

AICTE Sponsored QIP

Short Term (7-Day) Course

on

MECHANICAL VIBRATIONS

30th January - 05th February 2017



Course Coordinator

Dr. Sridhar Thyageswaran
Professor

Department of Mechanical Engineering
Coimbatore Institute of Technology
Coimbatore – 641 014
Tamil Nadu, India

Organized by

Department of Mechanical Engineering
Coimbatore Institute of Technology
Coimbatore – 641 014
Tamil Nadu, India

SCOPE OF THE COURSE

The course will emphasize on building and consolidating fundamental concepts and techniques required for the analysis of mechanical vibrations in engineering systems. Participants will be trained to mathematically model and analyze real-world vibration problems, which can be very useful for teaching elective courses or for pursuing advanced-level research related to this area.

LEARNING OBJECTIVES

The participants will be able to:

1. Generate conceptual models of various vibration phenomena by transforming physical situations into mathematical models
2. Solve the models using appropriate mathematical techniques to predict the system response
3. Predict natural frequencies, modes of vibration, and system critical frequencies for design applications

COURSE CONTENTS

1. Terminology, mathematical preliminaries, natural frequencies of simple systems
2. Single degree-of-freedom (DOF) systems, energy methods, free and forced vibrations without/with damping
3. Multiple DOF systems, Lagrangian-Hamiltonian principles, spring-mass-damper coupled systems, matrix methods, forced vibrations
4. Lumped parameter systems, influence coefficients, Rayleigh and Dunkerley approaches, torsional vibrations
5. Vibrations in strings, longitudinal vibrations of bars, transverse vibrations of beams
6. Critical speeds of rotating shafts, transfer matrix methods
7. Numerical methods – finite-difference, finite-element, and digital computation techniques

COURSE FEATURES

- a) Participants desirous of taking this course must have an aptitude for engineering mechanics, solid mechanics, matrix methods, vector algebra, and differential equations. Participants who are unfamiliar with these topics need **not** enroll for this course.
- b) A lot of emphasis will be placed on physical and mathematical principles, to be brought out by traditional lectures. All participants are advised to make their own class notes.
- c) Certificates of participation will be issued only to those who have more than 80% attendance overall.

FACULTY

The course faculty are resource persons from reputed institutions, industries and R&D organizations.

ELIGIBILITY

Faculty members and Ph.D. research scholars from technical institutions approved by AICTE, and professionals from industry are eligible. However, preference will be given to faculty members pursuing their Ph.D. degree. Since the total number of seats is limited to 35, selection will be made on a first-come first-served basis.

REGISTRATION GUIDELINES

There is no registration fee. Refreshments and meals will be provided by CIT Hostel. Lodging will be provided in campus for outstation participants. Those willing to participate must complete and send the pre-registration, declaration and sponsorship document by e-mail to the organizers before 16.01.2017. All communications will be via e-mails only.

IMPORTANT DATES

Last date for receiving applications: 16.01.2017
Intimation of selection: 18.01.2017

PRE-REGISTRATION FORM

AICTE-Sponsored QIP
Short-Term (7-Day) Course on

MECHANICAL VIBRATIONS

(30th Jan - 05th Feb 2017)

1. Name*:
2. Gender (M/F)*:
3. Qualification*:
4. Designation*:
5. Department*:
6. Organization*:
7. Whether college is AICTE approved (Y/N)*:
(for participants from engineering colleges only)
8. Work Experience:
9. Postal Address:
- Phone*:
- Email*:
10. Whether pursuing Ph.D. (Y/N)*:

Signature of the Applicant with Date*
(All starred items are mandatory)

DECLARATION BY THE APPLICANT

The above-mentioned information is true to the best of my knowledge and belief. I agree to abide by the rules and regulations governing the QIP course. I shall attend all the sessions of the course for the entire duration.

Place:

Date: *Signature of Applicant*

SPONSORSHIP CERTIFICATE

Dr./Mr./Ms. _____
an employee/Ph.D. Research Scholar of our institution is hereby permitted to attend the course on “**MECHANICAL VIBRATIONS**” to be held in CIT, Coimbatore during 30th Jan - 05th Feb 2017.

Place:

Date: *Signature and Seal of
Sponsoring authority*

Combined pre-registration form, declaration form and sponsorship certificate should be filled, scanned and sent to the course organizers by e-mail.

CONTACT DETAILS OF THE ORGANIZERS

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ABOUT THE INSTITUTE

The V. Ranganasamy Naidu Education Trust established Coimbatore Institute of Technology (CIT) in 1956. CIT is one of the most reputed and prestigious educational institutions in South India. The Institute backed by world class research and development attained autonomous status in 1987 and is affiliated to Anna University, Chennai. The Institute boasts of strong academic-industrial interaction and high quality of research and consultancy. Managed by a professional team for the past 50 years, CIT enjoys national repute. The institute has competent qualified faculty, and visionary management to enhance the quality of education at all levels and maintain its position in emerging global scenario.

ABOUT THE DEPARTMENT

One of the first departments of CIT, the Mechanical Engineering Department has played a leading role in evolving an ‘Engineering Science’ based curriculum. Today, the department attracts an extraordinary rich diversity and quantity of talented individuals, with over 500 UG students (full time and part time), 40 PG students, and 40 faculty members. The department serves as a role model for many academic institutes in and around Coimbatore. Apart from teaching undergraduate and postgraduate students, the faculty of mechanical engineering actively pursue research with graduate students and research scholars. Over the years, interaction with industry and emphasis on applied engineering has increased.

REACHING CIT

CIT is located about 8 km from Coimbatore Railway Junction / Gandhipuram Bus Stand on the Coimbatore – Bangalore National Highway, popularly known as Avinashi Road. The journey time is around 20 minutes from both the stations.