



Veermata Jijabai Technological Institute (V.J.T.I)

(Central Technological Institute, Maharashtra State, INDIA)

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Website: www.vjti.ac.in

Programme: Diploma in Civil Engineering (DCE)


Semester: VI


Implemented from: 2017

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME												
			L	T	P	CR	PAPER HRS	TH		MS T	TOTAL		PR		OR		TW		TOTAL MARKS
								Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
171CE61	BUILDING SERVICES	A	3	2	0	5	3	80	32	20	100	40			25**	10	25@	10	150
171SE62	DESIGN OF RCC & STEEL STRUCTURES	A	3	0	2	5	3	80	32	20	100	40					25@	10	125
171CE63	IRRIGATION ENGG.	A	3	1	0	4	3	80	32	20	100	40					25@	10	125
171CE64	CONSTRUCTION MANAGEMENT	M	3	2	0	5	3	80	32	20	100	40			25**	10	25@	10	150
171CE65	ELECTIVE:(ANY ONE)		3	2	0	5	3	80	32	20	100	40			25**	10	25@	10	150
176CE66	PROJECT-II	A	-	-	6	6	-	-	-	-	-	-	-	-	50**	20	100@	40	150
171CE67	CONSTRUCTION ENTREPRENEURSHIP	M	2	1	0	3									25**	10	25@	10	50
171CE68	INDUSTRY INSTITUTE INTERACTION-II	A	0	0	2												##		
	TOTAL		17	8	10	33		400		100	500				150		250		900

Abbreviations: B – Basic; C – Core; A – Applied; M – Management; L – Theory Lecture; T – Tutorial; P – Practical; TH – Theory Paper; MST – Mid-Semester Tests; PR – Practical Exam; OR – Oral Exam; TW- Term Work. @- Assessment by Internal Examiner * Indicates assessment by Internal Examiner, **: Assessment by External and Internal Examiner, Project Presentation/Seminar assessment by External And Internal Examiner# -For Non Credit course grades (A-D) to be mentioned in the mark sheet based on the continuous assessment.


 Curriculum Coordinator


 Head
 Diploma in Civil Engineering


 Dean - Diploma



List of Third Year Elective Subjects
VI SEMESTER

SR. NO.	SUBJECT CODE	SUBJECT TITLE
1	171CE65E1	ADVANCED CONTRUCTION TECHNIQUES
2	171CE65E2	ADVANCED TRANSPORTATION ENGG
3	171CE65E3	ENGINEERING GEOLOGY
4	171SE65E4	ADVANCED THEORY OF STRUCTURES.

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DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: BUILDING SERVICES
COURSE CODE	: 17ICE61

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	2	0	5	3	80	32	20	100	40	--	--	25**	--	25@	10	150

** - Assessment by Internal & External Examiner @ - Assessment by Internal Examiner.

Course Objectives:

This course is intended to teach the students various Building Services essential for buildings and its habitants.

Course Outcomes:

After completion of the course the students will be able to

CO1	List various building services.
CO2	Obtain water connection from main and categorize water supply systems for high rise buildings.
CO3	Demonstrate various traps and sanitary fittings.
CO4	Install various building services like water supply, building drainage, rain water harvesting, electrical installation and recycling of waste water.
CO5	Describe elevators and its legal aspects in buildings
CO6	Plan fire fighting systems and relate its legal aspects

Course Content:

SECTION-I									
Unit & Sub-Unit	Topics/Sub-topics			Hou rs	Mark s	C O	R Leve l	U Leve l	A Leve l
1	Introduction :								
1	1.1	Comfort Standards:		02	04	1	50%	50%	--
	1.2	Types of various installation services:							
2		Building Water Supply :							



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	2.1	Plumbing Engineering: Principles of Plumbing, Service connections from municipal main, Ferrule, Storage of water (underground & overhead), Water meter (sizes and its fixing).	07	12	2	35%	35%	30%
	2.2	Air Lock: Causes, Effects and Prevention.						
	2.3	Plumbing of High Rise Buildings: Types of various water supply systems (down take pressure reducer valve system, multiple storage system, break pressure tanks, hydro pneumatic systems), Pumping system.						
	2.4	Water Supply Pipes: Standard sizes of pipes available for plumbing						
3		Sanitary Services:	10	14	3	30%	40%	30%
	3.1	Sanitary Appurtenances: Classification of fixtures (ablution fixtures and Soil fixtures), bathroom accessories & fittings.						
	3.2	Building Drainage: General principles governing building drainage, Various plumbing systems (one pipe, two pipe, single stack single stack partially ventilated and hybrid), Capacity and sizing of pipes (primary & secondary braches). Siphonic action & vent piping, Traps for appliances- Bottle trap, Nahani trap, Gulley trap. Air admittance valve, installation of pipes,						
4		Recycling of Water & Waste Water:	05	10	4	30%	40%	30%
	4.1	Recycling of Water: Need , Uses & Types- Storm Water, Residential, Industrial & Commercial, Grey water						
	4.2	Environmental Benefits: of recycled water , Future of water recycling						
	4.3	Recycling of Waste Water: Need & Uses						
	4.4	ZLD: Concept of Zero Liquid Discharge for industrial plant						
		Total of Section I	24	40				
SECTION-II								
Unit & Sub-Unit	Topics/Sub-topics							
5		Rain Water Harvesting System:	05	08	4	25%	25%	50%
	5.1	Introduction: Collection of runoff, pipe system, design consideration, Road surface runoff (open drain and closed drain).						
	5.2	Disposal of rain water: Surface and Underground rain harvesting.						
6		Electrical Installations:	02	02	4	30%	40%	30%
	6.1	Types of Wiring used in Buildings: Temporary Wirings, C.T.S. / P.V.C.						



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I	Introduction	02	50%	50%	--	04
II	Water Supply & Distribution	07	35%	35%	30%	12
III	Sanitary Services	10	30%	40%	30%	14
IV	Recycling of Water & Waste Water	05	30%	40%	30%	10
V	Rain Water Harvesting System.	05	25%	25%	50%	08
VI	Electrical Installations	02	30%	40%	30%	02
VII	Elevators	06	40%	25%	35%	12
VIII	Fire Fighting System Installations	08	40%	30%	30%	12
IX	Green Building	03	35%	35%	30%	06
	Total	48				80

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Assignments	Approx. Hours	CO
1*	1	Study of existing municipal water supply scheme to VJTI campus.	1	2
2*	2	Study of types of pipes used for plumbing and sanitary services, pipe fittings, valves and tools required for fittings.	2	2
3*	3	Study of a Ferrule.	1	2
4*	4	Study of various traps used for plumbing & sanitary fixtures	2	3
5*	5	Rainwater harvesting of the building	2	4
6*	6	Installation of W.C., commode, Nahani traps to bath/toilet.	2	3
7*	7	Draw layouts, plan, elevation & section of a selected case for study. i) Indian toilet ii) Western toilet. Give dimension based on site visit.	2	3
8	8	Site Visit Report- Visit any building site and submit a report based on following observation i) plumbing system ii) architectural & structural provision iii) pipe material iv) work method v) safety	6	1,2,3,4,5,6
9*	9	Site Visit Report to a fire-compliant building to study Firefighting systems	2	6



