

Seminar Title	: Modulations in Dynamics and Thermodynamics of Martian Atmosphere Due to Dust Lifting Activities
Speaker	: Anirban Mandal (Rollno : 521er1002)
Supervisor	: Prof. Jagabandhu Panda
Venue	: ER-303
Date and Time	: 17 Jan 2024 (4:15 PM)
Abstract	: Dust is one of Mars's most essential and dynamic atmospheric components. Dust storms on the red planet are a significant feature of its atmospheric dynamics. Strong winds on Mars mobilize vast amounts of dust particles, circulating them around and giving rise to dust storms. Planetwide dust storms that engulf the whole planet are also a unique feature of the Martian dust cycle. On Mars, global-scale dust storms happen irregularly, about every 3–5 Mars Years. In addition to dust storms, Mars experiences another intriguing phenomenon known as dust devils. Understanding the physics and dynamics associated with dust storms and dust devils on Mars is vital in comprehending the behavior of dust in the Martian atmosphere and its influence on climate patterns and surface conditions. The main focus of this work would be to advance the understanding of the thermodynamics and dynamics of different layers of the Martian atmosphere and associated changes due to dust-lifting activities. This work will examine the growth and evolution of dust storms, their influence on each other, interannual variability, and their impact on the variability of water ice and CO ₂ ice, using observations and numerical modeling. Furthermore, the study aims to understand the intricate dynamics between the planetary boundary layer, topography, and dust-lifting activities, shedding light on the physical characteristics associated with dust devils' development near the Martian surface. The study of Martian dust-lifting activities will shed light on the unique atmospheric processes of the red planet, contributing to our broader understanding of the physics and dynamics of the planetary atmospheres.