# PMRF-ISSS Teaching Programme

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



# Module PMRF-ISSS064/2024

# Mechanical Testing and Deformation Behavior of Metals

#### Name of the PMRF student

## Abhinay Chandraker

### Required background of the students taught

Understanding of intermediate level science and mathematics is sufficient

Students of Metallurgical / Materials / Mechanical / Aerospace Engineering may find this beneficial and relevant



#### Details of the content of the module

### Content details -

Mechanical testing and deformation behavior of metals will be covered from conceptual as well as research-oriented perspective of two novel and exciting material systems - FCC high entropy alloys and BCC refractory alloys

The topics covered will be -

- Basic crystallography
- Introduction to defects, their characteristics and interactions
- Strengthening mechanisms
- Uniaxial tensile, High temperature creep,
  Fracture, Fatigue Testing,
  Phenomenological description,
  Microstructure based mechanisms,
  Property improvement methods

### Nature of module –

- Theory lectures will also be including doubt discussion and some numerical problem solving
- Separate doubt discussion sessions will be held periodically.

#### Schedule of the module

Tentative start date – 4<sup>th</sup> May 2024

Tentative end date – 13<sup>th</sup> Jul 2024

Tentative total number of hours – 18–20 hours

Schedule - Every Saturday 3pm – 5 pm (2 hrs)

Recordings will be uploaded after each class

Meeting link: Will be shared later

Link

Contact email ID: <u>isss.forum@gmail.com</u>

Registration link:

https://forms.gle/a6iH6b9V

