

# **RAGHU ENGINEERING COLLEGE**

AUTONOMOUS (Approved by AICTE, New Delhi, & Permanently Affiliated to JNTU-GV, Vizianagaram) NBA & NAAC A+ grade Accredited institute

Dakamarri, Bheemili Mandal, Visakhapatnam Dist. – 531 162 (A.P.) Phone: +91-8922-248001, 248002, 9963981111, <u>www.raghuenggcollege.com</u>

#### **INSTITUTE VISION**

Envisioning to be a world class technical institution by synergizing quality education with ethical values.

#### **INSTITUTE MISSION**

- To encourage training and research in cutting-edge technologies.
- To develop and strengthen strategic links with the industry.
- To kindle the zeal among the students and promote their quest for academic excellence.
- To encourage extra-curricular activities along with good communication skills. QUALITY POLICY

**RAGHU** Engineering College underscores ethical values along with innovative teaching through an interactive, activity-based pedagogy, establishes the best of infrastructural facilities, inculcates engineering temper among the students through the use of the latest Information and Communication Technologies and strives for an efficient, responsive and transparent administration in all areas

#### **Department of Civil Engineering**

#### VISION

To become a pioneer in the field of civil engineering by providing high quality education and research to serve the public consistently with competitive spirit professional ethics.

#### MISSION

- M1: Provide quality knowledge and advance skills to the students in order to expertise theoretically and practically in the areas of civil engineering.
- M2: Improve the professional potentiality of the students and staff through educational programs to expand the knowledge in the field of civil engineering
- M3: Inculcate healthy competitive spirit towards the higher education and successful career in the field of civil engineering to serve the nation ethically.

### PROGRAMME EDUCTIONAL OBJECTIVES(PEOs)

- PEO 1: Employ a practicing civil engineer in construction, design, testing, and allied fields.
- PEO 2: Engaging in self-directed learning research or undertaking higher studies in the rapidly changing civil engineering environment.

• PEO 3: Create new methods/processes to meet the needs of society with their civil engineering knowledge.

## MAPPING OF MISSION STATEMENTS WITH PEOS

MS/PEO	PEO 1	PEO 2	PEO 3
MS 1	3	3	2
MS 2	3	3	2
MS 3	3	3	2

1-Slight, 2- Moderate, 3- Substantial

PROGRAM OUTCOMES								
	Graduates of Civil Engineering Will:							
PO 1	<b>Engineering knowledge</b> : Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.							
PO 2	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.							
PO 3	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.							
PO 4	<b>Conduct investigations of complex problems</b> : Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.							
PO 5	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.							
PO 6	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.							
PO 7	<b>Environment and sustainability</b> : Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.							
PO 8	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.							

PO 9	<b>Individual and team work</b> : Function effectively as an individual, and as a member or
	leader in diverse teams, and in multidisciplinary settings.
PO 10	<b>Communication:</b> Communicate effectively on complex engineering activities with the
	engineering community and with society at large, such as, being able to comprehend
	and write effective reports and design documentation, make effective presentations, and
	give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the
	engineering and management principles and apply these to one's own work, as a
	member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to
	engage in independent and life-long learning in the broadest context of technological
	change.
	PROGRAM SPECIFIC OUTCOMES (PSOs)
<b>PSO 1:</b> <i>A</i>	Analyze, design and execute the civil engineering structures with good knowledge in
engineeri	ng, mathematics & basic sciences.

