PMRF-ISSS Teaching Programme

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

Module PMRF-ISSS152/II/2024

Hydrodynamic Stability

Name of the PMRF student

Saini Jatin Rao, IISc Bangalore

Required background of the students taught

Any learner with UG level background in Fluid Mechanics, Thermodynamics and Engineering Mathematics.

Online session coordinator

Will be chosen from the list of registrants

Details of the content of the module

This course is an introduction to the stability of fluid flows. These effects are often observed in various scenarios, such as waves on the river surface, the mixing of cream in coffee, the wavy clouds, and the ripples on a water jet dripping from a faucet.

The following key concepts will be covered:

- Introduction and preliminaries
- General framework
- Fluid interfaces and boundary conditions
- Capillary Instability (Rayleigh-Plateau)
- Shear Instability (Kelvin-Helmholtz)
- Rayleigh-Taylor Instability (Density-gradient)
- Thermal instability (Rayleigh-Bernard)

There will be periodic reviews of essential concepts throughout the course.

Schedule of the module

Registration Deadline: 25th September 2024

Start date: 30th September 2024

End date: 31st December 2024 (tentative)

Lecture uploaded every Monday – 7:00PM

Meeting link : Will be shared later

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.gle/Kg5sHjFuuPBmjRLTA