_\_\_

[Registration Fee (including GST) for Students: 4000/-, Faculty members: 8000/-, Industry personnel: Rs. 20,000/-; Demand draft should be drawn in favour of “**The Registrar, IIT Indore**” payable at **Indore**.

For online payment/Bank transfer, Bank Name: **State Bank of India**, Branch: **Khandwa Road Indore**, Account Number: **31702151577**, IFS Code: **SBIN0011779**]

Date: \_\_\_\_\_

Place: \_\_\_\_\_ Signature of Applicant

**Note: Last date of Registration: November 24, 2017**

[Demand draft or online transfer details along with the registration form should be sent to **Dr. Santanu Manna, Discipline of Mathematics, IIT Indore, SIC, Maths-Faculty-Office 2, Simrol, Khandwa Road, Indore, M.P.-453552, India** and E-mail: [smanna@iiti.ac.in](mailto:smanna@iiti.ac.in) / [parimal@iiti.ac.in](mailto:parimal@iiti.ac.in)]

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CEP course on

Differential Equations: Theory, Computation and Applications

11-14 December 2017

Indian Institute of Technology Indore

(Fill in Block Letters)

.....  
Name \_\_\_\_\_

Designation: \_\_\_\_\_

Organization: \_\_\_\_\_

Mailing address: \_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Qualifications: \_\_\_\_\_ Discipline: \_\_\_\_\_

Experience: \_\_\_\_\_ Years \_\_\_\_\_ Months

Area of your work (if any): \_\_\_\_\_

Sex: \_\_\_\_\_ (M / F); Age: \_\_\_\_\_ years

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