**PSO 2:** Follow the economic, environmental and safety factors involved in the construction industry.

PEO/PO	PO- 1	PO- 2	РО- 3	РО- 4	РО- 5	PO- 6	PO- 7	PO- 8	РО- 9	PO- 10	РО- 11	PO- 12	PSO- 1	PSO- 2
PEO 1	3	3	3	2	3	2	2	2	3	3	3	3	3	3
PEO 2	3	3	3	2	3	2	2	1	3	3	3	3	3	2
PEO 3	3	3	3	3	3	1	1	1	2	3	2	3	3	2

#### Mapping of PEOs with POs and PSOs

1-Slight, 2- Moderate, 3- Substantial

2301205 – Fluid Mechanics and Hydraulic Machines Lab												
(Civil Engineering)												
Prog	gramme	B.Tech - CE	Sem	Category	L	Т	Р	Credit				
& B	ranch											
Prer	equisites	Fluid Mechanics,	4	PC	0	0	3	1.5				
		Hydraulics and Hydraulic										
		Machines										
				•								
Prea	mble	This Lab provides students wi	th prac	tical experie	nce and	a deep	er unde	erstanding				
		of fundamental fluid mechan	ics pri	nciples and	their a	pplicatio	ons in	hydraulic				
		machinery These experime	ents h	elp studen	ts deve	elop a	comp	rehensive				
		understanding of fluid behavio	or, mea	surement tec	hniques	and the	e perfoi	rmance of				
		hydraulic equipment, essentia	al for	future engi	neers i	n fluid	mecha	anics and				
		hydraulics.										
List	of Exper	iments:										
1	Calibrat	ion of Venturimeter & Orifice m	neter									
2	Determi	nation of Coefficient of discharge	pe for a	small orific	e by a c	onstant	head m	ethod				
3	Determi	nation of Coefficient of discharge	e for a	n external m	outhpie	$\frac{1}{ce bv va}$	riable	head				
_	method.				I I	j						
4	Calibrat	ion of contracted Rectangular N	otch ar	d /or Triang	ular No	tch						
5	Determi	nation of Coefficient of loss of h	nead in	a sudden co	ntractio	n and fri	ction f	actor.				
6	Verifica	tion of Bernoulli's equation.										
7	Impact of	of jet on vanes										
8	Study of	f Hydraulic jump.										
9	Perform	ance test on Pelton wheel turbin	e									
10	Perform	ance test on Francis turbine.										
11	Efficien	cy test on centrifugal pump.										
12	Efficien	cy test on reciprocating pump.						1 201				
Dafe	ronges/N	anuals/Softwara					Тс	otal: 30hrs				
1	Textbool	anuals/Software: k· 1 D.S. Kumar, Fluid Mechar	nics &	Fluid Power	Engine	ering Qt	h Ed	Kataria &				
1	Sons. Pu	blisher. 2 0 1 8	nes œ		Ligino	лш <u>е</u> ,л	ii Lu., I	ixatarra &				
	2. Banga	and Sharma, Hydraulic Machine	es,8th l	Ed., Khanna	Publish	ers, New	vDelhi,	2003				
2	Laborato	ory Manual:					,					
	Fluid Me	echanics & Hydraulic Machinery	y Lab N	Manual–Civi	l Engine	ering-R	aghu					
	Engineering College, Visakhapatnam.											

COURS	E OUTCOMES:	BTMapped
On com	(Highest Level)	
CO 1	Demonstrate the calibration of different flow meters	4
$CO^{2}$	Estimate the coefficient of discharge for different flow	4
02	conditions	
CO 3	Apply Bernoulli's equation and Momentum equation for real	4
	fluid flow problems	
CO 4	Analyze the performance characteristics of funds, including	4
CO 4	head, discharge and efficiency through experimental methods	
CO 5	Evaluate the operational performance and efficiency of turbines	4
05	under varying load and flow conditions	

Mapping of Cos with POs and PSOs														
	PO-	PSO-	PSO-											
05/105	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO 1	3	-	-	3	-	-	-	-	1	-	-	-	3	-
CO 2	3	-	-	3	-	-	-	-	1	-	-	-	3	-
CO 3	3	-	-	3	-	-	-	-	1	-	-	-	3	-
CO 4	3	-	-	3	-	-	-	-	1	-	-	-	3	-
CO 5	3	-	-	3	-	-	-	-	1	-	-	-	3	-
1 – Slight, 2 – Moderate, 3 – Substantial														