III Year - II Semester | **L T P C**
20CE6644 | **3 0 0 3**

OPEN CHANNEL HYDRAULICS

Course Outcomes: At the end of the course, the student will be able to

- Basic concepts of Free surface flows, specific energy and specific force
- Understanding the basic concepts of Non-Uniform flows and also methods
- Knowledge about the Rapidly varied flow
- Analyze the Spatial varied flow
- Explain about the Unsteady flows

SYLLABUS

UNIT I
Introduction: Free surface flows, velocity distribution, resistance relationships, specific energy and specific force, normal and critical depths computations

UNIT II
Non–Uniform flows- gradually varied flow-governing equation –types of flow profiles-computation of gradually varied flow profiles by direct integration, graphical and numerical methods.

UNIT III
Rapidly varied flow -Hydraulic Jump: Elements of hydraulic jump, hydraulic jump in variety of situations including contracting and expanding geometries and rise in floor levels, control of hydraulic jump using baffle walls and cross jets.

UNIT IV
Spatially Varied Flows: Flows past side weirs, De Marchi equations, design of side weirs, flow past bottom racks,

UNIT V
Unsteady Flows: St. Venant's equations and their solution using method of characteristics and finite difference schemes; hydraulic flood routing. Channel Transitions.

REFERENCES:

- Chow, V.T., "Open Channel Hydraulics", McGraw Hill. 1959
- Choudhary, M.H., "Open-Channel Flows", Prentice-Hall. 1994
- RangaRaju, K.G., "Flow Through Open Channels, Tata McGraw Hill. 2003 Subramanya K Open channel flows