PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –III**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (100)	External	Internal	Total
DCE1301	Strength of Material	3	1	-	(70)	(30)	Min: 40 (D Grade)	(Nil)	(Nil)	(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know mechanical properties of metal such as elasticity.
	2. Student should able to know shear force and bending moment.
	3. Student should able to know bending stresses in beams.

Unit	Contents (Theory)	Marks Weightage
I	**Stress & Strain**: Mechanical properties of metal such as elasticity & elastic limit , Definition of stress, Strain, Modulus of elasticity, S.I. Unit, Classification of stress, Strain, Sign convention, Stress, Strain curve for mild steel and HYSD bar, Yield stress/ proof stress, Ultimate stress, Breaking stress and percentage elongation.	**14**
II	**Elastic Constants & Principal Stresses**: Definition of lateral strain, Poisson's ratio, Change in lateral dimensions, Volumetric strain & change in volume, Definition of bulk modulus, Relation between modulus of elasticity, Modulus of rigidity and bulk modulus, Definition of principal planes & principal stresses.	**14**
III	**Shear Force And Bending Moment** : Types of beams - cantilever, Simply supported, Fixed and continuous beams and over hanging beam, Types of loading- point load, Uniformly distributed load, Support reactions for determinate structures, Concept of shear force and bending moment, Sign convention, Relation between bending moment, Shear force and rate of loading.	**14**
IV	**Stresses In Beams**: Bending Stresses in Beams, Concept of pure bending, theory of simple bending, Assumptions in theory of bending, Neutral axis, Bending stresses and their nature, Bending stress distribution diagram, Moment of resistance. **Moment Of Inertia**: Concept of moment of inertia, M.I of plane areas such as rectangle, Triangle, circle, Semicircle and quarter circle, Parallel axis and perpendicular axis theorem, M.I of composite sections.	**14**
V	**Columns**: End conditions, and Equivalent length, Radius of gyration and slenderness ratio classification as per mode of failure, Euler's and Rankine's formulae, Use of Euler's and Rankine's formulae.	**14**

Text Book/References Books/ Websites

1. S. Ramamurtham ; Strength of Materials ; **Dhanpat** RaiPublishing Company (P) Limited.
2. R. S. Khurmi ; Strength of Materials ; S. Chand & Company, Delhi.
3. S. B. Junnarkar ; Volume - I & II Mechanics of Structures ; Charotar Publishing House, Anand.

Suggested List of Laboratory Experiments :- (Expandable): Nil

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
DCE1302	Building Design & Drawing	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Engineering Graphics**
Course Outcome	1. Student should able to know conventions types of lines.
	2. Student should able to know principles of planning of residential and public building.
	3. Student should able to know , area statement and other details.

Unit	Contents (Theory)	Mark Weightage
I	**Conventions** : Unit conversation, Types of Lines - Visible line, Centerline, Hidden line, Section line, Dimension line, Extension line, Pointers, Arrow heads or dots, Dimensioning systems, Symbols, Reading of available ammonia prints of residential buildings.	**14**
II	**Planning Of Building:** Principles of planning of Residential and Public building, Space requirements and norms for various units of Residential and Public building. Rules and byelaws of local governing authorities for construction, Drawing of line plans for Residential and Public building, Principle of Architecture.	**14**
III	**Building Drawing:** Development of plan from line plan of a residential building, Elevation, Section, Foundation plan, Area statement and other details, Submission Drawing and Working Drawing, Map Study.	**14**
IV	**Detailed Drawing:** Drawing of staircase, Drawing of steel truss & lean to roof, Drawing of layout plan of water supply, Layout plan of sanitary line work, Septic tank, Sanitary fittings, Position of wash basin, Sink.	**14**
V	**Perspective Drawing :** Definition, Principles of Perspective Drawing, Terms used in perspective drawing, Types of perspective views, One point perspective, Two point perspective view of a small object like pedestal, step block, Small single storied building with flat roof.	**14**

Text Book/References Books/ Websites

1. V.B.Sikka; Building Drawing; S.K. Kataria & Sons.
2. D. M. Mahajan ; Elements of Building Drawing ; Pune Vidyarthi Griha Prakashan.
3. Y. S. Sane ; Planning and Design of Building ; distributor: Allies Book Stall.
4. Malik & Meo ; Civil Engineering Drawing ; New Asian Publishers New Delhi.

