

Effective from Sessi	on: 2011						
Course Code	DCE-401	Title of the Course	Soil mechanics and foundation Engineering	L	Т	Р	С
Year	II	Semester	IV	03	01	00	
Pre-Requisite	DCE-401	Co-requisite	NA				
	This course is aimed	at teaching students	to apply scientific and mathematical principles to sol	ve pro	oblem	s relat	ted to
<b>Course Objectives</b>	soil and foundations.	The courses also he	lp students develop the skills and knowledge needed	to des	ign an	id con	struct
	foundations.						

	Course Outcomes									
CO1	Understand the theory and practice of soil mechanics									
CO2	Learn how to use modern equipment for soil mechanics and foundation engineering									
CO3	Develop the ability to solve problems related to soil									
CO4	Learn how to design foundations using systematic methods									
CO5	Understand how soil behaves under different foundation types									

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	Introduction and engineering properties of soil	<b>Definition of soil Mechanics and foundation</b> engineering. Soil formation - different kinds of soils and soil structures. Fundamental Definitions and their Relationships Graphical representation of soils as a three-phase system. Definitions of moisture content unit weight of soil mass such as bulk density, saturated density, submerged density and dry density, specific gravity, mass specific gravity, void ratio, porosity and degree of saturation, percentage air voids and their content, density index. Relationships between various terms stated above. Consistency limits Liquid limit, Plastic limit, Shrinkage limit, Plasticity index, Consistency index. Grain size analysis - Sieve and Hydrometer analysis, C.C. and C.U.	8	CO1
2	Soil Classification and Permeability	Particle size classification - M.I.T., and I.S., U.S. bureau of soils and U.S. P.R.A. Textural classification chart, brief description of plasticity chart. I.S. soil classification. Permeability of Soils Definition of Permeability. Interpretation of Darcy's law, definition of discharge, velocity and seepage velocity and coefficient of percolation. Factors affecting permeability. Laboratory methods of falling head and constant head, field methods of pumping-out and pumping-in tests.	10	CO2
3	Soil Compaction	Definition of Compaction. Standard & modified Proctor compaction test. Different methods of compaction. Factors affecting compaction. Brief description of field compaction methods. Compacting equipments and field control. Indian Standards. Consolidation Definition of consolidation and its importance on foundation settlement. Difference between consolidation and compaction.	6	CO3
4	Shear Strength Earth Pressure	Definition of shear strength. Definition of Cohesive & non cohesive soil with reference to c and O (phy) soil. Coulomb's equation. Shear box and unconfined compression tests. Earth Pressure and Retaining Structures Definition of earth pressure, active and passive earth pressures, terms and symbols relating to a retaining wall. Relation between movement of wall and earth pressure Ka and Kb by Rankin's Method. Simple earth pressure calculations without surcharge.	8	CO4
5	Shallow and Deep Foundations	Definitions of shallow and deep foundations Application of Terzaghi's bearing capacity formulae for different types of foundations. Factors affecting depth of shallow foundation Plate load test for shallow foundations Ground Improvement Techniques Concept of stabilization, materials used, advantages of lime & cement as stabilizing agents. Strength of stabilized soil. Deep compaction - Heavy tamping, Explosion, Grouting, Reinforcement. Soil Exploration and sampling Methods of exploration Types of soil samples and samplers	8	CO5
Referen	nces Books:			
1. "Pul 2. "Pul	blic Health Engg.	- S.K. Garg		
∠. Pui	ng Source:	- Kaligwala		
1 14		/ /////////////////////////////////////		

1. https://archive.nptel.ac.in/courses/105/105/105105201/

PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO														
CO1	2	3		1										
CO2	2	3			2			2						
CO3	2	3			2			2			2			
CO4	2	3		1	1	2								
CO5	2	3				1	1							