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10	10	Site Visit Report of a Green-Building	2	4
11	11	5 assignments based on the syllabus.	6	1,2,3,4,5,6
13	13	Mini Projects: students will work in group on following: 1. Study of plumbing system of their home. 2. Interaction with Electrical Engineer/ Contractor to understand Electrical Wiring in Buildings and submit report on it.	4	1,2,3,4,5,6
Minimum 8 and maximum 12 practicals/experiment/Tutorials sessions to be included in a course term work in a term.				
Note: * - Mandatory Assignment/Tutorial/Practical				

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	S.M. Patil	Building Services	Seema publications, Mumbai. 2 nd Revised, 2014
2.	S. G. Deolalikar,	Plumbing Design and practice	Tata McGraw Hill publishing company. 2 nd Edition, 2016

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Sandeep Mantri	The A to Z of Practical Building Construction and it's Management	Mantri Institute of Development and Research, Pune. Latest Edition.
2.	C. R Mohan	Design & Practical Handbook on Plumbing	Standard Publishers, 1 st Revised, 2010
3.	BIS	IS Codes: 4985, 1239,14846,10124,12235	Bureau of Indian Standards
4.	National Building Code (NBC)		Latest
5.	Websites: a) http://nptel.ac.in/courses/105105048/2 b) https://www.watercorporation.com.au/~media/files/...and.../plumbing-handbook.pdf		

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Syllabus Coordinator.

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Head
Diploma in Civil Engrg

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Dean (Diploma)



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DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: FIFTH
COURSE TITLE	: DESIGN OF RCC AND STEEL STRUCTURES.
COURSE CODE	: 171SE62

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	-	2	5	3	80	32	20	100	40	-	-	-	-	25@	10	125

@- Assessment by Internal Examiner.

Course Objectives:

Civil engineering essentially means dealing with structures in various ways, either as designer or contractor in maintenance field. Reinforced Cement Concrete and Structural Steel are most widely used materials of construction and this syllabus deals with basic Properties of this composite material and structural steel and principles on which various components of the structures are designed using this composite material as well as structural steel. The syllabus deals with analysis and design of basic structure components which form part of most of the structures to give feel of design of basic to complex structures.

Course Outcomes: Student should be able to

CO1	Explain philosophy of Limit State Method with stress block diagram partial factor of safety etc. Enlist various loads coming on structures.
CO2	Calculate load or moment carrying capacity of various components of a simple building.
CO3	Design various components of a simple building
CO4	Draw reinforcement detailing sketches for various components of a simple building for RCC and design welded or riveted connections for steel members with neat sketches.

Syllabus

Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hou rs	Mar ks	CO	R Level	U Level	A Level
1	Introduction to philosophy of Reinforced Concrete Design by Limit Stress Method (IS:456-2000)	06	09	1	35	40	25
2	Design of two way slabs-Simple theory and use of IS code coefficients.	06	09	3,4	20	40	40
3	Design of continuous beams	05	08	2,3,4	20	40	40
4	Design of floor systems including continuous beams and slabs (using design	05	08	2,3,	20	40	40



		aids)			40			
5		Concept of various loads coming on structures, D.L., L.L., W.L, earthquake loads and ductility detailing, relevant I.S. codes	02	06	1	50	35	15
		TOTAL OF SECTION I	24	40				
SECTION-II								
6		Load carrying capacity and Design of Tension member, of simple roof trusses with its riveted connection to gusset plate using various arrangements of angles.	06	10	2,3,4	30	35	35
7		Load carrying capacity and Design of Compression members of simple roof trusses (Strut), Design of simple and composite columns (without lacing or battens) Effective lengths of compression members.	06	10	2,3,4	30	35	35
8	6.1	Load carrying capacity and Design of simple beams of uniform section, built up beams with flange plates.	06	10	2,3,4	30	35	35
9	6.3	Riveted and welded connection: Axially and eccentrically loaded simple connections of beam to beam and beam to column	06	10	2,3,4	30	35	35
		TOTAL OF SECTION II	24	40				
Numerical problems based on analysis and design alongwith reinforcement detailing sketches will be asked in the examination.								
		TOTAL OF SECTION I and II	48	80				

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

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Unit	Hours	Marks	CO	R Level	U Level	A Level
1	6	9	1	35	40	25
2	6	9	3,4	20	40	40
3	5	8	2,3,4	20	40	40
4	5	8	2,3,4	20	40	40
5	2	6	1	50	35	15
6	6	10	2,3,4		35	
7	6	10	2,3,4	30	35	35
8	6	10	2,3,4		35	
9	6	10	2,3,4	30	35	35



Term Work:

1. Project on design and drawing of RCC slab consisting of continuous two way slabs covering maximum 9 panels and continuous beams below it.
2. Project on design of primary, secondary beams, columns and their connections for an Industrial building.

Students shall submit minimum of two full imperial drawing sheets based on above designs.

Sr. No.	Name Of Topic	Hours	CO
1	Design Report 1 and drawing sheet 1		
	Design and reinforcement detailing sketches of roof having continuous two way slabs and beams below slabs .Schedule of slabs and beams, general notes on drawing sheet 1	16	2,3,4
2	Design Report 2 and Drawing sheet 2		
	Design and connection detailing sketches of secondary beams, primary beams and columns, Schedule of beams and columns , general notes on drawing sheet 2	16	2,3,4

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Shah and Kale	Design of R.C.C. structures	Edition- Reprint 2007, Publisher- Structures Publication
2	Committee Members of BIS	I.S. 456-2000 Plain and Reinforced Concrete - Code of Practice .	Bureau Of Indian Standards, New Delhi
3	L.S. Negi	Design of steel structures	Edition-2 nd , 2005,paper back. Publisher-Tata McGraw Hill.


Reference books and Websites:


Sr. No.	Author	Title	Publisher and Edition
1	Committee Members of BIS	I.S. 456-2000 Plain and Reinforced Concrete - Code of Practice .	Bureau Of Indian Standards, New Delhi
2	Committee Members of BIS	I.S.800 - 2007 Code of Practice for general construction in steel.	Bureau Of Indian Standards, New Delhi
3	Committee Members of BIS	SP 34 (1987), handbook on Concrete Reinforcement and detailing.	Bureau Of Indian Standards, New Delhi
4	Web site	https://nptel.ac.in/courses	All IITs and IISc



6	Web site	https://youtu.be/80gP3JmuhOg and many more links on you tube	www.youtube.com
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Curriculum Coordinator


Head
Diploma in Civil Engg


Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: IRRIGATION ENGINEERING
COURSE CODE	: 17ICE63

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		MST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	1	-	4	3	80	32	20	100	40	--	--	--	--	25@	10	125

@- Assessment by Internal Examiner.

Objective:

India is an agricultural country as about 70% of Indian population is directly dependent on agriculture which makes the Agricultural industry as the backbone of Indian economy. India is a tropical country with non uniform rainfall, so artificial application of water is enviable to get assured and increased yield.

Irrigation is an age-old art. The aim of the subject is to present the science and practice of irrigation engineering in a concise form comprising practically all the modern development. The input to the subject is the knowledge of survey for investigation, hydrology for calculation of yield from rainfall records and hydraulics for designing the storage, conveyance and outlet structures.

Course Outcomes:

After completion of the course the student will be able to

CO 1	Enlist various types of irrigation systems with their advantages and disadvantages.
CO 2	Calculate water requirements of crops and canal capacity.
CO 3	Decide the type and section of Dams
CO 4	Recognize types of watershed management techniques used in farms
CO 5	Calculate runoff and yield from catchments.
CO 6	Identify the type and section of Bandhara irrigation, percolation tanks, weirs, barrages, canals etc.



