



Course Name:

Advanced Hydraulics

Course Number: 20-676	Credit: 3
Program: Graduate	Course Type: Technical Selective
Prerequisite: -	Corequisite: -

Course Description (Objectives):

The ability to perform advanced hydraulic calculations for open channels and pipelines, including variable and unsteady flows, sediment transport, scouring, and ocean wave mechanics.

Course Content (outline):

- Chapter 1: Spatially variable steady flow calculations.
- Chapter 2: Gradually varied unsteady flow calculations.
- Chapter 3: Rapidly varied unsteady flow calculations.
- Chapter 4: Sediment transport in rivers (bedload and suspended).
- Chapter 5: Surge and water hammer analysis in pipelines.
- Chapter 6: Scour around bridge piers.
- Chapter 7: Wave calculations in marine environments.

References:

- K. Subramanya, 2019. Flow in Open Channels McGraw-Hill
- American Water Works Association, 2018. M32 Computer Modeling of Water Distribution Systems 4th Edition
- F.M. Henderson, 1966. Open Channel Flow, Technology & Engineering
- V.T. Chow, 2009. Open Channel Hydraulics Blackburn Press.
- H. Chanson, 2004. The Hydraulics of Open Channel Flow, Butterworth Heinemann
- R. M. Sorensen, 1993, Basic Wave Mechanics: for Coastal and Ocean Engineers, Environmental Science
- R G Dean and R A Dalrymple, 1991, Water Wave Mechanics for Engineers and Scientists, World Scientific.