Effective	from Sessi	on: 2011										
Course (	Code	DCE-402	Title of the Course	CIVIL ENGINEERING DRAWING-I	LT	P C						
Year		Π	Semester	IV	3 1	0						
Pre-Requisite DCE-402 Co-requisite NA												
Course Objectives 2. To know about different measurement given by BIS.												
	Course Outcomes											
CO1 In	nterpret conv	ventional sign, syml	bols and working drav	wings of various Civil Engineering structures.								
CO2 P	repare a deta	ling byelaws and Pr	sidential and public b	for residential and public buildings								
CO3 U	CO4 Use software to prepare detailed drawing of residential and public buildings.											
CO5 T	o enable stu	dents to create deta	iled plans, cross-secti	ions, and pipe joint drawings for water supply and sewe	rage systen	ıs.						
UnitNo. Title of the Contact Mapped												
	0	Sumbols and con	ventions of materials	and fittings used in Civil Engineering works Symbols	Q.							
UNIT-I	Symbol	conventions of ele	ectrical fittings	and multips used in Civil Engineering works Symbols	α 4	CO-1						
UNIT-II	Foundation s, Doors & Windows	Foundations, de basement showing Doors & Winde braced and batten and glazed door, n elevation of fully sectional plan an Queen post roof and RB flat roof insulation Details the following typ ground floor (b)T slab (d)Terrazzo f	tails of a spread fou g necessary damp pro ows:1. Doors: Eleva ted door, glazed door, fully paneled door, y glazed window ar d sectional side, ele trusses with roof Cov showing details rega to Of reinforcement ne bes of Concrete floor cerrazzo floor finish c floor finish structured	andation for an external and internal masonry wall we bofing arrangements. tion, sectional plan, sectional side Elevation of ledge and flushed door with wire gauge shutter, partly Pane . <b>Windows:</b> 1. Elevation, sectional plan, sectional s and fully paneled window with Fan light 2. elevative vation of a glazed steel window. Roofs: King post a vering and support details on wall. Section through RC rding arrangements for water proofing, drainage and h eed not to be shown. <b>Floors:</b> 1. Detailed cross section ring as per IS:2571-1970 (a) Concrete floor finish or over ground floor (c) Concrete floor finish with structure I slab (e)Terrazzo little floor finish over ground.	ith ged ide on, nd 10 CC eat of ver red	CO-2						
UNIT-III	Building Plan-I	Working drawing drawing of a three	g of a two roomed bui e roomed building fro	ilding with kitchen and bath having pitched roof. Worki om a given line plan and given data.	<sup>ng</sup> 10	CO-3						
UNIT-IV	Staircase	Working drawing (a) Details of dog plan and section of domestic septic and	g of a three bedroom legged stairs (Wood of an inspection chan nd soak pit for 10 use	double storied flat roofed residential building. Stairca en & RCC). b. Plans of remaining type of stairs. c. Deta nber and manhole. d. Detailed plan and cross section o rrs as per IS:2470Part I.	se: iils f a 6	CO-4						
UNIT-V	Building Plan-II	Detailed plan and pipe joints comm drawing with Aut 15 should be prep	l cross section of bath only used in water su toCAD Three Room b pared by AutoCAD A	proom, kitchen and W.C. connections. Detailed drawing upply and sewerage system. Two Room building works building working drawing with AutoCAD (Plate No. 14 lso)	of ng & 10	CO-5						
. Refere	nces Books	:										
1. Civil Engineering Drawing" – Gurucharan Singh												
e-Learning Source:												
1. https:	//www.yout	ube.com/watch?v=c	qgWfNKK3bag&list=	=PLyTjtAH-y1X9EbNWlZsrVCDwVwzQiYmZs								

PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1		3						2		2	2	1	
CO2		3					2				3		2
CO3		3					2				3	1	
CO4		3					2	2		3			3
CO5		3					2	1			2		2