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Suggested List of Laboratory Experiments :- (Expandable):

1. Drawing various types of lines, lettering and symbols of materials.
2. Drawing the plans of buildings residential Building.
3. Public Building – School building, Primary health center / Hospital building, Bank, Post Office, Hostel building etc.(At least two).
4. Drawing of a residential Building (Load bearing/ Framed structure Type) , showing Plan , Elevation, Sections, Construction notes, Schedule of openings, Site Plan, Area statement etc.
5. Submission Drawing of two storied residential building (Framed structure type) showing Plans , Elevation, Sections, Foundation Plan ,construction notes, Schedule of openings, Site Plan ,Area Statement etc.
6. Working drawing of above drawing sheet preferably one plan, section through stair case to scale 1:50.
7. Two point perspective view of a building drawn in submission drawing.
8. Tracing of a submission drawing prepared at Sr. No.4 above.
9. Ammonia print of submission drawing prepared at Sr. No.4 above.

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (100)	External	Internal	Total (50)
DCE1303	Fluid Mechanics	3	1	1	(70)	(30)	Min: 40 (D Grade)	(35)	(15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know physical properties of fluid.
	2. Student should able to know pressure in horizontal and vertical direction.
	3. Student should able to know concept of pressure head and its unit.

Unit	Contents (Theory)	Marks Weightage
I	**Properties Of Fluid:** Definition of fluid, Difference in behavior of fluid with respect to solids. Introduction to fluid mechanics and hydraulics, Branches of hydraulics- Hydrostatics and hydrodynamics, 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.	**14**
II	**Hydrostatic Pressure:** Free liquid surface, Definition of pressure and its SI unit, Hydrostatic pressure at point, Pascal's law, Variation of pressure in horizontal and vertical direction in static liquid, Pressure diagram, Total hydrostatic pressure and center of pressure, Determination of total pressure & center of pressure on vertical & inclined faces of dams, sluice gates, sides and bottom of water tanks. Numerical Problems.	**14**
III	**Measurement Of Liquid Pressure In Pipes:** Concept of pressure head and its unit, Intensity of pressure, 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.	**14**
IV	**Fundamentals Of Fluid Flow:** Concept of flow, Gravity flow and pressure flow. Types of flow, Laminar and turbulent. Reynolds number and its application Discharge and its units, Continuity equation for fluid flow. Datum head, pressure head, velocity head and total head, Bernoulli's theorem, its assumptions and limitations. Loss of head Application of Bernoulli's theorem. Simple Numerical Problems.	**14**
V	**Flow Through Open Channel:** Types of channels- artificial & natural, purposes of artificial channel Chezy's equation and Manning's equation for calculation of discharge through an open channel, common range of values of Chezy's constants and Manning's constant of different types of channel surfaces. Critical, sub-critical and supercritical flow in channel, Hydraulic jump its occurrence in field, uses of hydraulic jump.	**14**

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Programme: **Diploma in Engineering** **Semester –III**

Text Book/References Books/ Websites

1. S.Chand ; Fluids Mechanics & Hydraulics Machines ; S.Chand & Company Ltd. New Delhi.
2. R.K.Rajpu ; Fluids Mechanics Hydraulics Machines ; Chand & Company Ltd. New Delhi.
3. Dr. Jagdish Lal ;Metropolitan Fluids Mechanics & Hydraulics ;Dr. Jagdish Lal,Metropolitan Book Co Private Ltd.
4. Dr. P.N.Modi & Dr. S.M.Seth ; Hydraulics & Fluids Mechanics ; Standard Book House, Delhi.

Suggested List of Laboratory Experiments :- (Expandable):

1. Measurements of pressure and pressure head by Piezometer, U-tube manometer.
2. Measurement of pressure difference by U-tube differential manometer. Study of bourdon's gauge.
3. Verification of Bernoulli's theorem.
4. Determination of Darcy's friction factor for a given pipe.
5. Determination of Minor losses in pipes (any two).
6. Determination of Manning's constant or Chezy's constant for given rectangular channel section.
7. Demonstration of Hydraulic jump.
8. Demonstration and use of Pitot tube and current meter.
9. Study & use of water meter.
10. Study of a model of centrifugal and reciprocating pump.

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Programme: **Diploma in Engineering** **Semester –III**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
DCE 304	Surveying	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know definition & objects of surveying.
	2. Student should able to know direct and indirect ranging & chaining.
	3. Student should able to know conversion of bearings.

