



Module PMRF-ISSS018

## Introduction to Continuum Mechanics

### Name of the PMRF student

**Anshul Shrivastava**

PhD Scholar,  
Indian Institute of Science, Bengaluru

### Course Relevant to :

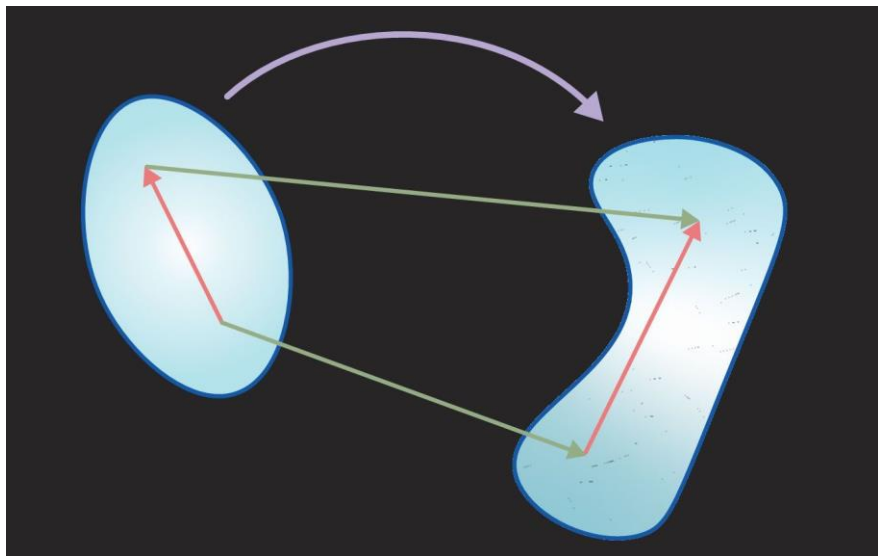
UG/PG students of Mechanical Engineering,  
Aerospace Engineering, Materials  
Engineering, Civil Engineering,  
Biotechnology / Bioengineering, Physics

### Faculty coordinator

Rani Mary Joy, PhD Scholar, Institute of  
Materials Research/IMEC/UHasselt, Belgium

### Online session coordinator

Mr. MD Taj, VFSTR (Deemed to be University),  
Andhra Pradesh, India



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### Details of the content of the module

#### 1. Introduction to Tensors

- Algebra of Vectors
- Algebra of Tensors
- Higher order Tensors
- Different types of Tensors
- Divergence and Stokes' Theorem

#### 2. Kinematics

- Configurations and Motion of Continuum Bodies
- Displacement, Velocity and Acceleration fields
- Deformation Gradient, Strain tensors
- Examples of simple motions

#### 3. Balance Laws

- Conservation of Mass
- Concept of Stress
- Balance of Linear and Angular Momentum
- Energy Equation

#### 4. Constitutive Equations

- Concept of Objectivity
- Principle of Material Frame Indifference
- Hyperelastic Materials

### Schedule of the module

**Start Date** : 8<sup>th</sup> July 2021

**Class Schedule** : Every Thursday 6:00 PM to 7:30 PM IST

**End date** : 30<sup>th</sup> September 2021

**Note** : Only first 300 registrations will be accommodated  
in live classes.

Meeting link : [Microsoft Teams Link](#)

<https://tinyurl.com/continuummechanics>

Contact email ID: [issf.forum@gmail.com](mailto:issf.forum@gmail.com)

Register for free at:

<https://forms.gle/LuoRkoW7zMh8xprB9>

