

# Structural Dynamics: Analysis and Control

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## Overview

Structures including buildings and machines are very often subjected to dynamic loads such as wind, earthquake, machine vibration and acoustics. The ensuing vibration is undesirable and can cause damage, noise and discomfort. It is important that the engineers are fully aware of the causes of vibration and the way in which the structures respond to dynamic loading. The course aims to take a step forward to unravel the mysteries of dynamics and control of this phenomenon in structures.

This course is organized in one module. The topics in Module shall expose the participants to the basics of structural dynamics and its analysis of structures analytically and numerically. The numerical analysis of plate and shell structures using finite element method and experimental modal analysis will be explained. The dynamics of composite structures and its measurement of natural frequencies of vibration will be demonstrated. The different methods of control of vibration will be described. The numerical application of all these issues with specific case study will be discussed for benefit of participants.

Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants.

<b>Module</b>	<b>Module: Structural dynamics and Control: October 1-5, 2018</b> <b>Number of participants for the course will be limited to fifty.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"><li>▪ you are an Civil engineer or research scientist interested in designing structures subjected to dynamic loading and control of vibration in these structures.</li><li>▪ you are an Mechanical engineer or research scientist interested in designing machines subjected to dynamic loading and control of its vibration.</li><li>▪ you are a student or faculty from academic institution interested in learning how to do research on Structural dynamics of structures or want to work with and control of vibration.</li></ul>
<b>Fees</b>	The participation fees for taking the course is as follows: <b>Participants from abroad : US \$200</b> <b>Industry/ Research Organizations: Rs 5000</b> <b>Academic Institutions: Rs 5000</b> <b>Students: Rs 1000 (free for the host institution)</b> The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

## The Faculty



**Prof. Michael Brennan** is a **Research Professor in the Department of Mechanical Engineering, UNESP, Brazil since 2010**. He is currently a Guest Professor at Harbin Engineering University in China and Visiting Professor at the ISVR, University of Southampton. He has a wide-range of research interests, encompassing vibration, acoustics and Control.



**Prof. Shishir Kumar Sahu** is currently Professor of Civil Engineering in National Institute of Technology, Rourkela. His research interest is Structural Dynamics, Composite Structures, Finite Element Method, Vibration and Stability of Plates and Shells, Modal analysis of structures, Fracture Mechanics.

## Course Co-ordinator

**Prof. Shishir Kumar Sahu**

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