

## CIPE3005 PAVEMENT MATERIAL (3-0-0)

### Course Objective

1. To gain a comprehensive understanding of the physical and mechanical properties of various conventional and non-conventional pavement materials.
2. To develop the skills necessary to analyze how physical and mechanical properties influence performance and durability of pavement.
3. To Integrate knowledge of soil and aggregate properties into the application of Granular layers of pavement.

### Module-I: [8 hours]

Soils: Source, classification, grading, basic and advanced engineering properties, soil stabilization: different methods.

### Module-II: [10 hours]

Conventional aggregates: Source, preparation, grading, blending of aggregates, testing, and their evaluation

### Module-III: [10 hours]

Bituminous binders- Properties, testing and applications, Bituminous mix types, Design, testing, and performance evaluation of bituminous binders and mixes.

### Module-IV: [8 hours]

Materials for cement concrete and semi-rigid pavements, Design of mixes for stabilized roads, non-conventional and new pavement materials- their application and limitations.

### Course Outcome

After successfully studying this course, students will able to:

- Gain knowledge physical, chemical, and mechanical properties of various pavement materials.
- Demonstrate the ability to select appropriate pavement materials based on characterization using conventional and advanced methods.
- Demonstrate the ability to assess the performance and sustainability of advanced and recycled materials in enhancing pavement stability and durability.

### Books:

- P. Chakraborty and A. Das, Principles of Transportation Engg., PHI Publication , Latest Ed
- G V Rao, Principles of Transportation and Highway Engineering, Tata Mc. Graw Hill , Latest Ed
- A T Papagiannakis and E A Masad, Pavement Design and Materials, John Willey and Sons , Latest Ed.