Name & Sign of Program Coordinator	Sign & Seal of HoD



Effective	from Sessio	n: 2011								
Course (	Code D	CE-403	Title of the Course	SURVEYING-I	LT	P C				
Year	1	-	Semester	IV	3 1	0				
Pre-Requ	uisite D	OCE-403	Co-requisite	NA	·	1.				
Course C	<b>Dbjectives</b> <sup>1.</sup> <sub>2.</sub>	Students will gain Insight in Using S	urveying Instruments.	s surveying methods, including chain, compass survey	ng, and leve	ling.				
		<u> </u>		Course						
	11 '	· ,	· · · · · · · · · · · · · · · · · · ·	Outcomes						
CO2 C	andle various	s survey instrumer	its for a particular sur	vey work.						
CO3 C	ollect and an	alyze survey data	for preparing drawing	s and maps.						
CO4 D	o different m	ethods and their p	rocedure for levelling	<u> </u>						
CO5 St	tudents will l	earn the principles	, construction, and pr	actical applications of minor surveying instruments su	ch as Abney	's level etc				
UnitNo.	Title of the				Contac	t Mapped				
	Unit				Hrs.	Ö				
	~ .	Concept of sur	veying, purpose of	surveying, Measurements linear and angular, unit	s of	~~ I				
UNIT-I	NIT-I Surveying measurement, instruments used for taking these measurements. Classification of survey based									
		Purpose of chair	Basic principles of sur	rveying.	vina					
		Viz chains ta	nes ranging rods a	arrows negs cross staffs Indian ontical square	their					
	Chain	construction and	uses. Different opera	ations in chain surveying: Ranging (direct/indirect), o	ffset	CO 1				
UNIT-II	Surveying	(perpendicular/o	blique), chaining (fla	at and sloping ground), conducting chain survey over	ran 8	CO-1				
		area. Recording	the field data, plottin	ng the chain survey, conventional sign. Obstacles in c	hain	0-2				
		surveying. (a) E	rrors in chain survey	ring. (b) Correction for erroneous length of chain, sin	nple					
		problems. Testir	ig and adjustment of c	chain.	- of					
		prismatic Com	npass surveying. Co bass Method of sett	ting and taking observations. Concept of following	r(a)					
		Meridian - Mag	netic, true and arbitra	ary. (b) Bearing- Magnetic, true and arbitrary. (c) W	hole					
		circle bearing ar	d reduced Bearing, (o	d) Fore and back bearing. (e) Magnetic dip and declina	ition					
	Compass	Local attraction-	al attraction-causes, detection, errors and correction. Problems on local attraction, magnetic							
UNIT-III	Surveying	declination and	calculation of includ	led angles in a compass traverse. Concept of a trave	rse- 8	CO-3				
		Open and closed	l traverse. Traversing	with a prismatic compass. Checks for an open and clo	sed					
		A diustment of	ig of a traverse - By	included and deflection angles. Concept of closing e	rror.					
		Testing and adju	istment of a prismatic	compass. Use of surveyor's compass and its construct	tion					
		details, comparis	son with prismatic con	mpass.						
		Purpose of leve	lling, concept of a le	evel surface, horizontal surface, vertical surface, da	tum,					
		reduced level a	nd benchmarks. Prin	ciple and construction of dumpy, I.O.P. (tilting) le	vels.					
		Concepts of line	e of collimation, axis	of the bubble tube, axis of the telescope and vertical	ixis.					
		Levelling staff (	(1) single piece (11) fo	olding (11) sop with (1) invar precision staff. Tempo	rary					
	Levelling	Differential leve	lling up and levening	sight fore sight intermediate sight station change <b>n</b>	oint					
UNIT-IV	Levening	height of instru	nent. Level book and	l reduction of levels by (a) Height of collimation me	thod 10	CO-4				
		and (b) Rise a	nd fall method. Ari	thmetical checks. Problem on reduction of levels.	Fly					
		levelling, check	levelling and profile l	levelling (L-section and X-section) Errors in levelling,	and					
		precautions to	minimize them and	permissible limits. Reciprocal levelling. Difficultie	s in					
		Numerical probl	ems	erraction. Testing and adjustment of dumpy and IOP is	vei.					
	Minor	Minor Instrum	ents: Principal constr	uction and uses of the following minor instruments:						
UNIT-V	Instrument	s (a) Abney's leve	l (b) Tangent clinome	eter (c) Ceylone Ghat Tracer(d) Pentagraph (e) Planime	eter 8	CO-5				
Reference	es Books:									
1. "?	Surveying" V	ol. I & II – Arora	R. – Khanna Pub., De	elhi						
2. "S	Surveying" V	ol. I & II – Arora	K.P. – Standard Book	x House, Delhi						
3. "S	Surveying" V	ol. I & II. –B.C. P	unmia							
e-Learnin	g Source:									
1. https:/	//www.youtu	be.com/watch?v=l	Uh7LMnqcgLg&list=	PLCYhGkOwO39hxuhBKcH3Q3XoE7TqzFyAb						
2. https:/	//www.youtu	be.com/watch?v=j	o1SUNySoWhE&pp=	sygUfQ29tcGFzcyBzdXJ2ZX1pbmcgYW5kIEx1dmVs	oGluZw%3I	0%3D				
3. https://	//www.youtu	be.com/watch?v=1	mdxOaQ5wqE&pp=y	ygUdbWlub3IgaW5zdHJ1bWVudCBpbiBzdXJ2ZXlp	bmc%3D					



PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO													
CO1		2						2		2			2
CO2		3					2					2	
CO3		3					2	2					3
CO4		3					2	1		3		1	
CO5		3					2	2					2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation									
Name & Sign of Program Coordinator	Sign & Seal of HoD								



