PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS043/2022

Numerical implementation of Structure Dynamics and Earthquake Engineering using MATLAB

Name of the PMRF student

ROHIT SACHDEVA

Required background of the students taught

Civil Engineering
Mechanical Engineering
Aerospace Engineering

(*Requires slight knowledge of Structure Dynamics*)

Faculty coordinator

TO BE DECIDED

Online session coordinator

TO BE DECIDED

Details of the content of the module

1. **Introduction to MATLAB**
2. **Basic theory and overview of Structure Dynamics**
3. **Numerical time-stepping methods**
4. **MATLAB implementation of numerical techniques for Single Degree of Freedom (SDOF) system**
5. **MATLAB implementation for Multi-DOF systems**
6. **Response spectra analysis in Earthquake engineering using MATLAB**

The course will include brief theory required to understand Structure Dynamics. It will then cover some *Numerical Time-stepping techniques* which can be used to solve differential equations in MATLAB. Step-by-step coding procedure will be demonstrated for them.

We will also cover MATLAB implementation of *Response Spectra* analysis for Earthquake engineering.

Schedule of the module

Start date: 24th December, 2022

End date: 15th January, 2023

Class timing: Saturday and Sunday, 11 am – 1 pm. Course will include small take-home self-practice problems.

Basic knowledge of Structure Dynamics is assumed. Some prior basic coding knowledge (any language) will be helpful but not mandatory.

Meeting & WhatsApp Group Link : *Will be shared after registration*

Contact Email ID :
isss.forum@gmail.com ;
matlabfemisss@gmail.com

REGISTER HERE

Registration Link :
https://forms.gle/vwcn9UaZk3jzXXHL7