Content: Theory.

Unit	Topics/Sub-topics	Hours	Marks	C O	R Level	U Level	A Level
01	Introduction- 1.1 Definition – Irrigation and irrigation engineering, necessity of irrigation, advantages of irrigation, ill effects of over irrigation and types of irrigation. 1.2 Introduction to lift irrigation scheme. 1.3 Irrigation department design standards and specifications.	03	06	1	60%	40%	--
02	Water Requirement of Crops- 2.1 Principle Indian crops. Cropping seasons. 2.2 Definitions – Crop period, base period, Duty & Delta, factors affecting Duty, relation between Duty, Delta and base period. 2.3 Definition – CCA, GCA. Intensity of irrigation, time factor, Kor Period, Kor depth, outlet factor. 2.4 Modified Penman method and Problems on water requirement and capacity of canal.	05	10	2	30%	50%	20%
03	Dams And Spillways- 3.1 Survey for irrigation project- Data to be collected for irrigation project: site selection for dams, reservoir and spillways. 3.2 Types of dams – Earthen dams and Gravity dams (masonry and concrete), Comparison of earthen and gravity dams with respect to foundation, seepage, construction and maintenance. 3.3 Earthen Dams – Components and their functions, Types of earthen dams, seepage through embankment and foundation, seepage control through embankment and foundation. Types of failure of earthen dams and remedial measures. 3.4 Gravity Dams- Typical cross section, drainage gallery, joints in gravity dam. Concept of high dam and low dam, forces acting on dam. 3.5 Spillways- Definition, function, location and components, various types.	16	24	3	30%	40%	30%
	Total of Section I	24	40				
04	Hydrology- 4.1 Definitions- rainfall, rain gauge and rain gauge station, average annual rain fall. 4.2 Definition of runoff, factors affecting run off.	06	08	5	20%	40%	40%



	calculation of run off by runoff coefficient, Inglis' formula. 4.3 Unit hydrograph and its uses.						
05	Bandhara Irrigation and Percolation Tanks- 5.1 Layout and component parts, Advantages and disadvantages of bandhara irrigation. 5.2 Percolation Tanks- necessity and importance, selection of site.	04	8	6	30%	40%	30%
06	Diversion Head Works- 6.1 Weirs – components parts, functions and types, layout of diversion head works with its components and their function, canal head regulator, Purpose of silt excluders and silt ejectors. 6.2 Barrages – components and their function. Difference between weir and barrage.	06	10	6	20%	50%	30%
07	Canals- 7.1 Classification of canals according to alignment and position in the canal network. Lacey's and Kennedy's Silt theories. 7.2 Canal lining – Definition, purpose, types of canal lining, and advantages of canal lining. 7.3 Cross Drainage works- Concept and different types of C.D. works.	08	14	2, 6	30%	30%	40%
	Total of Section II	24	40				
	Total	48	80				

SUGGESTED SPECIFICATION TABLE WITH HOURS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			Total Marks	R Level	U Level	A Level
I	Introduction	03	06	60%	40%	--
II	Water Requirement of Crops	05	10	30%	50%	20%
III	Dams and Spillways	13	24	30%	40%	30%
IV	Hydrology	06	08	20%	40%	40%
V	Bandhara Irrigation and Percolation Tank	04	08	30%	40%	30%



VI	Diversion Head Works	06	10	20%	50%	30%
VII	Canals	08	14	30%	30%	40%
TOTAL		48	80			

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Tutorial –

Sr. No.	Tutorial Exercise	Hours	CO
1.	Study of National Water Policy and Maharashtra Water Policy.	01	1,2,3,4,5,6
2.	Collection of information and prepare list of documents and drawings required for irrigation project.	02	1
3.	Study of various watershed management techniques adopted in farms.	02	4
4.	Numerical on Calculation of Canal capacity.	01	6
5.	Six assignments based on the syllabus.	07	1,2,3,4,5,6
6.	Mini-project- Student should collect information of any one major dam in the state and present a seminar with report.	03	3
TOTAL		16	

Term Work- Students should submit journal of above exercises.

Site Visits-

1. Irrigation and watershed management structures and Students will submit visit report.



Text Books:

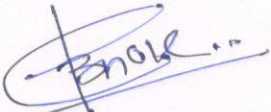
Sr. No.	Author	Title	Publisher and Edition
1.	Sharma R.K. & Sharma T.K.	Irrigation Engineering (Including Hydrology)	S.Chand & Co.Ltd, 2 nd Edition, 2004


Reference Books-

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	S.K.Garg	Irrigation and Hydraulic structure	Khanna publisher, New Delhi, 1981
2	Dr.P.N.Modi	Irrigation Water Resources & Water Power Engineering	Standard Book House, 7 th edition, 2008.
3	Basak N.N.	Irrigation Engineering	Tata McGraw-Hill Publishing Co., 1 st Edition, October 1999.
4	Dr.B.C.Punmia, Dr.Pande Brijbasi Lal	Irrigation & Water Power Engineering	Laxmi Publications 16 th editions 2009.


Curriculum Coordinator


Head


Dean - Diploma

Diploma in Civil Engg.



DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: VI
COURSE TITLE	: CONSTRUCTION MANAGEMENT
COURSE CODE	: 171CE64

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH			TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min	IST	Max	Min	Max	Min	Max	Min			
3	2	0	5	3	80	32	20	100	40			25**	10	25@	10	150

** Assessment by External and Internal Examiner@ Assessment by Internal Examiner

Course Objectives:

Civil Engineer should learn the managerial processes involved in construction industries like management of labor, material and equipment to minimize the project cost and project duration and also to optimize the quality of works. Student will learn the application of available techniques used in the management of construction industries.

Course Outcomes:

Student should be able to

CO1	Identify the different Stages in construction management
CO2	Adopt Different Planning Techniques
CO3	Adopt Cost and Resource Optimization for Planning and organizing construction site and resources
CO4	Adopt suitable Safety and Quality Control measures in Construction to control the progress of work.

Section I							
Unit & Sub-Unit	Topics/Sub-topics	Hou rs	Mar ks	C O	R Level	U Level	A Leve l
01	Construction Management :	7	10	1	40%	60%	
	1.1 Construction Scenario in India						



	1.2	Classification of Construction work						
	1.3	Characteristics of Construction Project						
	1.4	Various stages in construction from conception to realization.						
	1.5	Agencies involved and their method of execution						
	1.6	Objective & Function of Construction Management						
02		Construction Planning:	14	22	2	40%	40%	20%
	2.1	Stages of project planning: pretender planning, preconstruction planning, detailed planning. Level of details. Types of Planning. Necessity of planning						
	2.2	Process of development of plans and schedules: Terminology involved in planning, Activity and its types, Events and its types, Characteristics Fulkerson Rule for the development of Network diagram. Work break- down structure, activity list, estimation of duration, sequence of Activity. Problem based on it.						
	2.3	Planning Tools- Bar chart, Mile stone chart, Network Diagram Critical Path Method, Activity early and late time computations, Activity On Node (AON) Types of float. Analysis of single relationship (finish to start) networks, computation of float values, critical path Float computations. Problems based on it.						
	2.4	PERT – Assumption underlying PERT analysis, three time estimate, slack computation, Probability of completion time for a project. Problem based on it.						
03		Construction Cost:	3	8	3	20%	40%	40%
	3.1	Classification of cost						
	3.2	Time cost trade-off in construction projects(compression and decompression): Concept, Need and Benefits.						
		Total of Section I	24	40				
Section II								
Unit & Sub-Unit	Topics/Sub-topics		Hou rs	Mar ks	C O	R Level	U Level	A Leve l