Unit	Contents (Theory)	Marks Weightage
I	**Types Of Survey:** Definition, Objects of Surveying, Principles of Surveying, Classification of Surveying, Method of surveying, Object of surveying, Surveying for building work.	**14**
II	**Curves**: Classification and use, Elements of circular curves, Calculations, Setting out Curves by offsets and Theodolite, Compound curves, Reverse curves, Transition curves, Cubic Spiral and lemniscates, Vertical curves, Setting out.	**14**
III	**Compass Survey:** Principle of Compass Survey, Bearing of lines – Meridian –True, Magnetic, and Arbitrary, Bearing –fore bearing, Back bearing, Whole circle bearing, Quadrennial bearing system and Reduced bearing, Conversion of bearings, Finding included angles from bearings. Traversing – traversing by compass, Open traverse, Closed traverse.	**14**
IV	**Leveling : M**eaning of various terms used in leveling, Reduced level(RL), Bench mark (BM) Dumpy level –Foresight (FS), Back sight (BS), Intermediate sight (IS), Change point (CP), Height of collimation, Temporary adjustments of dumpy level. Method of Reduction of levels – Height of instrument method and Rise and fall method, Arithmetical checks, Numerical problems, Computation of missing readings.	**14**
V	**Area And Volume Measurements:** Definitions of Contour, Characteristics of contours .Method of locating contours. Uses of Contour Maps. Study and use of Digital Planimeter .Concept of computation of Volume by Trapezoidal and Prismoidal formulae.	**14**

Text Book/References Books/ Website:

1. N.N.Basak ; Surveying and Levelling ; Tata Mc Graw-Hill.
2. T .P. Kanetkar & S. V.Kulkarn ; Surveying and Levelling, Part I and II ; Pune Vidhyarthi Griha Prakashan.
3. Dr. B. C. Punmiya ; Surveying And Leveling . Vol. I and II ; Laxmi Plublication.
4. S.K.Husain & M.S. Nagaraj ; Surveying ; Chand And Company.
5. S. K. Duggal ; Surveying And Levelling -Vol. I And II ; Tata Mc Graw-Hill.

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Programme: **Diploma in Engineering** **Semester –III**

Suggested List of Laboratory Experiments :- (Expandable):

1. Measurement of Area by Chain and cross staff survey.
2. Measurement of distances with chain & tape on ground with direct or indirect ranging.
3. Use of prismatic compass and observing fore bearing and back bearing.
4. Construction and use of optical square and open cross staff for setting out Perpendicular and running a survey line for locating details.
5. Measuring Fore bearing and Back bearing of side closed polygon. Identifying stations affected by local attraction and calculation of corrected F.B. & B.B.
6. Measuring fore bearing and back bearing for an open traverse. Calculate direct angles between successive lines.
7. Use of Dumpy level, temporary adjustments and taking reading on leveling staff. Recording readings in field book.
8. Differential leveling practice, reduction of level by H.I. method.
9. Differential leveling practice, reduction of level by rise & fall method.
10. Measurement of Area of irregular figure by polar planimeter.

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (100)	External	Internal	Total (50)
DCE1305	Engineering Geology	3	1	1	(70)	(30)	Min: 40 (D Grade)	(35)	(15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Geology**
Course Outcome	1. Student should able to know objects and scope of geology.
	2. Student should able to know introduction to crystal systems.
	3. Student should able to know brief geological history of India.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction and Physical Geology**: Objects and scope of geology, The crust and the Interior of the earth, Origin and age of the earth, Sub-aerial and sub-terrain weathering, Denudation and deposition, Wind, river, Glacial and marine erosion, Volcanoes , Soil formation, Soil profile, Geological classification of soil and concept of earthquake plate-tectonics.	**14**
II	**Mineralogy And Crystallography**: Fundamentals of mineralogy, Study of common rock Forming minerals, Ores and minerals of economic importance to civil engineering, Elements of crystallography and introduction to crystal systems.	**14**
III	**Petrology:** Composition of earth's crust, Study of igneous, sedimentary and metamorphic rocks and their formation, Characteristics classification, Rocks of civil engineering Importance. **Geology Of India:** Physical features of India, Brief geological history of India, Occurrence of important ores and minerals in India.	**14**
IV	**Structural Geology**: Structures related to rocks, Dip, Strike and outcrops, Classification and detailed studies of geological structures i.e. Folds, Faults, Joints, Unconformity and their Importance in civil engineering.	**14**
V	**Applied Geology**: Introduction to applied geology and its use in civil engineering, Properties of rocks, Selection of sites for roads, Bridges, dams, Reservoirs and tunnels. Prevention of Engineering structures from seismic shocks, Stability of hill sides, Water bearing strata, Artesian wells, Use of remote-sensing techniques in selection of above sites.	**14**

