RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code			CO Code	LO Code	Format No. **4**
		C 03		*3*	*0*	*1*	*1*	*1*	
		C 05							

COURSE NAME	HYDRAULICS
CO Description	**To measure pressure using various pressure measuring devices and to calculate hydrostatic pressure on different surfaces.**
LO Description	**Explain the terms related with Hydraulics and compute properties of fluid with given data.**

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Technical terms used in Hydraulics –fluid, fluid mechanics, hydraulics, hydrostatics and hydrodynamics, application of hydraulics. **Physical properties of fluid** Mass density, Weight density, Specific volume, Specific gravity, Surface tension and capillarity, Compressibility, Viscosity, Newton's law of viscosity – Dynamic and kinematics viscosity. Ideal and Real liquids	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	06	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Mid-semester Exam	Student will be asked to Define/discuss various terms used in hydraulics and its relevance, various physical properties of fluid/liquids Compute properties of fluid/liquid with given data.	10	Test Paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of mid semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code			CO Code	LO Code	Format No. 4
		C	0	3	3	0	1	1	2

COURSE NAME	HYDRAULICS
CO Description	To measure pressure using various pressure measuring devices and to calculate hydrostatic pressure on different surfaces.
LO Description	Calculate pressure using various pressure measuring devices Piezometer/ U tube manometer/ U tube differential manometer

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	**MEASUREMENT OF LIQUID PRESSURE IN PIPES**: Definition of pressure and its SI unit Concept of pressure head and its unit Variation of pressure with depth of liquid Types of pressure- atmospheric gauge and absolute pressure. Conversion of pressure head of one liquid in to other. Devices for pressure measurements in pipes – Piezometer, U-tube manometer, Bourdon's pressure gauge. Explain and calculate pressure difference using differential manometer – U tube differential manometer / inverted U-tube differential manometer. Simple Numerical Problems.	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	08	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory exam	Student will be asked to define/explain pressure/ its variation with depth /concept of pressure head / Tyoes of pressure. Describe principle/ working of pressure measurement devices, Simple numerical problems on conversion of pressure head and calculation of pressure using various pressure measuring devices.	10	Test Paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of end semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code		CO Code	LO Code	Format No. **4**
		C	**0**	**3**	**3 0**	**1**	**1**	**3**	

COURSE NAME	HYDRAULICS
CO Description	**To measure pressure using various pressure measuring devices and to calculate hydrostatic pressure on different surfaces.**
LO Description	**Measure pressure using various pressure measuring devices Piezometer/ U tube manometer/ U tube differential manometer**

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	1. Measurements of pressure and pressure head by Piezometer, U-tube manometer 2. Measurement of pressure difference by U-tube differential manometer. 3. Study of Bourdon's gauge	Lab demonstration, hands on practice, lab assignments	Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments.	-	06	Handouts, chalk board, PPT, text book, charts, video film, and lab manual.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Practical test in Laboratory	Student will be asked to perform lab experiments, take observations and report results.			Pressure Measurement Apparatus.	External/ Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

In external practical exam any of the practical mentioned in LO's can be assessed. Internal evaluation of the lab-work is to be done by evaluating remaining practicals.

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code			CO Code	LO Code	Format No. 4
		C	0	3	3	0	1	1	4	

COURSE NAME	HYDRAULICS
CO Description	To measure pressure using various pressure measuring devices and to calculate hydrostatic pressure on different surfaces.
LO Description	Compute Total pressure and centre of pressure for horizontal/Vertical/inclined surfaces

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	**HYDROSTATIC PRESSURE** : Hydrostatic pressure at point Pascal's law Pressure diagram – Concept and use Total hydrostatic pressure and center of pressure Determination of total pressure & center of pressure on horizontal, vertical & inclined immersed surfaces Determination of total pressure & center of pressure on sides and bottom of water tanks. Numerical Problems	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	6	0	Handouts, chalk board, PPT, text book, charts, video film, and lab manual.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory exam	Student will be asked to Explain Pascal's law/ pressure diagram. Define/ discuss Total pressure and center of pressure on various submerged surfaces.	08	Test Paper + Rating scale	Handouts, chalk board, PPT, text book, charts, video film.	External

	Solve simple numerical on total pressure & center of pressure.						

