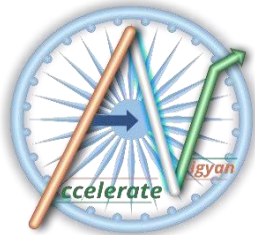


High-End Workshop
on
**Introduction to Random
Vibrations and Structural
Reliability**

11th July 2022 (Mon) – 15th July 2022 (Fri)



Organized by

Department of Applied Mechanics
Visvesvaraya National Institute of Technology
Nagpur - 440010

Funded by:

Science & Engineering Research Board (SERB)
under
'KARYASHALA' ABHYAAS Program
Accelerate Vigyan Scheme

Chief Patron:

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About the Institute

Visvesvaraya National Institute of Technology, Nagpur is one of the thirty National Institutes of Technology in the country. It is an Institute of National Importance, named after Bharat Ratna Sir M. Visvesvaraya. Earlier, the institute was known as Visvesvaraya Regional College of Engineering (VRCE). It was established in the year 1960 under the scheme sponsored by Govt. of India and Govt. of Maharashtra. The vision of institute is to contribute effectively to the national endeavour of producing quality human resources of the world-class standard by developing a sustainable technical education system to meet the changing technological needs of the country, incorporating relevant social concerns and to build an environment to create and propagate innovative technologies for the economic development of the nation.



About the Department

Established in 1962, the Department of Applied Mechanics offers two post graduate programs i.e. M.Tech. in Structural Engineering and M.Tech. in Structural Dynamics and Earthquake Engineering. The department offers structural engineering courses to B.Tech. (Civil) and B. Arch programs along with the course of Engineering Mechanics to the first year B.Tech. students. Department is pursuing activities related to earthquake, wind, concrete corrosion, advanced engineered materials, blast, impact and fire engineering.

About the Course

This course will be conducted under Accelerate Vigyan scheme KARYASHALA intended towards "Abhyaas" mission. Civil engineering structures are often subjected to random loads such as wind and earthquake loads. Understanding the behaviour of structures subjected to these random loads necessitates the need to study the theory of stochastic structural dynamics. This course aims to introduce the basic concepts of probability theory, random variables and stochastic processes with a view to analyze the behaviour and ascertain the safety of structures subjected to random loads.

The course shall be conducted in physical mode. No participation fee will be charged from the participants.

Target Participants

Motivated Doctoral & Master's students (full time / part-time) in structural & civil engineering or allied disciplines from Tier-I, Tier-II & Tier-III level institutes as defined under the 'Accelerate Vigyan' scheme DST-SERB.

Objective of the Course:

- ✓ As desired by DST-SERB 'KARYASHALA', the course is intended towards "Abhyaas" mission.
- ✓ This course aims to introduce the basic concepts of probability theory, random variables and stochastic processes with a view to analyze the behaviour and ascertain the safety of structures subjected to random loads.

Prerequisites:

- ✓ Basic knowledge about structural dynamics and probability theory.

Tentative Schedule

Topics	Speakers	Topics	Speakers
Random Variables, Random Processes, Random Vibration of SDOF and MDOF systems	Dr. C. S. Manohar Professor, Department of Civil Engineering, IISc Bangalore	Time variant reliability analysis	Dr. Sayan Gupta Professor, Department of Applied Mechanics, IIT Madras
Uncertainty Modelling and Quantification using Monte Carlo Simulations	Dr. B Radhika DST-INSPIRE Faculty, Department of Civil Engineering, IIT Tirupati	Reliability Based Optimization	Dr. Subhrajit Dutta, Assistant Professor, Department of Civil Engineering, NIT Silchar
Accelerated Reliability Testing	Dr. Somayya Ammanagi Head, R&D, ITW India Pvt Ltd, (BiSS Division) - Bangalore	Global Sensitivity Analysis of Structural Systems	Dr. Greegar George Assistant Professor, Department of Civil Engineering, NIT Trichy
Importance sampling and variance reduction	Dr. Oindrila Kanjilal Senior researcher, Engineering Risk Analysis Group, Technical University of Munich	Review of Deterministic Structural Dynamics – Response Spectrum Analysis	Dr. O. R. Jaiswal Professor, Applied Mechanics, VNIT
Review of Deterministic Structural Dynamics - SDOF and MDOF systems	Dr. R. S. Sonparote Professor, Applied Mechanics, VNIT	Seismic Vulnerability and Risk Assessment of Indian Cities	Dr. Ratnesh Kumar Professor, Applied Mechanics, VNIT
Structural Reliability FORM and SORM	Dr. Debarati Dutta Associate Professor, Applied Mechanics, VNIT	Experimental Demonstrations	Dr. Sonal Dhanvijay Assistant Professor, Applied Mechanics, VNIT

Key Features:

- ✓ Review of deterministic structural dynamics
- ✓ Understanding the behaviour of structures under random loads.
- ✓ Statistical tools and modelling for reliability analysis.
- ✓ Importance sampling and variance reduction

Course Assessment & Feedback

- ✓ Active participation in lectures & discussion/interaction sessions along with a basic level evaluation shall fetch the participant the KARYASHALA Course Completion Certificate.
- ✓ As per SERB guidelines, mandatory anonymous course feedback shall be taken in the stipulated format.

Registration & Guidelines

- ✓ **The course will be completely free of cost for the shortlisted participants.**
- ✓ The participants will be limited to 25 candidates (as per SERB norms).
- ✓ The applicants shall produce an endorsement letter from their Head of the department indicating their enrolment with the institute and “No Objection Certificate (NOC)” for permitting to undergo training in the workshop if selected.
- ✓ VNIT reserves the right to devise a well-defined shortlisting criterion for selection of candidates based on the basic eligibility criteria laid out by SERB and as per formulated guidelines for this workshop.
- ✓ Please fill Google form for Registration: <https://tinyurl.com/apmvnit2022>



Scan to register

Last date for registration:

29-06-2022

Notification to selected participants:

01-07-2022