04		Resource Scheduling :	6	10	3	40%	60%	
	4.1	Line of balance techniques: Concepts, Features, Benefits, Advantages over CPM technique. LOB calculation						
	4.2	Resources constraints and conflict: Concept and Effects						
	4.3	Resources smoothing and leveling: Concept , Steps involved						
05		Planning and organizing construction site and resources	10	16	3	20%	40%	40%
	5.1	Site: Temporary services required at the site. Preparation of Job Layout developing site organization for different civil works.						
	5.2	Personnel Management : planning , organizing, staffing, motivation						
	5.3	Materials Management: Concept, Function procurement Inventory and inventory control: Objective, Advantages Different Inventory Control method. Estimation by ABC analysis ,Inventory Cost , EOQ Modern Techniques of Material Management : i) Material Resource Planning (MRP) Functions of MRP, Input to MRP, benefits of MRP, ii) Enterprise Resource Planning (ERP)- Concept, list of modules, advantages & disadvantages of ERP						
	5.4	Fund- Cash flow: Inflow and outflow, sources of fund, Cash flow forecast, Cash flow in Construction						
06		Monitoring and Control :	8	14	4	40%	40%	20%
	6.1	6.1 Control of progress: Supervision, record keeping, periodic progress reports, periodical progress meetings.						
	6.2	Updating of plans : purpose ,data required for updating, methods of updating, Life Cycle Cost						
	6.3	Quality and Quality Control: Need of quality, its Elements. Quality Control: Objectives, Functions, Advantages Quality Assurance-Concept, Quality Assurance System Quality Management System – Activities, Benefits						



		Quality Circle - Concept, Characteristics & Objectives Components of TQM – Concept, Elements of TQM, Benefits Modern Technique & Systems of Quality Management like Kaizen, 5'S', 6 Sigma ISO 9001:2000 - Benefits, Main clauses.						
	6.4	Health, Safety, Security and Environment (HSSE): Accidents; their causes and effects, costs of accidents, occupational health problems in construction, Importance of Safety on construction sites.						
		Total of Section II	24	40		80%	160%	160%
		Total of Section I & II	48	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxonomy).								

List of Practicals/Assignments/Tutorials

Sr. no	Unit	Practical/Assignment	Approx. Hrs	CO
1.	1	*Presentation on different aspect of Construction Scenario in India	6	1
2.	2	*Preparation of Flow chart and Bar chart for different item of work	6	2
3.	2	*Preparation of network diagram for different civil engineering works.		2
4.	2	*Problem based on CPM technique		2
5.	2	*Problem based on PERT technique		2
6.	3	Problem based on Time-Cost Trade off		2
7.	4	Identify the case study based on Line of Balance	2	3
8.	5	*Preparation of Job Layout developing site organization for civil works	6	4
9.	5	*Case Study on Personnel Management		4
10.	5	Problem based on Estimation by ABC analysis		3
11.	5	Case Study on Cash flow in Construction		3
12.	6	Case Study on Quality and Quality Control		4
13.	6	*Presentation on Safety measures to be adopted on work sites	8	4
14.	2	Study of Project Management Softwares	2	2
		Total	32	

Minimum 8 and maximum 12 practical/experiment sessions to be included in a course in a term

Term Work: At least six assignment and eight problems covering entire syllabus.



SUGGESTED SPECIFICATION TABLE WITH HOURS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Construction Management	7	40%	60%	0	10
II	Construction Planning	14	40%	40%	20%	22
III	Construction Cost	3	20%	40%	40%	8
IV	Resource Scheduling	6	40%	60%		10
V	Planning and Organizing Construction Site and Resources	10	20%	40%	40%	16
VI	Monitoring and Control	8	40%	40%	20%	14
	Total	48				80

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Learning Resources:

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Stevens,	Techniques for construction Network scheduling	Revised edition 1990
2	B. M. Naik	Project management	Vani Educational Books
3	Chitkara K.K.,	Construction Project Management	Tata McGraw Hill Publishing Co, Ltd

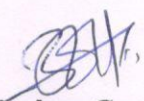


4	Gahlot P.S.,	Construction Planning and Management	International Publishers, Delhi.
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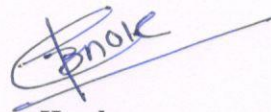
Reference Books:

Sr. No.	Author	Title	Publisher and Edition
1	P. K. Joy	Handbook of Construction Management	MacMillan Publisher India (2000)
SP-7, National Building Code of India 2016			
IS code 15883-2: 2013- Construction Project Management – Guidelines			

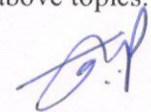
Termwork: Students shall submit journals and at least three geological maps for above Practical work. Also students shall submit three assignments based on the above topics.



Curriculum Coordinator



**Head
Diploma in Civil Engg.**



Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: ADVANCED CONSTRUCTION TECHNIQUES
COURSE CODE	: 171CE65E1

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	C R	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	2	0	5	3	80	32	20	100	40			25**	10	25@	10	150

** - Assessment by Internal & External Examiner. @- Assessment by Internal Examiner.

Course Objectives:

Today the infrastructure development is at its peak and many advance techniques are used for various construction activities. Being civil engineering students are supposed to know the features and utility of various equipments used in construction activities, but it is necessary to have the preliminary knowledge of simple construction techniques before studying advanced techniques.

Course Outcomes:

Student should be able to

CO1	State various techniques and equipments required for construction activities.
CO2	Recognize methods of excavation in rock and earth
CO3	Use various techniques for dewatering the foundation depending upon the soil conditions.
CO4	Apply advanced methods and equipments used for concreting.
CO5	Draft the connections found in structural steel.
CO6	Estimate the owning and operating cost of the equipments used on construction site.



Section I								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
01	1	Excavation in Rock and Earth:	08	12	1 & 2	30%	60%	10%
	1.1	Definitions: Bits, Cuttings, Drifters, Drills (Abrasion, Churn, Core, Diamond, Percussion and shot), Blast hole, explosives, safety fuse and blasting cap.						
	1.2	Brief description of different types of bits (Carbide insert & button) and drills (Jack hammer, drifters, churn drill, shot drill & diamond drill)						
	1.3	Types of Explosives (Dynamite, Slurry, ANFO and Primers), Handling and storage explosives						
	1.4	Introduction of Equipments used for excavation: (Shovel, Hoe, Loader)						
02	2	Dewatering of foundation:	06	10	1 & 3	50%	30%	20%
	2.1	Necessity and Techniques used. - Drains, sumps, pumps, well point system (Single and Multiple).						
03		Scaffolding and shoring:	04	08	1	20%	20%	60%
	3.1	Definition and utility, types of scaffolding according to use for masonry and finishing works.						
	3.2	Types of shoring - Raking, Dead and flying						
04	4	Advancements in Concreting:	06	10	4	40%	30%	30%
	4.1	Concreting in different weather conditions (Hot and cold weather), Methods of Underwater concreting.						
	4.2	Equipments used for concreting: Batchers, Mixer, Batching plant, Builders Hoist.						
		Total of Section I	24	40				
Section II								
05	5	Formwork	06	10	6	20%	30%	50%
	5.1	Formwork for structural members (Columns, Beam and slab)						
	5.2	Advanced methods of Shuttering						
06	6	Structural Steel and Heavy Equipments		18	1 & 5	20%	40%	40%
	6.1	Welding methods (Electric arc welding and oxyacetylene welding), advantages of welding over riveting joint						



