PMRF-ISSS Teaching Programme

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

Module: PMRF-ISSS104/II/2025

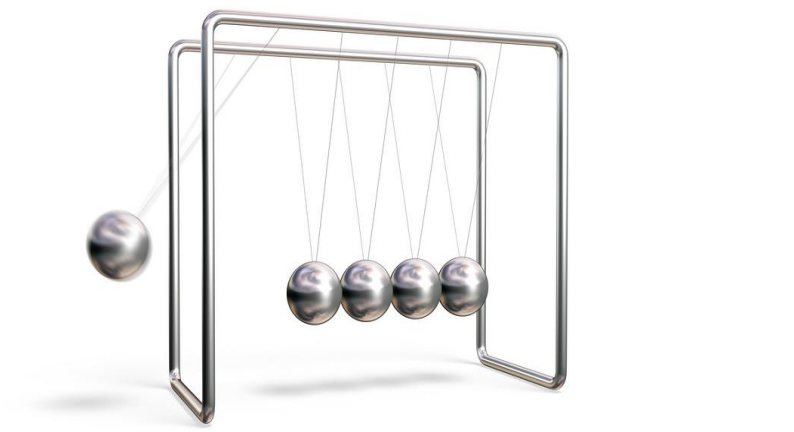
Problem Solving in Newtonian Mechanics

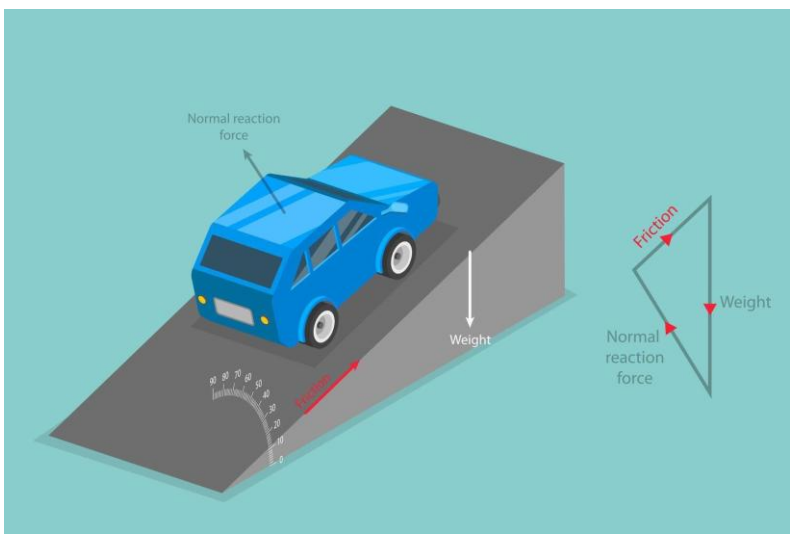
Name of the PMRF student

Sugata Paul

Required background of the students taught

This is a course on applying basic Newtonian Mechanics principles to solve problems (often in real life systems), designed for UG students with a Physics, Engineering or any interdisciplinary background.
Prerequisite: High school level education in Physical Science





Details of the content of the module

The course includes problem solving with examples on the following topics:

- Application of scalar, vector, tensor.
- Problems on Newton's laws of motion using free-body diagrams.
- Conditions of mechanical equilibrium with potential energy diagrams, force-torque balance, principle of virtual work.
- Idea of friction in solid objects and connection with viscosity i.e., liquid friction.
- Principle of conservation of energy and momentum.
- Translation and rotation of rigid bodies: obtaining moment of inertia, principal axes of rotation, center of mass etc.

The course will focus on learning the easy and quick problem solving approaches of Newtonian Mechanics related problems.

Schedule of the module

Start date: 20th October, 2025

End date: 30th October, 2025

Time: 9 pm – 10 pm everyday

Mode: live/Recorded problem-solving sessions and optional discussion sessions based on students' requirements.

Recorded class: Will be uploaded to course portal of ISSS online

Contact email ID: isss.forum@gmail.com

Registration link:
https://forms.gle/qR2ogBQ5FEUmY6Gu5