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code			CO Code	LO Code	Format No. **4**
		C	**0**	**3**	**3**	**0**	**1**	**2**	**1**

COURSE NAME	HYDRAULICS
CO Description	Apply fundamentals of fluid flow with help of continuity equation and Bernoulli's theorem.
LO Description	Differentiate various types of flows.

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	**FUNDAMENTALS OF FLUID FLOW** : Concept of flow Gravity flow and pressure flow. Types of flow – steady and Unsteady, uniform and non-uniform, Laminar and turbulent Reynolds number and its application	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	03	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory exam	Student will be asked to Differentiate gravity flow and pressure flow. Define/discuss types of flows.	05	Test Paper + Rating scale	Handouts, chalk board, PPT, text book, charts, videos.	External

		Define Reynold's number / explain its significance.					

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)
Part of end semester theory exam

GPV (Diploma Wing) Bhopal	**SCHEME FOR LEARNING OUTCOME**	Branch Code		Course Code			CO Code	LO Code	Format No. **4**
		C	**0**	**3**	**3**	**0**	**1**	**2**	**2**	

COURSE NAME	**HYDRAULICS**
CO Description	**Apply fundamentals of fluid flow with help of continuity equation and Bernoulli's theorem.**
LO Description	**Calculate flow parameters using continuity equation / Bernoulli's theorem.**

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Discharge and its units Continuity equation for fluid flow. Various forms of energies present in fluid flow-potential, kinetic, & pressure energy. Bernoulli's theorem, its assumptions and limitations. Loss of head and modified Bernoulli's theorem Application of Bernoulli's theorem. Simple Numerical Problems.	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	06	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory exam	Students will be asked to Define discharge Explain continuity equation for fluid flow.	10	Test Paper + rating scale	Handouts, chalk board, PPT, text book, charts, video film.	External

		Discuss various forms of energies present in fluid flow. Explain Bernoulli's theorem, it's assumptions/limitations. Calculate flow parameters applying continuity equation and Bernoulli's equation with given data.				

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)
Part of end semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code		CO Code	LO Code	Format No. **4**
		C	**0**	**3**	**3**	**0**	**1**	**2**	**3**	

(Code boxes read left to right: C 0 3 3 0 1 2 3)

COURSE NAME	HYDRAULICS
CO Description	**Apply fundamentals of fluid flow with help of continuity equation and Bernoulli's theorem.**
LO Description	**Perform experiments related to fundamentals of fluid flow**

SCHEME OF STUDY							
S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	1. Reynold's experiment to study types of flow. 2. Verification of Bernoulli's theorem	Lab demonstration, hands on practice, lab assignments	Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments.		04	Handouts, chalk board, PPT, text book, charts, video film, and lab manual.	NIL

SCHEME OF ASSESSMENT					
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal

| 1 | Lab Experiment | Student will be asked to perform lab experiments, take observations and report results. | | | 1. Reynold's apparatus
2. Bernoulli's apparatus | External / Internal |

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

In external practical exam any of the practical mentioned in LO's can be assessed. Internal evaluation of the lab-work is to be done by evaluating remaining practicals.

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		C	0	3	3	0	1	3	1	

COURSE NAME	HYDRAULICS
CO Description	To apply basic principles of hydraulics in pipe flow.
LO Description	Calculate major head loss / minor head losses in pipes/ size of equivalent pipe.