Text Book/References Books/ Websites

1. Prabin Singh ; Engineering and General Geology ; S.K. Kataria & Sons.
2. Gulati ; Geotechnical Engineering; TMH.
3. P.K. Mukerjee ; Geology ; World Press.
4. S.K. Garg ; Physical And Engineering Geology ; Khanna Publishers.

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Suggested List of Laboratory Experiments :- (Expandable):

1. Study the identification of simple rock forming minerals and important ores.
2. Identification of rock.
3. Simple map exercises
4. Field visit / geological excursion.
5. To study the earth and interior of the earth.
6. To study the land forms of the earth by land form models.
7. Use of Dumpy level, temporary adjustments and taking reading on leveling staff. Recording readings in field book.
8. To study about ground water, glacier, sea water, rivers, denudation, wind erosion system with the help of chart.
9. To study the charts showing topography of the ocean floor, Tsunami, map of ocean current.
10. To study the hardness by Mohr scale of hardness.

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total	External	Internal	Total (50)
DCE1306	Software Lab	-	-	1	(Nil)	(Nil)	(Nil)	(35)	(15)	Min: 20 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know Introduction to Computer Aided Drafting software for 2D.
	2. Student should able to know 3D Modeling, benefit, software's basic commands of drafting entities.
	3. Student should able to know like line, circle, polygon, polyhedron, cylinders; transformations and editing commands like move, rotate, mirror, array.

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable):

S. No.	List of Experiments	Marks Weightage
1	Introduction to Computer Aided Drafting software for 2D and 3D Modeling, benefit, software's basic commands of drafting entities like line, circle, polygon, polyhedron, cylinders; transformations and editing commands like move, rotate, mirror, array. 1. Practicing commands under draw and dimension menu 2. Practicing commands under modify menu. 3. Practicing commands under tool menu. 4. Practicing commands under format menu. 5. Practicing commands under express menu.	**50**

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Programme: **Diploma in Engineering** **Semester –III**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total	External	Internal	Total (50)
DPE1307	Professional Skill	-	-	1	(Nil)	(Nil)	(Nil)	(Nil)	(50)	Min: 20 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil
Practical Internal Max Marks: 50	Lab work & Sessional - Max Marks: 25	Assignment/Quiz/Attendance - Max. Marks: 25

Pre-Requisite	**Nil**
Course Outcome	Able to solve problems ask in the competitive exams.

Unit	Contents (Theory)	Marks Weightage
I	**Quantitative Aptitude:** Percentages/profit & loss, Time and work, Simple and compound interest, Series and progression.	**50**
II	**Reasoning :** Puzzles and seating arrangement, Data sufficiency, Coding-decoding, Blood relation, Order and ranking, Alpha numeric symbol series, Logical reasoning:	
III	**English**: Free quizzes related to synonyms, Antonyms, One word substitution, Idioms and phrases, Spelling correction, Fill in the blanks and common errors in English.	

Text Book/References Books/ Websites

1. R.S. Aggarwal; Quantitative Aptitude for Competitive Examinations.
2. Arihant Publications; Fast Track Objective Arithmetic.
3. R S Aggarwal; Verbal and Nonverbal Reasoning.
4. M K Pandey; Analytical Reasoning.
5. B S Sijwali, Indu Sijwal; A New Approach to Reasoning Verbal and Non-Verbal (English) 1st Edition.
6. SP Bakshi; Objective General English.
7. Wren and martin; English grammar book.
8. Neetu singh; Plinth to paramount English.
9. Norman Lewis; Word power made easy (Mainly for development of vocab)
10. https://www.playquiz2win.com/engquizmenu.html
11. https://www.sawaal.com

Suggested List of Laboratory Experiments :- (Expandable):

Students should solve various problems and quiz on the above mention topics, and prepare an assignment.