	6.2	Cranes: Classification and utility of cranes, Features of major types of mobile and tower cranes, selection criteria for types of cranes.	10					
	6.3	List of construction equipments- bull dozer, road roller, sheep's foot roller.						
07	7	Equipment Cost :	08	12	4	20%	40%	40%
	7.1	Definitions: Salvage value and depreciation.						
	7.2	Cost of owning and operating cost, numerical for calculation of depreciation by straight line method and sinking fund method.						
	Total of Section II		24	40				
	Total of Section I & II		48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Suggested Specification Table

Unit No.	Unit Title	Teaching Hours	Total Marks	R Level	U Level	A Level
1	Excavation in Rock and Earth	08	12	30%	60%	10%
2	Dewatering of foundation	06	10	50%	30%	20%
3	Scaffolding and shoring	04	8	20%	20%	60%
4	Advancements in Concreting	06	10	40%	30%	30%
5	Formwork	06	10	20%	30%	50%
6	Structural Steel and Heavy Equipments	10	18	20%	40%	40%
7	Equipment Cost	08	12	20%	40%	40%
	TOTAL	48	80			

List of Practical's/Assignments/Tutorials

Sr. No	Practical/Assignment	Appro x. Hrs	CO
1.	Submit one site visit report on major equipments used on site from two site visits.	4	1, 2, 3, 4 & 5
2.	20 sketches of types of scaffolding, shoring, formwork for various	10	3, 4 & 5



	structural members, concrete pump, builders hoist, vibrator and various steel member connections.		
3.	Numerical on calculation of depreciation by straight line method and sinking fund	4	6
4.	5 assignments based on syllabus	8	1, 2, 3, 4, 5 & 6
5.	Power point presentation on advanced equipments used for construction activities.	6	1, 2, 3, 4 & 5
	TOTAL	32	

Termwork: Students shall submit journal and sketch book of above exercises.

Learning Resources:

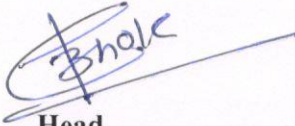
Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	Arora S.P. and Bindra S.P.	Building Construction, Planning Techniques and method of construction	Dhanpat Rai and Sons, edition 1997
2.	Peurifoy, R.L, Ledbetter W.B. and Schexnayder	Construction Planning, Equipments and Methods	McGrawHill, Singapore, 5 th edition

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Dr Mahesh Verma	Construction Equipment and its planning and application	Metropolitan Book Company New Delhi.
2.	Sharma S.C.	Construction Equipment and Management	Khanna Publisher New Delhi.


Curriculum Coordinator


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DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: ADVANCED TRANSPORTATION ENGINEERING
COURSE CODE	: 171CE65E2

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	2	-	5	3	80	32	20	100	40	-	-	25**	10	25@	10	150

** : assessment by External and Internal Examiner, @ : assessment by Internal Examiner

Course Objectives:

1. To study the various components of the Transportation Planning process, their importance and various approaches/ methods/ models to be resorted to for each of these components.
2. To understand the concept of economic evaluation of any of the transportation projects, its significance, various aspects associated with the evaluation; and various methods of economic evaluation.
3. To expose the students to planning and design principles of Airports.

Course Outcomes:

Student should be able to

CO1	Compute the inter-zonal trip generations and trip distributions
CO2	Understand various terms and new systems of MRTS(Mass Rapid Transport System)
CO3	Conduct the economic and financial analysis between different travel modes and suggest most economical and efficient mode
CO4	Analyse the various components of an airport and aircraft characteristics affecting the design of airport
CO5	Point out suitable method of grading and levelling work along with drainage provision for surface and subsurface water flow
CO6	Understand the various air traffic control aid required for safe landing and take-off of aircraft at airport



Course Content:

SECTION-I							
Unit	Topics/Sub-topics	Hours	Marks	C O	R Level	U Level	A Level
1	Transport System Planning: Transport policy, process, and types of surveys. OD matrix. Travel demand forecasting, trip generation, modal split analysis, trip distribution, route assignment analysis, Transport Networks, network flow analysis	06	10	1	20%	50%	30%
2	Urban Transport Technology: Classification, mass and rapid transit system, Introduction to Intelligent Transportation System (ITS), Public Transport policy, intermediate. Introduction to BRT, Mono rail, sky bus, metro projects, grade separated interchanges such as flyovers, underpasses, overpasses, concept of Integrated Inter Model transit system.	09	15	2	40%	40%	20%
3	Transport Economics & Financing: Vehicle operations cost, running cost, pollution cost, value of travel time, road damage cost, congestion cost, accident cost economic evaluation, various economic studies. Transportation plans – Benefit cost method, Net present value method, First year rate of return method, Internal rate of return method & comparison of various methods.	09	15	3	20%	50%	30%



SECTION-II							
Unit	Topics/Sub-topics	Hours	Marks	C O	R Level	U Level	A Level
4	Highway Financing: Pay as you go method, credit financing, private financing, BOT, BOOT, dedicated road funds, road pricing, tolls, private provisions, advantages& limitations.	02	04	3	20%	50%	30%
5	Airport Engineering: 1.Introduction: Development of Air Transport in India, Air craft classification, Aircraft characteristics, Components of Airports and their functions. 2. Airport Planning: Objectives, layout characteristics, socio-economic characteristics of the Catchment area, criteria for airport site selection and ICAO stipulations, Typical airport layouts, Case studies, Parking and circulation area. 3. Airport Layout, Geometrics Runway Design: Orientation, Wind Rose Diagram, Runway length, Problems on basic and Actual Length, Geometric design of runways, Configuration Elements of Taxiway Design, Airport Zones.	11	18	4	30%	40%	30%
6	1.Airport Grading and Drainage: Airport grading, importance, operations, Airport drainage aims, functions, special characteristics, basic requirements, surface and subsurface	11	18	5 , 6	30%	50%	20%

	<p>drainage systems.</p> <p>2.Visual Aids and Air-traffic control: Air traffic control, objectives, control system, control network, visual aids, landing information system, airport markings and lighting, Modern technology in Air Transport, Maintenance of Airport Pavements, Environmental Guidelines for Airport Project</p> <p>3.Heliports: Introduction, Helicopters, Helipads, Planning and Design of Heliports.</p>					
<p>Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).</p>						

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Suggested Specification Table

Unit No.	Unit Title	Teaching Hours	Total Marks	R Level	U Level	A Level
1	Transport System Planning	06	10	20%	50%	30%
2	Urban Transport Technology	09	15	40%	40%	20%
3	Transport Economics & Financing	09	15	20%	50%	30%
4	Highway Financing	02	04	20%	50%	50%
5	Airport planning and Layout	11	18	30%	40%	30%
6	Airport Grading, Drainage and Air Traffic Control	11	18	30%	50%	20%
		48	80			

List of Tutorials:

Tutorial consisting on all of the topics as follow

Sr. No.	Unit	Tutorials	Approx. Hours	CO
1*	1	Transportation Planning process	2	1
2*	1	Trip Generation analysis	2	1
3*	1	Trip distribution	2	1
4	1	Traffic assignment (Route Choice)	2	1
5	2	Intelligent Transportation System (ITS)	2	2
6	2	Integrated Inter Model transit system	2	2
7*	3	Economic evaluation of highway project	4	3
8	4	Highway financing	2	3
9*	5	Airport Layout	2	4
10	6	Airport Drainage	2	5,6
11*	6	Airport Marking and Lighting	2	5,6
12*	6	Modern Technology in Air Transport	2	5.6
13*	2,5,6	Mini Project 1. Case study of METRO and MONO Rail in Mumbai City 2. Case study of any International Airport in India 3. Case study of any International Airport in Abroad	6	2,5,6

*Mandatory Tutorials

Term work:

Term work shall consist record of tutorials.

