Course No.	**CE 214004**
Course Title	**River Mechanics**
Credits	**L T P Cr** **3 1 0 4**
Prerequisites	**-**

Course Contents:

Introduction
Individual properties of sediment: size, shape, fall velocity and mineral classification, bulk properties of sediment: Size distribution, porosity, unit weight, angle of repose.

Incipient Motion
Definition, Various concepts of incipient motion: Competent velocity approach, lift approach and critical shear stress approach. Incipient motion for non-uniform sediment.

Bed forms and resistance to flow: Introduction to various bed forms: ripples and dunes, transition and antidunes, Prediction of regime of flow, importance of regime of flow. Resistance to flow: Velocity distribution in turbulent rigid boundary, Resistance to flow in alluvial streams, velocity distribution in alluvial streams.

Modes of sediment transportation: Various approaches for bed load transport, suspended load profile and suspended load equations, total load transport including total load transport equations. Comparison and evaluation of sediment transport equations. Sediment sampling.

Bed level variation: Continuity equation for sediment transportation, bed level variations, local scour, degradation, aggradation and reservoir sedimentation.

Design of stable channel: Stable channel design with and without suspended sediment and sediment control.

Reference / Text Books

1. Garde, R. J. and Ranga Raju, K. G. Mechanics of Sediment Transportation and Alluvial Stream Problems. New Age Publishers.
2. Jansen, P. P. H. Principals of River Engineering. VSSD Publications.
3. Garde, R. J. River Morphology. New Age Publishers.
4. Subramaniya, K. Flow in open channels. Tata-McGrawHill Publishers.

Any other Remarks: