

**III Year-II Semester  
(20CE6644) Open Channel Hydraulics**

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
30	70	100	3	-	-	3

**Pre- Requisites: Fundamentals of Fluid Mechanics**

**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.

**Course Outcomes:**

S.No	Course Outcomes	BTL
1	Basic concepts of Free surface flows, specific energy and specific force	L2
2	Understanding the basic concepts of Non-Uniform flows and also methods	L2
3	Knowledge about the Rapidly varied flow	L2
4	Analyze the Spatial varied flow	L4
5	Explain about the Unsteady flows	L2

**Reference Books:**

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