Text Books:


Sr. No	Author	Title	Publisher and Edition
1	Justo, Khanna and A. Veeraragavan	Highway Engineering	Nem Chand & Bros, Roorkee, India & 10th Edition
2	Khanna and Arora	Airport Planning & Design	Neem Chand Bros Publisher
3	C Venkataramaiah	Transportation Engineering Volume I & II	Universities Press Publications & 1st Edition
4	L.R.Kadiyali and N.B.Lal	Principles and Practices of Highway Engineering	Khanna Publishers ,Delhi-6 & 6th Edition




Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	G Venkatappa Rao	Airport Engineering	Tata McGraw-Hill Publishing Co.Ltd
2	S.P. Bindra	A Course in Highway Engineering	Dhanpat Rai and Sons, Delhi.
3	Pratha Chakroborty and Animesh Das	Principles of Transportation Engineering	PHI Learning Private Ltd.
4	Virendra Kumar and Satish Chandra	Air Transportation Planning and Design	Galgotia Publication , New Delhi
5	Ministry of Road Transport and Highways	Road Development Plan for India 2001-2021,	Indian Roads Congress, New Delhi, 2002.


Curriculum Coordinator


**Head
Diploma in Civil Engg.**


Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: ENGINEERING GEOLOGY
COURSE CODE	: 171CE65E3

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	C R	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	2	0	5	3	80	32	20	100	40			25**	10	25 @	10	150

** - Assessment by Internal & External Examiner. @- Assessment by Internal Examiner.

Course Objectives:

Civil Engineer during construction activities faces variety of practical problems associated with rock and soils. They design and construct structures, transportation facilities, dams, tunnels, and power plant and have to mitigate naturally occurring phenomena such as floods, landslides, and earthquakes. These problems need to be solved using principles of engineering geology to construct durable structure.

Course Outcomes:

Student should be able to

CO1	Compare various rock forming minerals
CO2	Differentiate types of rocks and rock structure
CO3	Select suitable remedial measures for the different rock instability.
CO4	Apply geological concept for civil engineering projects.
CO5	Identify quality of rock as construction materials.



Section I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	C O	R Level	U Level	A Level
01	Introduction:	4	6	1	30%	50%	20%
01	1.1	Branches of geology useful to civil engineering, importance of geological studies in various civil engineering					
	1.2	Different subdivision of geology					
	1.3	Detailed study of physical properties of minerals					
	1.4	Definition of Perfect crystal, crystalline, amorphous					
	1.5	Methods of mineral identification, physical properties of minerals, rock forming minerals, megascopic identification of common primary & secondary minerals, study of common ore minerals - as prescribed under Practicals					
02	Petrology	10	14	2	40%	40%	20%
	2.1	Agents modifying the earth surface. Study of weathering and its effects on engineering properties of rocks.					
	2.2	Igneous Petrology; Definition of rocks, igneous rock, magma and lava, Major subgroups of igneous rocks, Composition, textures, types of textures, structures					
	2.3	Sedimentary Petrology Definition of sediments, sedimentary rocks Grain size distribution of sediments Composition, textures and structure					
	2.4	Metamorphic Petrology: Definition of metamorphism, metamorphic rock. Factors affecting metamorphism, Different kind of metamorphism Composition, textures, structures					
03	Structural Geology	6	10	2	20%	40%	40%
	3.1	Unconformable beds and Conformable beds-Definition Concept of Dip and Strike, Types of Dip and their significance, Outcrop pattern, outliers and inliers.					
	3.2	Fault: Formation, Different terminology involved, types of fault					



	3.3	Fold: Formation , Different component ,types of fold						
	3.4	Joints: Definition, Types of joints						
	3.5	Geological aspects for Earthquake resistant structure						
04		Ground water	4	10	3	40%	60%	
	4.1	Sources & zones, aquifer, aquiclude, aquifuge and water table						
	4.2	Definition of Confined and unconfined & perched aquifers						
		Total of Section I	24	40		130%	190%	80%
Section II								
Unit & Sub-Unit	Topics/Sub-topics		Hours	Marks	C O	R Level	U Level	A Level
05	Rock Instability and Slope movement:		7	14	3	20%	40%	40%
	5.1	Concept of sliding blocks .Types of landslide. causes and preventive measures for landslides						
	5.2	Prevention by surface drainage, slope reinforcement by Rock bolting and Rock anchoring, Retaining wall, Slope treatment						
06	Geology of dam and reservoir site:		7	10	4	20%	40%	40%
	6.1	Required geological consideration for selecting dam and reservoir site Ideal site conditions for dam, geological conditions to be avoided						
	6.2	Precautions to be taken to counteract unsuitable conditions						
07	Tunneling:		5	8	4	20%	40%	40%
	7.1	Ideal site conditions for tunneling, geological conditions to be avoided						
	7.2	Over break, Tunneling in folded rock						
	7.3	Pressure grouting for dams and tunnels,						
08	Rock masses as construction material:		5	8	5	20%	40%	40%
	8.1	Definition of Rock masses. Main features constituting rock mass						
	8.2	Main features affects the quality of rock engineering and design						
	8.3	Measurement of velocity of sound in rock						
	8.4	Classification of Rock material strength.						
	8.5	Core logging, Rock Quality Designation						



	8.6	Common rock as building material.						
		Total of Section II	24	40		80%	160%	160%
		Total of Section I & II	48	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								

List of Practical's/Assignments/Tutorials

Sr.no	Unit	Practical/Assignment	Approx. Hrs	CO
1.	1.5	Study of physical properties of minerals.	2	1
2.	1.5	Identification of minerals a. Silica group: Quartz, Amethyst, Opal b. Feldspar group: Orthoclase, Plagioclase c. Cryptocrystalline group: Jasper d. Carbonate group: Calcite e. Element group: Graphite f. Pyroxene group: Talc g. Mica group: Muscovite h. Amphibole group: Asbestos, Olivine, Hornblende, Magnetite, Hematite, Corundum, Kyanite, Garnet, Galena, Gypsum	10	1
3.	2.2	Identification of rocks(Igneous Petrology) Granite and its varieties, Syenite, Rhyolite, Pumice, a. Obsidian, Scoria, Pegmatite, Volcanic Tuff. b. Gabbro, Dolerite, Basalt and its varieties, Trachyte.	8	2
4.	2.3	Identification of rocks(Sedimentary Petrology): Conglomerate, Breccia, Sandstone and its varieties , Laterite, Limestone and its varieties, Shales and its varieties	4	2
5.	2.4	Identification of rocks(Metamorphic Petrology) : Marble, slate, Gneiss and its varieties, Schist and its varieties, Quartzite, Phyllite	4	2
6.	8.6	Mini Project: Study of different building stone from various formation in Indian peninsula,	4	5

* Minimum 8 and maximum 12 practical's/experiment sessions to be included in a course in a term

Termwork: Students shall submit journals and at least three geological maps for above Practical work. Also students shall submit three assignments based on the above topics.