Effective	from Sess	ion: 2011										
Course (	Code	DCE-404	Title of the Course	PUBLIC HEALTH ENGINEERING-II	L T	P C						
Year	• • • • •	II DCE 404	Semester		3 1	0						
Pre-Keq		DCE-404 To understand dif	ferent types of sewage	NA disposal and different types of sewers and lying of sew	ver and thei	ir joint						
Course (	<b>D</b> bjectives	. To understand abo	but rural sanitation and	d sewage composition and different terms associated wi	th sewage of	disposal.						
				Course Outcomes								
CO1 T	o know the	basic knowledge al	out wastewater.									
CO2 T	o know difi o know the	ferent techniques fo	r treatment of wastewa	ater.								
CO3 1 CO4 T	o know abc	ut drains and sewer	sections.	age.								
CO5 Understanding of Sewage Composition, Characteristics and principles of sewage treatment												
UnitNo	Title of th				Conta	rt Manned						
emtro.	Unit				Hrs.	CO						
UNIT-I	Waste and SewageWaste: Dry, semiliquid, liquid, Necessity of systematic collection and disposal of waste. Brief description of Sewage disposal system. Conservancy and water carriage system, their advantages and disadvantages. Quantity of Sewage: Sewage: Domestic, industrial and storm water. Volume of domestic sewage (DWF), variability of flow, limiting velocities in sewers. Use of table as per I: S 1742-1983 to determine relationship between gradient, diameter, discharge and velocity.											
UNIT-IISewerage SystemsTypes of sewerage systems: separate, combined and partially separate. Sewers: Stone ware, cast iron, concrete and masonry sewers their sizes and joints. Appurtenances: (Location, function and construction) manholes, drop manhole, lamp hole catch basin, inverted syphon, flushing tanks, 												
UNIT-III	Buildinş Drainag	Aims of building drainage arrange sanitary fittings a taken, Gulley, In	g drainage and its red ment for a building and their Installation. T tercepting and Grease	quirements. General layout of sanitary fittings and ho (single and multistoried) as per IS 1742-1983. Differ Traps, seal in traps, causes of breaking of seal, precauti traps. Testing of house drainage.	use ent ons	CO-3						
UNIT-IV	Rural Sanitatio	Drainage: Topo development of and village latrin pit (design of se n constructional d Maintenance: Ins maintenance of maintenance	ography, alignment c drains, alignment, siz es: Collection and dis ptic tank, soak pit/ce etails, uses and mair spection of mains, clea traps, cleaning of h	of lanes and bye lanes, storm water, natural passa the and gradient. Phase Programme. Disposal of night posal of garbage and refuse. Septic tanks, chess pools/s ress pools), privy pit and bore hole latrines. Biogas plantenance. Guidelines for future development of villa aning and flushing of sewers. Precautions during clean house drainage line. Tools and equipment needed	ge, soil pak int, ge. 6 ng, for	CO-4						
UNIT-V	Sewage Disposa	Sewage Disposa O.D., B.O.D. and sea. Merits and disposal. Sewag constructional de clarifiers/aeration Oxidation ponds.	I: General composition d C.O.D. Disposal me demerits. Nuisance du <b>e Treatment</b> : Meani etails of screening cha in tank. Sludge treatr	on of sewage, importance & method of determination ethods. Land disposal, disposal by dilution and disposa ue to disposal, self-purification of streams, conditions ing and principle of primary and secondary treatme amber, grit chamber, clarifier, trickling filters, second ment, sludge digestion, sludge drying; sludge dispo	of in of ent, 10 ary sal.	CO-5						
Referen	ces Books:											
1. Public	e Health En	gg. – S.K. Garg										
2. Public	e Health En	gg Rangwal										
e-Learnin	g Source:											
1. https:	//www.you	ube.com/watch?v=	MsrmjuwV7SY&pp=	ygUjZGlmZnJlbnQgVHlwZXMgb2Ygd2FzdGUgYW5	kIHNld2Fı	nZSA%3D						
2. https:	//www.you	tube.com/watch?v=	mpmiimIgUoM&list=	PLZvSSwzLFnRBBIe04q7rB2NSKSk4roAHU								
3. https: 5kIHI	//www.you Nld2VyIGF	ube.com/watch?v= wcHVydGVuYW5	w3b62C8EAVY&pp= jZXMg	=ygU8ZGlmZnJlbnQgbWV0aG9kcyBvZiBzZXdnZSB(	cmVhdG1	lbnQgYW						



PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	1		2	3	2	3		2	2	2		1	
CO2	2			3	2	3	2	2	2	2		2	2
CO3	1		2	3	2	3	2	2	2	2		1	
CO4	2		2	3	2	3	2	2	2	2			3
CO5		2	2	3	2	3		2	2	2			2

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Sign & Seal of HoD
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Effective from Ses	ffective from Session: 2011											
Course Code	DCE-405	Title of the Course	BUILDING CONSTRUCTION AND MAINTENANCE ENGGII	L	Т	Р	C					
Year	II	Semester	IV	3	1	0	-					
Pre-Requisite	DCE-405	Co-requisite	NA									
Course Objectives	To develop the kr	nowledge of construct	ion.									