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	**FLOW OF LIQUID THROUGH PIPES** : Major head loss in pipes due to friction and its calculation by Darcy-Weisbach Equation, Use of Nomograms Minor loss of head in pipe flow- loss of head due to sudden Contraction, sudden expansion, at entrance and exit of pipes and in various pipe fittings. Hydraulic gradient line and Energy gradient line Pipes in series and parallel Equivalent pipe – Dupuit's equation Simple Numericals	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	10	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory exam	Students will be asked to Explain major loss of head/ minor losses of head Differentiate hydraulic gradient line and energy gradient line Describe pipes in series/parallel Solve simple numerical on head loss	10		Handouts, chalk board, PPT, text book, charts, video film.	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of end semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		C	0	3	3	0	1	3	2	

COURSE NAME	HYDRAULICS
CO Description	To apply basic principles of hydraulics in pipe flow.
LO Description	Explain water hammer and siphon in pipe flow

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1.	Water hammer in pipes – cause, effects and remedial measures Siphon	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	03		Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1.	Quiz / Assignment	Students will be asked to	05		Handouts, chalk board, PPT, text book, charts, videos,	Internal

| | | Explain the water hammer phenomenon/it's causes/effects Explain provision of surge tank Describe water siphon | | | | | | | |

RGPV (Diploma Wing) Bhopal	**SCHEME FOR LEARNING OUTCOME**	Branch Code		Course Code			CO Code	LO Code	**Format No. 4**
		C	**0**	**3**	**3**	**0 1**	**3**	**3**	

COURSE NAME	**HYDRAULICS**
CO Description	**To apply basic principles of hydraulics in pipe flow.**
LO Description	**Calculate discharge in a pipe for the given data using Venturimeter and determine Hydraulic coefficients of orifice.**

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Discharge measuring device for pipe flow Venturimeter – construction & working. Measuring discharge for a tank using orifice Hydraulic coefficients of orifice	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	06	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal

| 1 | Theory exam | Student will be asked to
Describe construction/working of venturimeter
Discuss orifice and its hydraulic coefficients
Simple numerical on calculation of discharge with given data for a venturimeter/ hydraulic coefficient of an orifice. | 08 | Test Paper + rating scale | Handouts, chalk board, PPT, text book, charts, video film. | External |

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of end semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code		CO Code	LO Code	Format No. **4**
		C **0**	**3**	**3** **0**	**1**	**3**	**4**	

COURSE NAME	**HYDRAULICS**
CO Description	**To apply basic principles of hydraulics in pipe flow.**
LO Description	**Determination of Darcy's friction factor of a pipe and hydraulic coefficients for given venturimeter and orifice.**

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	1. Determination of Darcy's friction factor for given pipe. 2. Determination of coefficient of discharge for a given Venturimeter. 3. Determination of hydraulic coefficients for sharp edge orifice.	Lab demonstration, hands on practice, lab assignments	Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments.		06	Handouts, chalk board, PPT, text book, charts, video film, and lab manual.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Lab Experiment	Student will be asked to perform lab experiments, take observations and report results.		Rating scale/ Rubrics	1.Pipe friction apparatus 2. Venturimeter Apparatus 3. Apparatus for determination of hydraulic coefficients for sharp edge orifice	External / Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)
In external practical exam any of the practical mentioned in LO's can be assessed. Internal evaluation of the lab-work is to be done by evaluating remaining practicals.

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		C	0	3	3	0	1	4	1	

COURSE NAME	HYDRAULICS
CO Description	To determine fluid flow parameters in Open channel flow
LO Description	Calculate velocity and discharge using Chezy's / Manning's equation and properties of most economical channel section for rectangular/ trapezoidal channel sections.