SUGGESTED SPECIFICATION TABLE WITH HOURS (Theory)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction	4	30%	50%	20%	6
II	Petrology	10	40%	40%	20%	14
III	Structural Geology	6	20%	40%	40%	10
IV	Ground water	4	40%	60%		10
V	Rock Instability and Slope movement	7	20%	40%	40%	14
VI	Geology of dam and reservoir site	7	20%	40%	40%	10
VII	Tunneling	5	20%	40%	40%	8
VIII	Rock masses as construction material	5	20%	40%	40%	8
	Total	48				80

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

Learning Resources:

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	Dr. R.B. Gupte	Text Book of Engineering Geology	Revised edition 2005, Publisher Pune Vidyarthi Griha
2.	Parbin Singh	Text Book of Engineering and General Geology	S.K.Kataria & Sons
3.	Kesavalu	Text Book of Engineering Geology	MacMilan
4.	P.K.Mukherjee	A Textbook of Geology	11 th Edition, Publisher World Press

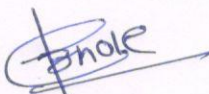


Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Emmons, Thiel, Stauffer, Allison	Geology Principle and Processes	McGraw-Hill Book Company, Inc.
2.	J.C.Harvey	Geology For Geotechnical Engineers	CambridgeUniversity Press
3.	F.G.H.Blyth,	Geology for Engineers	Publisher Edward Arnold & Co.
4.	Rober R. Compton	Manual of Field Geology	by Edition 1968, Wiley Eastern University



Curriculum Coordinator



**Head
Diploma in Civil Engg.**



Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN CIVILENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: ADVANCE THEORY OF STRUCTURES.
COURSE CODE	: 171SE65E4

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	2		5	3	80	32	20	100	40	-	-	25**	10	25@	10	150

** - Assessment by Internal & External Examiner. @- Assessment by Internal Examiner.

Course Objectives:

Being in the final year of their diplomacourse, it's time to give students those having interest in the field of Structural Engineering which cannot be separated from the principles of dynamics- to take care of earthquake forces and machine foundations, knowledge of principles of dynamics and few more methods of analysis of indeterminate structures. In addition, this course also covers analysis of rigid joint determinate frames which prepare students for the analysis of indeterminate frames during their under graduation. Thus this course provides a very strong foundation / prerequisite for the final year students to learn analysis and design of multistoried earthquake resistant structures during their undergraduate course.

Course Outcomes: Student should be able to

CO1	Calculate slopes and deflections of various types of determinate frames with rigid joints.
CO2	Analyze determinate rigid joint frames and indeterminate propped cantilevers and continuous beams.
CO3	Apply principles of dynamics – kinematics & kinetics and work energy principle to simple engineering problems.

Syllabus

Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R	U	A
1	Analysis Of Determinate Frames With Rigid Joints: SFD, AFD and BMD of determinate frames with rigid joints.	09	15	2	20	40	40
2	Deflection of Frames with rigid	06	10	1	20	30	50



		joints. Unit load Method						
3		Slope Deflection Method: Analysis - SFD and BMD of propped cantilever and continuous beams with and without overhang. by slope deflection method	09	15	1	20	40	40
		TOTAL OF SECTION I	24	40				
SECTION-II								
Unit & Sub-Unit		Topics/Sub-topics	H	M	CO	R	U	A
4		Projectile: Review of rectilinear motion, Motion of projectile, Time of flight, Maximum height and horizontal range, relation between angle of projection and range, maximum horizontal range.	6	10	3	30	30	40
5		Angular Motion: Definition, Angular displacement, Angular velocity, Angular acceleration, Tangential and Radial components equations of circular motion, Relation between rectilinear and circular motion super elevation.	9	15	3	40	35	25
6		Work, Power and Energy: Definition of terms, form of energy, law of conservation of energy, Relation between force, mass & acceleration and its application.	9	15	3	25	40	35
		TOTAL OF SECTION II	24	40				
Numerical problems will be asked in the examinations.								
		TOTAL OF SECTION I and II	48	80				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified

Unit	Hours	Marks	CO	R Level	U Level	A Level
1	9	15	2	20	40	40
2	6	12	1	20	30	50
3	9	15	2	20	40	40

4	6	12	3	30	30	40
5	9	15	3	40	35	25
6	9	15	3	25	40	35

Term Work:

Tutorial consisting of minimum 5 numerical on all of the topics as follows:

Unit & Sub-Unit	Topics/Sub-topics	Hours	CO
01	Analysis Of Determinate Frames With Rigid Joints	2	2
02	Deflection of Frames with rigid joints. Unil load Method	2	1
03	Slope Deflection Method	2	1
04	Projectile	2	3
05	Angular Motion	2	3
06	Work, Power and Energy	2	3

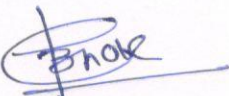
Text Books:


Sr. No.	Author	Title	Publisher and Edition
1	S. Ramamrutham	Theory Of Structures.	8 th Edition Reprint 2008, Publisher Dhanpat Rai and Sons.
2	S. B. Junnarkar	Mechanics of structures	21 th Edition 2010, Charotar Publishing. House

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	V.N. Vazirani & M. M. Ratwani.	Analysis of structures Vol II	Edition 2003, Khanna Publishers.
2	C.S.Reddy.	Basic Structural Analysis.	2 nd Edition, 16 th Reprint 2007, McGraw-Hill
3	Web site	NPTEL videos and websites http://nptel.ac.in/courses/	IIT, Delhi and Chennai.


Curriculum Coordinator


Head
Diploma in Civil Engg


Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: PROJECT-II
COURSE CODE	: 171CE66

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
-	-	6	6	-	-	-	-	-	-	-	-	50**	20	100@	20	150

** : assessment by External and Internal Examiner, @ : assessment by Internal Examiner

Course Objectives:

The students passing this course should have concept to solve a specific problem from its identification and literature review till the successful solution of the same. Accordingly suitable projects will be taken by the students to study the complete aspects of a project. The project activities will provide students the exposure to handle real world life problems and their solutions.

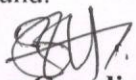
Course Outcomes:


Student should be able to

CO1	Review and evaluate the available literature on the identified problem
CO2	Apply the principles, tool and techniques to solve the identified problem
CO3	Analyze data to produce useful information and to draw conclusions by systematic deduction
CO4	Communicate results, concepts, analyses and ideas in written and oral form
CO5	Develop a range of leadership skills and abilities such as effectively leading change, resolving conflict

Course Content:

The students in a group of 4 to 5 work on a topic related to civil engineering, approved by the head of the department under the guidance of a faculty member. It is mandatory to present and submit final report based on work done. The project work shall be in continuation of semester Vth. The report shall contain literature survey, objectives, methodology, analysis results & conclusion of the work. The project shall be typed or printed in standard format with hard bound.


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DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: VI
COURSE TITLE	: CONSTRUCTION ENTERPRENEURSHIP
COURSE CODE	: 171CE67

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	C R	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
2	1	0	3									25**	10	25@	10	50

** Assessment by External and Internal Examiner @ Assessment by Internal Examiner

Course Objectives:

Engineers can play very important role in economic development of the nation and wealth creation by innovation and entrepreneurship. This course aims to develop among the engineering students' awareness and abilities to be entrepreneurs.