	Course
	Outcomes
CO1	Students are able to understand the property, use, advantage and disadvantage of different material used in construction.
CO2	Identify the components of building and differentiate various types of building materials depending on its function.
CO3	Students are able to understand construction procedure of different components.
CO4	Students will Learn Details and Structure of all Parts and Components of the Building.
CO5	To be able to understand the responsibilities of engineer in civil engineering projects
-	

Unit	Title of the		Contact	Mapped
No.	Unit		Hrs.	œ
UNIT - I	Damp Proofing	Dampness and its ill effects on bricks, plaster, wooden fixtures, metal fixtures and reinforcement, damage to aesthetic appearance. Damage to heat insulating materials, Damage to stored articles and health. Types of dampness-moisture penetrating the building from outside e.g. rainwater, surface Water, ground moisture. Moisture entrapped during construction i.e. moisture in concrete, masonry construction and plastering work etc. Moisture which originates in the building itself i.e. water in kitchen and bath rooms etc. Damp proofing materials and their specifications rich concrete and mortar, bitumen, bitumen mastic. Methods of damp proofing basement, ground floors, plinth and walls, special damp proofing arrangements in bathrooms, W.C. & Kitchen, Damp Proofing for roofs and window sills. Plinth Protection and Aprons	8	CO-1
UNIT - II	Floors & Roofs	<b>Ground floors:</b> Glossary of terms-floor finish, topping, under layer, base course, rubble filling and their purpose. Types of floor finishes-cast in situ concrete flooring (monolithic, bonded) Terrazzo tile flooring. Terrazzo flooring, Timber flooring. Description with sketches of the methods of construction of the floors and their specifications. Floor polishing equipment. <b>Upper floors:</b> Flooring on RCC Slab. Flooring on R.B. Slab. Glossary of terms for pitched roofs-batten, eaves, barge, facial board, gable hip, lap, purlin, rafter, rag bolt, valley, ridge. Pitched roof, steel trusses, fink truss, arched trusses, and North light truss. Roof coverings for pitched Roofs-Asbestos sheeting, big six, Trafford sheets, Mangalore tiles, method of arranging and fixing to the battens, rafters, purlins-both steel and wooden. Drainage arrangement for pitched roofs. Concept of Flat roofs, RCC, RB, Coffer & folded slabs. Drainage arrangements for flat roofs.	8	CO-2
UNIT - III	Stairs and staircase	Glossary of terms: Stair case winders landing, strings, newel, baluster, riser, tread, width of staircase, hand rail, nosing. Planning and layout of staircase: Relations between rise and tread, determination of width of stair, landing etc. Various types of layout-straight flight, dog legged, open well, quarter turn, half turn, (Newel and geometrical staircase). Bifurcated stair, spiral stair.	6	CO-3
UNIT -IV	Surface Finishes	Plastering-Classification according to use and finishes like grit finish, rough cast, pebble dashed, plain plaster etc. Dubbing, Proportion of mortars used for different plasters, preparation of mortars, techniques of plastering and curing. Pointing-Different types of pointing, mortar used and method of pointing. Painting-preparation and application of paints on wooden, steel and plastered wall surfaces. White washing, color washing and distempering. Application of cement and plastic paints. Commonly used water repellants for exterior surfaces, their names and application. Ventilation and Air Conditioning Natural and Artificial Ventilation. Requirements of comfort conditions, temperature control, mechanical ventilation, plenum system, exhaust system, air filter of different types, and principle of Air Conditioning Plant (no construction detail). Fire Fighting Causes of fire, spread of fire, firefighting equipment and different method of firefighting, sprinklers, fire regulations & requirement. Fire insurance. Indian Standard.	8	CO-4
UNIT -V	Principles of Maintenan ce	Definition, of maintenance, decay and deterioration of building/building components. Sources and causes of deterioration and decay in building. Factors influencing the decision to carry out maintenance of building. Maintenance Practice Defects, causes and repairs in structural elements of buildings such as (i) Foundation (ii) Walls (iii) Floors (iv) Roof (v) Components such a doors, windows and ventilators etc.	10	CO-5
Refe	rences Book	·s:		
1.Buil	ding Constr	uction" – B.C. Punmia		

