

Techno India NJR Institute of Technology



Course File HYDRAULICS ENGINEERING LAB (4CE4-22)

For Techno India NJR Institute of Technology
पंकज पोरवाल
Dr. Pankaj Kumar Porwal
(Principal)

Bharat Kr. Suthar
(Assistant Professor)
Department of CE



RAJASTHAN TECHNICAL UNIVERSITY, KOTA

SYLLABUS

II Year-IV Semester: B.Tech. (Civil Engineering)

4CE4-22: HYDRAULICS ENGINEERING LAB

Credit: 01

Max. Marks: 100 (IA:60, ETE:40)

OL+OT+2P

1. To determine the minor losses.
2. To determine the friction factor.
3. To determine Cd of Broad crested weir.
4. To verify the momentum equation.
5. To determine the discharge of venturimeter.
6. To determine Manning's & Chezy's coefficient of roughness for the bed of a given Channel.
7. To study and plot characteristics curve of hydraulic jump.
8. To study velocity distribution in open channel flow.

Course Overview:

The hydraulic engineering lab course covers topics such as viscous fluid flow, laminar and turbulent flow, boundary layer analysis, dimensional analysis, open channel flows, flow through pipes, and computational fluid dynamics. This lab aims to introduce different hydraulic engineering issues such as open channel flows and hydraulic devices etc.

Course Outcomes:

CO.NO.	Cognitive Level	Course Outcome
1	Comprehension	Students will be able to analyze the process of deriving equation by using dimensional methods.
2	Application	Students will analyze the problems related to flow of fluids in channel.
3	Analysis	Students will be able to explain and remember the different types of turbines & pumps used.
4	Synthesis	Students will be able to create economic sections for fluid channels.
5	Evaluation	Students will be able to remember the concepts of Hydrology.

Prerequisites:

1. Fundamentals knowledge of Hydraulics & hydraulics machine.

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Course Outcome Mapping with Program Outcome:

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO248.1	3	3	3	2	1	2	1	1	1	1	1	1	1	2	1
CO248.2	3	2	3	1	1	2	1	1	1	1	1	1	1	2	1
CO248.3	3	2	3	2	1	1	1	1	1	1	1	1	1	2	1
CO248.4	3	3	3	3	2	1	1	1	2	1	1	3	2	2	1
CO248.5	3	3	2	3	2	1	2	1	2	1	1	3	1	2	1
CO248 (AVG)	3	2.6	2.8	2.2	1.4	1.4	1.2	1	1.4	1	1	1.8	1.2	2	1

Course Coverage Module Wise:

Lab No	Topic
1	To determine the minor losses.
2	To determine the friction factor.
3	To determine Cd of Broad crested weir.
4	To verify the momentum equation.
5	To determine the discharge of venturimeter.
6	To determine Manning's & Chezy's coefficient of roughness for the bed of a given Channel.
7	To study and plot characteristics curve of hydraulic jump.
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Faculty Lab Manual Link

https://docs.google.com/document/d/1Nj5VWPnIUP5I5IHsHX_qkwBRbNZAanRS/edit?usp=sharing&oid=117086363540796308845&rtpof=true&sd=true

Viva QUIZ Link

1. <https://lastmomenttuitions.com/engineering-viva-questions/applied-hydraulics/>
2. <https://engineeringinterviewquestions.com/hydraulic-mechanics-lab-viva-questions-and-answers-pdf-free-download/>

Assessment Methodology:

1. Practical exam using Advance Surveying Lab software.
2. Internal exams and Viva Conduct.
3. Final Exam (practical paper) at the end of the semester.

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