Course Outcomes:

Student should be able to

CO1	Identify the different business opportunity in civil engineering career.
CO2	Apply standard code of practices, by-laws, regulations, norms for different forms of business in civil engineering projects.
CO3	Adopt suitable Business Plan for Financial Development
CO4	Make use of project economics & methods of valuation of business.
CO5	Identify risks in running the projects.

Unit &	Topics/Sub-topics	Hour	CO	R	U	A
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Sub-Unit		s		Level	Level	Level	
01		3	1	40%	60%		
01	1.1	Projects, Unique features of construction, Project participants, method of project execution.					
02		8	1,2	40%	60%		
	2.1	Need & importance of an organization					
	2.2	Forms or types of ownership / business organization					
	2.3	Features, advantages & disadvantages of various types of business enterprise.					
	2.4	Importance of government policies / regulations to business owner.					
	2.5	New Industrial Policy (latest)					
	2.6	Regulations affecting business – business registration, licensing requirements, Gross Sales Tax, income tax, labor legislation, local legal requirements.					
	2.7	Introduction of importance law related to construction industry: Factory Act, Minimum Wages Act, Workmen's Compensation Act , Contract labor Act					
03		3	5	40%	60%		
	3.1	Risks in running business.					
	3.2	Risks in construction.					
	3.3	Types of Insurance in construction, Adoption of Insurance to mitigate the risk in business.					
04		6	4	40%	60%		
	4.1	Fundamental concepts- demand & supply , cost & revenue,					
	4.2	Price & income, consumer behavior demand, elasticity of demand, demand forecasting.					
	4.3	Cost aspects, cost volume - Net Present Value, Payback, profit analysis, break even analysis and its applications to decision making.					
	4.4	Engineering economics – equivalence, value of time, annual equivalence cost, Market conditions, technological considerations under competitive economical & global business environment. Market structure and					



		Pricing output.					
05		Entrepreneurship	12	1,3,4	30%	30%	40%
	5.1	Qualities of entrepreneurship, strength, weaknesses, opportunities, threats, analysis of an organization, live examples of challenges faced by entrepreneurs.					
	5.2	Business Plan-					
	5.2.1	Necessity of good business plan, benefits of a business plan.					
	5.2.2	Phases of business plan -					
	5.2.3	Phase I- data collection & Analysis					
	5.2.4	Phase II- strategy formulation					
	5.2.5	Phase III- forecasting results					
	5.3	Business Plan Format-					
	5.3.1	Part I – Business Concept - description of the business venture, business goals, marketing plan, sales forecast, production plan, corporate structure, risk assessment, action plan.					
	5.3.2	Part II- Financial Plan – financial statements, financial forecasts, financing and capitalization, operating plan, present financing, references, appendix.					
	5.4	Approaching lenders, attracting investors.					
	5.5	Development of a business plan for setting a construction company.					
	5.6	Valuation of a enterprise / business					
	5.6.1	Methods of valuations of a business					
	5.6.2	Successor					
	5.6.3	Negotiating considerations					
	5.6.4	Exchange of shares.					
		Total	32				

List of Practicals/Assignments/Tutorials

Sr. no	Unit	Practical/Assignment	Appro x. Hrs	CO
1.	5	*Report Writing on Live examples of challenges faced by entrepreneurs.	4	1,2,5



2.	5	*Presentation on Interaction with Government Sector /Construction Entrepreneur	4	1,2,5
3.	2	Government policies / regulations to business owner.	2	2
4.	2	*Roles and Responsibilities of stakeholders of project	2	1
5.	4	*Types of Insurance and its application in construction Industry with suitable examples	2	4
6.	5	Entrepreneurship: Market segmentation Strategy	2	3
7.	5	*Start-Up India : Action plan and Implementation	4	1
8.	3	Identifying Business Risks	4	5
Visit to any construction contracting firm's /office to study organization structure and other business practices.				
Total			16	

* Mandatory Practicals/Assignments/Tutorials

Termwork: Students shall submit journals for above topic by doing group presentation/ case study. Also students shall submit site visit report.

Learning Resources:

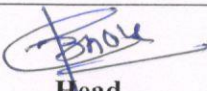
Text Books

Sr. No.	Author	Title	Publisher and Edition
1.	Khanna S.S	Entrepreneurial Development	Publisher S. Chand, 1999 edition, 2006 Reprint.
2.	Jha K.N	Construction Project Management	Publisher Pearson, 2011
3.	Colombo Plan Staff College for Technician Education	Entrepreneurship Development	Publisher Tata McGraw -Hill ,1 st reprint 1999
4.	Ryasri, A Ramana Murthy	Engineering Economics and financial accounting (ASCENT SERIES	A, V. V. Publisher Tata McGraw Hill

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Colin Barrow, Robert Brown and Liz Clarke	The successful Entrepreneur's Guidebook	Publisher Kogan page India.


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Diploma in Civil Engg.


Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN CIVIL ENGINEERING
PROGRAMME CODE	: DCE
SEMESTER	: SIXTH
COURSE TITLE	: INDUSTRY INSTITUTE INTERACTION-II
COURSE CODE	: 171CE68

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IS T	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
0	0	2													#	

- For Non credit course grades A-D to be mentioned in the mark-sheet based on the Continuous Assessment.

Course Objectives:

Technical education forms the backbone of development of any nation. The journey of cooperation between Industry and Institute has taken different forms at different times. Historically it started with simple interaction and gradually evolved to very close partnership overtime. India has one of the largest technical manpower in the world. But compared to its population, it is not significant and there is a tremendous scope of improvement in this area. Bridging the skill gap is the need of the day and decides the national development and economic growth.

It spells out the need for better interaction between educational institutes and industries which may help to bring in the students understanding the course content in a better way. Students will understand the engineering in a better way.

Course Outcomes:

After completion of the course the student / faculty will be able to

CO1	Participate in national / state level technical paper, project & quiz competition.
CO2	Enhance Industry Institution Interaction.
CO3	Learn the state of the global technology and process to add to their core technological foundation by industry expert lectures.
CO4	Keep them abreast of the scenario prevailing in their field of study.

Course Content:

Unit & Sub-Unit	Topics/Sub-topics	Hours	CO	R Level	U Level	A Level
1	Industry Liaison: Preparing / updating a comprehensive directory of technology experts in different fields of expertise and know-how and forging continuing links	20	1,2 ,3, 4	40	40	20



	with them through various means of involvement like <ul style="list-style-type: none"> • talks, • guest lectures, • research collaboration, • students project guidance, • seminars , • videos of various technical projects etc. 					
2	Industrial Visits /Technical Exhibitions: Encourage the students to visit <ul style="list-style-type: none"> • wide range of industries • Technical exhibitions, (to keep them abreast of the scenario prevailing in their field of study. 	12	1, 2, 3& 4	40	40	20


Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)


Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Assignments	Approx. Hours	CO
1.	1	Industry Liaison: Students will prepare the report of the activity in a group of 8-10 students.	20	1,2,3,4
2.	2	Industrial Visits /Technical Exhibitions: Students will prepare the report of the activity in a group of 8-10 students.	12	1,2,3,4
		Students will submit report of 1&2 mentioned above as a Term Work.		


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