### e-Learning Source:

#### 1. https://youtu.be/g7\_hFWwdw6c?si=IpavYu2B8tgc9HJo

PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	-	-	2	-	-	-	1	-	-	-	3	-
CO2	-	2	2	-	3	1	-	-	-	-	-	2	-
CO3	1	2	3	-	-	2	-	1	-	-	-	-	3
CO4	3	3	-	-	-	-	-	-	3	1	-	-	1
CO5	2	-	2	-	-	-	-	-	3	3	2	-	2



Effective	from Session: 2	011						
Course C	Code DCE	406	Title of the Course	CONCRETE TECHNOLOGY-II	L	Т	Р	C
Year	II		Semester	IV	3	1	0	
Pre-Requ	uisite DCE	406	Co-requisite	NA				
Course C	<b>Dbjectives</b> specia	vide foundati te practices. ized techniqu	onal knowledge and p The course emphasize es for handling, curing	practical insights into the design, materials, and opera es the significance of quality control, precautions du g, and maintaining concrete under varying environmer	tions tring tal co	of for constr ndition	mwor uction ns.	ck and n, and
				Course Outcomes				
CO1 K	now the Basic pro	perties of ingr	edients of concrete.					
CO2 K	now about the wo	rkability and s	trength of Concrete.					
CO3 K	now about the con	creting techni	aues.					
UnitNo.	Title of the Uni	t	1			Cont	act N	lapped
UNIT-I	Form Work	Form Work Materials us for form wo	: Concept of factors a ed for form work. Ske rk as per IS (No proble	affecting the design of form work (shuttering and st etches of form work for column, beams slabs. Strippin ems on the design of form work). Removal of formwork	aging) g time rk.	6		CO-1
UNIT-II	<ul> <li>Precautions to be taken before, during and after RCC Construction. (vii) Special type of formwork Concrete Operations: Storing Cement: Storing of cement in the warehouse. Storing of cement at site. Effect of storage on strength of cement. Aggregate: Storing of aggregate on site for maintaining uniformity of moisture and cleanliness. Batching: Batching of cement. Batching of aggregate: Batching by volume, using gauge box, selection of proper gauge box, Batching by weight-spring balances and by batching machines. Measurement of water. Mixing Hand mixing Machine mixing-types of mixers, capacities of mixers, choosing appropriate size of mixers, operation of mixers, mixing of water. Maintenance and care of machines. Transportation of Concrete: Transportation with and situations of use of the following- pans, wheele barrows, truck mixers, chutes, belt conveyors, pumps, tower cranes. Placement of Concrete: Prior preparation before placement; when put on natural soil, rocky base, specially prepared sub-base (brick soling and water bound macadam base), hardened concrete precautions to be taken. (vi) Compaction: (a) Hand compaction-pavement, narrow and deep members. (b) Machine compaction-types of vibrators (internal screed vibrators and form vibrators) Method of handling screed vibrators. Selection of suitable vibrators for various situations. (vii) Finishing concrete slabs-screeding, floating, and trowelling. (viii) Curing Object of curing, Method of curing, shading concrete works, covering surfaces with hessian, gunny bags, sprinkling of water, ponding method and membrane curing, steam curing. Recommended duration for curing. (ix) Jointing Location of construction joints, treatment of construction joint before the concrete is poured, concreting at these joints. Expansion joints in the design of the spored.</li> </ul>							CO-2
UNIT-III	Properties of Concrete	Properties of Bleeding. (i Durability Accelerators	f Concrete: (i) Prope ii) Properties of hard Impermeability. Din s and retarders. Air ent	rties in plastic stage: (a) Workability (b) Segregation dened concrete: (a) Strength. Characteristic streng mensional changes. (iii) Admixture (uses and of training agents. Water reduces and set controlling agent	on. (c) th (b) effect) nts.	6		CO-3
UNIT-IV	Quality Contro at site	Quality Con quality cont with referen and after co on concrete concrete. Us	atrol at site: Control t rol. Hot Weather Co ce to mass concreting ncreting, Use of retar strength, Heating of se of accelerators	ests on cement, aggregate water and concrete. Conc ncreting: Effect of high temperature on concrete st g, cooling of concrete materials, precautions before, eders. Cold Weather Concreting: Effect of low temper f concrete materials. Precaution before, during and	ept of rength during rature after	8		CO-1
UNIT-V	Repair and Maintenance	Repair and cracks and h of concrete ferrocement	Maintenance Method noles. Repairs underwa , High strength con concrete. ready-mix c	of repairing by grouting new and old concrete we ater. Special types of concrete General idea of special crete, fiber reinforced concrete, polymer concrete concrete.	rk for types , and	6		CO-2
Reference	s Books:							
1. "(	Concrete Technolo	gy" Theory &	Practice - Shetty M.S.	– S. Chand & Co. Ltd.				
e-Learnin	g Source:	-						
1. ht	tps://www.you	tube.com/wa	tch?v=cx5gPKp9QI	Ec&list=PLbMVogVj5nJQU7M0LdA77p_XaaW	BJnil	Nc		