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	**FLOW THROUGH OPEN CHANNEL** : Types of channels- artificial & natural, purposes of artificial channel, Different shapes of artificial channels. Geometrical properties of channel section – wetted area, wetted Perimeter, hydraulics radius.	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments	10	0	Text book, video lectures, chalk board.	NIL

| | Chezy's equation and Manning's equation for calculation of discharge through an open channel
Most economical channel section, conditions for most economical rectangular and trapezoidal channel sections. | | | to practice their knowledge. | | | | |

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory exam	Student will be asked to Classify channels. Define geometrical properties of channel sections. Calculate discharge through an open channel by Chezy's/manning's formula. Solve simple numerical on most economical rectangular/ trapezoidal channel section.	12	Rating scale/ Rubrics	Handouts, chalk board, PPT, text book, charts, video film.	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)
Part of end semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code		CO Code	LO Code	Format No. **4**
		C **0**	**3**	**3** **0**	**1**	**4**	**2**	

COURSE NAME	HYDRAULICS
CO Description	**To determine fluid flow parameters in Open channel flow.**
LO Description	**Explain specific energy diagram and hydraulic jump.**

SCHEME OF STUDY							
S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Specific energy diagram, Froud's number and its significance. Critical, sub-critical and supercritical flow in channel Hydraulic jump its occurrence in field, uses of hydraulic jump	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	03	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Quiz / Assignment	Students will be asked to Describe specific energy diagram Differentiate critical. Subcritical and supercritical flow Explain occurrence / uses of hydraulic jump	05	Rating scale/ Rubrics	Handouts, chalk board, PPT, text book, charts, video film.	Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)
Part of term work

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. **4**
		C	*0*	*3*	*3*	*0*	*1*	*4*	*3*	

COURSE NAME	HYDRAULICS
CO Description	To determine fluid flow parameters in Open channel flow.
LO Description	Explain discharge / velocity measuring devices.

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Discharge measuring devices – Triangular and rectangular notches, Weirs Velocity measurement devices - Floats, current meter and Pitot tube	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments to practice their knowledge.	05	0	Text book, video lectures, chalk board.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Theory Exam	Explain use of notches / weirs Differentiate notch and weir Solve simple numerical problems on a rectangular/triangular channel. Describe velocity measurement device	07		Handouts, chalk board, PPT, text book, charts, video film.	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)
Part of end semester theory exam

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code		Course Code			CO Code	LO Code	Format No. 4
		C	0	3	3	0	1	4	4	

COURSE NAME	HYDRAULICS
CO Description	To determine fluid flow parameters in Open channel flow.
LO Description	Determination of coefficient of discharge for given rectangular or triangular notch.

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Find out coefficient of discharge for given rectangular or triangular notch.	Lab demonstration, hands on practice, lab assignments	Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments.		02	Handouts, chalk board, PPT, text book, charts, video film, and lab manual.	NIL

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Practical test in Laboratory	Student will be asked to perform lab experiments, take observations and report results.			Rectangular/Triangular notch apparatus	External / Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

In external practical exam any of the practical mentioned in LO's can be assessed. Internal evaluation of the lab-work is to be done by evaluating remaining practicals.

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. **4**
		C	0	3	3	0	1	5	1	

COURSE NAME	HYDRAULICS
CO Description	**To select a suitable hydraulic pump for various applications.**
LO Description	**Describe construction and working of centrifugal pump /Reciprocating pump and recognize selection criteria of hydraulic pumps.**

SCHEME OF STUDY

S. No.	Learning Content	Method of teaching	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	**HYDRAULIC PUMPS**: Pumps - Definition and types. Suction head, delivery head, static head and manometric head. Centrifugal pump - component parts and their functions, principle of working, priming. Reciprocating pump - component parts and working.	Interactive classroom teaching, assignments, quiz, presentation.	Teacher will explain the contents and provide handouts to the students; teacher will conduct a quiz and give assignments		06	Text book, video lectures, chalk board.	NIL

		submersible pump and Jet pump. Selection and choice of pump.			to practice their knowledge.					

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Passing Criteria	Resources Required	External / Internal
1	Mid semester exam	Students will be asked to Classify pumps Explain various heads Describe construction/working principle of centrifugal / reciprocating pump. Write criteria for selection of pump.	10	Rating scale/ Rubrics		Internal

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Part of mid semester exam