

# Information

**Title of the course:** An Introduction to General Relativity

**Abstract:** General Relativity, one of the most profound scientific theories of the 20th century, redefined our understanding of gravity and the cosmos. In this lecture series, we will unravel the elegance and complexity of Einstein's revolutionary framework, exploring the intricate interplay between spacetime geometry and matter-energy.

The series begins with an intuitive introduction to the principles of relativity, the equivalence of inertial and gravitational mass, and the fundamental ideas that set the stage for Einstein's equations. Building on this foundation, we will delve into the mathematical machinery of tensors and differential geometry, providing tools to describe curved spacetime and its interaction with mass-energy. We will also highlight some aspects of cosmology. Finally, we will discuss Noether symmetry and gravitational decoupling techniques to find exact solutions of the field equations. We shall also investigate how to study the viability and stability of the resulting solutions.

**Domain** (General Relativity)

**MSC** (83)

**Keywords** (Gravitation # Cosmology # Exact Solutions)