PO- PSO	PO	PSO	PSO												
со	1	2	3	4	5	6	7	8	9	10	11	14	1	2	PSO 3
CO1		3		2		2			1		2				
CO2	2	3			1				2		2		1		2
CO3	2	3	2						1		2			2	
CO4		3	2	1	1	2					2				3

Nama	l. Sig	of Drogram	Coordinator
Ivanie	a sigi	i oi r rogram	Coordinator

Sign & Seal of HoD



Effective from Ses	Effective from Session: 2011												
Course Code	DCE-451	Title of the Course	Soil Mechanics Lab	L	Т	Р	С						
Year	II	Semester	IV	0	0	3							
Pre-Requisite	DCE-451	Co-requisite	NA										
Course Objectives	The objective of a S physical and engined	oil Mechanics lab cou ering properties of soil	arse is to equip students with practical knowledge and Is for geotechnical analysis and design.	skills	to de	termi	ne the						

	Course
	Outcomes
CO1	Determination of moisture content and specific gravity of soil particles by different method.
CO2	Determination of soil particles size and its liquid limit and plastic limit.
CO3	Analysis of Shear strength of sand by Shear test.
CO4	Experiment related to civil engineering materials using different tools and their application

Unit	Title of the Unit		Contact	Mapped
No.			Hrs.	Õ
1	Experiment No.1	Determination of moisture content by oven drying method	3	CO1
2	Experiment No.2	Determination of specific gravity of soil particles by specific gravity bottle/pycnometer	3	CO1
3	Experiment No.3	Determination of soil particles size distribution by sieving	3	CO1
4	Experiment No.4	Determination of liquid limit and plastic limit of soil	3	CO2
5	Experiment No.5	Determination of permeability by constant Head Permeameter and falling head permeameter.	3	CO2
6	Experiment No.6	Shear strength of sand by Direct Shear test.	3	CO3
7	Experiment No.7	Unconfined compression test	3	CO3
8	Experiment No.8	Standard Proctor compaction text.	3	CO3
9	Experiment No.9	Determination of field density of soil by sand replacement and core cutter methods.	3	CO4
10	Experiment No.10	Demonstration of Standard Penetration Test.	3	CO4
Refer	ences Books:			
1.	. Lab Manual			
e-Lea	rning Source:			
1.	https://youtu.be/	hNNilk-OKaw?si=xxzuMZYFLkoa-T_4		

PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2			3					1	2		1	
CO2	1			3					3	2	3		
CO3	2			2					1	3	3		1
CO4	2			3					1	3			2

Name & Sign of Program Coordinator	Sign & Seal of HoD



Effective from Session: 2011								
Course Code	DCE-453	Title of the Course	Surveying – I Lab	L	Т	Р	C	
Year	II	Semester	IV	0	0	3		
Pre-Requisite	DCE-453	Co-requisite	NA					
<b>Course Objectives</b> The objective of the Survey Lab is to equip students with practical skills and knowledge in the use of modern surveying instruments and techniques.								

	Course					
	Outcomes					
CO1	Measuring angles between the lines meeting at a point by prismatic compass.					
CO2	To find the difference of level between two distant points by taking staff readings on different stations from the single					
	setting.					
CO3	To find the difference of level between two points by taking at least four change points.					
CO4	Taking offsets and setting out right angles with cross staff and Indian optical square.					

