CE 502: Advanced Hydraulic Engineering (3-0-0:3)

Course objectives: To comprehend concepts of open channel flow with special reference to different types of open channel flows in compound and non prismatic channels and also to understand various sediment transport theories along with a brief description of various river training works.

Introduction
Open channel hydraulics.

Flow in compound channels
Uniform flow, Critical flow and GVF with special reference to compound channel, Rapidly varied flow in prismatic and non-prismatic channel

Channel design
Erodible and non-erodible channels, their design principles and various design methods.

Silt theories
Sediment transport theories and modeling.

River mechanics and river management
River erosion, River training works, Concept of hydraulic models, Introduction to Dam Engineering

Text Books and References:

1. RangaRaju, K.G., *"Flow Through Open Channels",* Tata McGraw Hill.
2. Chow, V.T., "*Open Channel Hydraulics",* McGraw Hill.
3. Henderson, F. M., *"Open Channel Flow"*, McGraw Hill.
4. Chaudhry, M. H., *"Open Channel Flow",* Prentice Hall.
5. Rober, A., "*River processes: An Introduction to Alluvial dynamics",* Arnold Publications.

Expected outcome: The student shall get a view of the open channel flows related to complex flow domain and will also have detail ideas about working of different river training works.