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
		Chain Surveying		
1		(a) Ranging a line.	2	005
1	Experiment No.1	(b) Chaining a line and recording in the field book.	3	COS
		(c) Testing and adjustment of chain.		
2	Europin ant No 2	(a) Chaining of a line involving reciprocal ranging.	2	COL
2	Experiment No.2	(b)Taking offsets and setting out right angles with cross staff and Indian optical square.	3	COI
3	Experiment No.3	Chain survey of a small area.	3	CO1
4	Experiment No.4	Chaining a line involving obstacles in ranging.	3	CO2
		Compass Survey		
5	Experiment No.5	(a) Setting the compass and taking observations.	3	CO2
		(b) Measuring angles between the lines meeting at a point by prismatic compass.		
6	Experiment No.6	Traversing with the prismatic compass and chain of a closed traverse. (Recording and plotting by	3	CO3
•	Experiment No.0	included angles) Plate II. Setting a regular Pentagon of given side & bearing	5	0.05
7	Experiment No 7	Traversing with the Prismatic compass and chain of a closed and open traverse (Recording And	3	CO3
<i>'</i>	Experiment (0.7	plotting by deflection angles).		005
8	Experiment No.8	Determination of local attraction at a station by taking fore and back bearing.	3	CO3
9	Experiment No.9	To find true bearing of a line at a place.	3	CO3
	L	Levelling:		
10	Experiment No.10	To find the difference of level between two distant points by taking staff readings on different	3	CO3
		stations from the single setting		
11	Experiment No.11	I o find the difference of level between two points by taking at least four change points.	3	CO4
12	Experiment No.12	Longitudinal sectioning of a road.	3	CO4
13	Experiment No.13	Cross-sectioning of a road.	3	CO4
14	Experiment No.14	Setting a gradient by IOP level	3	CO4
1-		Minor Instrument:	2	005
15	Experiment No.15	Setting and checking grades with Abney's level. Setting and checking grades with Ceylone Ghat	3	COS
1(				005
10	Experiment No.16	IF inding heights by Indian Pattern Clinometer (Tangent Clinometer)	2	C05
1/	Experiment No.17	Use of plani-meter for computing areas.	2	C05
18	Experiment No.18	Enlargement/ reduction of a plan by the use of penlagraph.	3	0.05
Refer	ences Books:			
1	. Lab Manual			
e-Lea	rning Source:			
1	https://woutu be	////wkkeW11k2ei-neTddNy7UKby570		

1. https://youtu.be/Ik7wKksW11k?si=pgTddNv7-UKhx5ZO

PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2			3					2	1				
CO2	1			3		1						1		2
CO3	2			2	2				3		1		2	
CO4	2			3		1		3				2		3



Effective from Session: 2011									
Course Code	DCE-454	Title of the Course	Public Health Engineering Lab	L	Т	Р	C		
Year	II	Semester	IV	0	0	3			
Pre-Requisite	DCE-454	Co-requisite	NA						
Course Objective The objective of the Soil Mechanics Lab is to provide students with practical knowledge and hands-on experien									
Course Objectives	determining the physical and engineering properties of soils.								

	Course
	Outcomes
CO1	To impart students with strong knowledge of water drinking standards for public health.
CO2	Analyze various physio-chemical and biological parameters of water in case of quality requirements.
CO3	At the end of the course students will be able to assess complete water quality assessment for EIA &domestic supplies.
CO4	Students will suggest various types of treatment methods required to purify raw water with different contaminants.

Unit	Title of the Unit		Contact	Mapped
No.			Hrs.	CO
1	Experiment No.1	To determine pH value of water sample.	3	CO1
2	Experiment No.2	To determine dissolved and suspended solids in water.	3	CO1
3	Experiment No.3	To determine turbidity of water.	3	CO1
4	Experiment No.4	To calculate Oxygen Demand (OD), Biological Oxygen Demand (BOD), Chemical	3	CO2
-		Oxygen Demand (COD)		
5	Experiment No.5	To determine residual chlorine in water sample.	3	CO2
6	Experiment No.6	To perform Jar Test for Coagulants.	3	CO3
7	Experiment No.7	To collect samples of water from shallow & deep wells.	3	CO3
8	Experiment No.8	To perform chlorine demand test.	3	CO3
9	Experiment No.9	To determine the hardness of water.	3	CO4
10	Experiment No.10	To determine available chlorine in bleaching powder.	3	CO4
11.	Experiment No.11	To perform field test for the detection of intermediate pollution in drinking water by OT test.	3	CO2
12.	Experiment No.12	<ul> <li>To visit and write specific report for the following.</li> <li>(Any three) <ul> <li>a. Water treatment plant for moderate town (say Population 1lacs)</li> <li>b. Sewage treatment plant for 5 lac to 10 lac population</li> <li>c. Sewage disposal work</li> <li>d. Construction site for layout of water supply &amp; sewerage system.</li> <li>e. Industrial effluent treatment plant</li> </ul> </li> </ul>	3	CO4
Refer	ences Books:			
1	. Lab Manual			
e-Lea	rning Source:			
1	. https://youtu.be/	/tnff9TANWbM?si=hW7nie_iYPTIKwWD		

PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1		1	1	3	3	3	1	3	1	1	3			
CO2		1	1	3	2	3	1	3	1	1	3	1		2
CO3		1	1	3	3	3	1	2	1	1	3		2	
CO4		1	1	3	3	3	1	3	2	1	3	2		3

Name & Sign of Program Coordinator	Sign & Seal of HoD