Priyadarshini J. L. College of Engineering
Affiliated to RTM Nagpur University Nagpur
Scheme of Teaching, Examination and Evaluation
Civil Engineering for B-Tech Programe

Scheme Name :- CEBTECH-23/R0 **Seventh Semester**

Sr. No.	Course Category	Course Code	Course Title	Teaching Scheme (Clock Hours/ Week)			Credits	Maximum Marks			Minimum Marks			End Semester Exam Duration (Hrs)
				L	T	P		Continuous Evaluation	End Semester Exam	Total Marks	Continuous Evaluation	End Semester Exam	Total Marks	
1	PCC	CE701T	Estimation and Costing	3	0	0	3	40	60	100	---	15	45	4
2	PCC	CE701P	Estimation and Costing Lab	0	0	2	1	25	25	50	---		25	---
3	PCC	CE702T	Irrigation Engineering	3	0	0	3	40	60	100	---	15	45	3
4	PCC	CE703T	Construction Methods and Equipment Management	3	0	0	3	40	60	100	---	15	45	3
5	PEC	CEE704T	Elective - III	3	0	0	3	40	60	100	---	15	45	3
6	PEC	CEE705T	Elective - IV	3	0	0	3	40	60	100	---	15	45	3
7	P	CEP707P	Industrial Case Study and Project Phase I	0	0	8	4	50	50	100	---		50	
8	HSMC	HUT706	Indian Knowledge System (Audit Course)	2	0	0	0	50			---		23	
			Total =	17	0	10	20	325	375	650	---	---	---	---

Abbreviations:- L- Lecture, T- Tutorial, P- Practical

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY, SEMESTER VII

COURSE : ESTIMATING AND COSTING **COURSE CODE: CE701T**

Hours/ Week	Credits	Duration of End Sem Exam	Continous Evaluation	End Sem Exam	Total Marks
3 Hrs	3	4 Hrs	40	60	100

Course Objectives:

1.	To differentiate the types of Estimation, adopt specification and Unit Rates
2.	To analyse rates for different items of works.
3.	To interpret the drawings and estimate the quantities of various items in civil engineering structures.
4.	To understand departmental procedures and Take measurement of completed work
5.	To understand different techniques of preliminary & detailed estimation of buildings and roads.

Course Outcomes:

After completion of the course, the student will be able to

CO1	Prepare the preliminary estimate of buildings, and write specifications
CO2	Prepare the detail estimate of buildings, roads and canals
CO3	Analyse the Rates of various items to estimating cost of material & manpower.
CO4	Understand the process of Tender and Contract.
CO5	Analyse the rent and Valuation of structures, Machineries etc.

SYLLABUS:

UNIT I	**(7 Hours) (12 Marks)**
INTRODUCTION **Introduction**: Importance and purpose of the subject, Units of measurement as per IS 1200. Items of work and Description of items of work. Administrative approvals, technical sanction, preliminary estimates. Objectives, and its methods **Specifications**: IS 1200 Introduction, Purpose and principles of specifications writing, Types of specifications, writing and developing.	
UNIT II	**(8 Hours) (12 Marks)**
DETAILED ESTIMATE Detailed estimates, objects, importance, accuracy. Methods of detailed estimates, Detailed estimates of load bearing and framed structures. Calculation of reinforcing steel with Bar bending Schedule. **Earthwork:** Calculation of Earthwork estimates in road, hill roads and canals, methods of consumptions of earthwork.	
UNIT III	**(7 Hours) (12 Marks)**
RATE ANALYSIS Introduction, Purpose and principles of CSR, Factors affecting analysis of rates, labour guidelines from National Building Organization, Task work. Market rates of materials and labour, Rate analysis of major items of work	
UNIT IV	**(7 Hours) (12 Marks)**
TENDERS AND CONTRACTS Method of carrying out works, tender notice, acceptance of tender, essentials of contract, type of contracts, contract documents, land acquisition act, Legal aspects of various contract provisions, Arbitration. Public work department procedure of work: Organisation of Engineering department, Methods of carrying out works, stores, Tools and plants, Mode of payment, Public work account, Power of sanctions	
UNIT V	**(7 Hours) (12 Marks)**
VALUATION Purpose of valuation, Factors affecting property price and cost, Types of Value. Real Estate, Tenure of land, Free hold and lease hold, sinking fund, Depreciation, and its methods, Capitalized value, Methods of valuation, Net & Gross income, Rent fixation.	

List of Books:

Text books:

1. Estimating and Costing By B. N. Dutta
2. Estimating and Costing By Chakraborty
3. Valuation by Roshan Namavati

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SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY,

SEMESTER VII

COURSE : ESTIMATING AND COSTING **COURSE CODE: CE701P**

Hours/ Week	Credits	Continuous Evaluation	End Sem Exam	Total Marks
2 Hrs	1	25	25	50

1) The practicals are based on theory subject of advanced concrete structure and CO's.

2) Minimum 08 practicals, from the list given below shall be performed:

3) Any one practical may be performed using virtual lab/Software Program.

List of Experiments

1. Preliminary estimate using Plinth area method.
2. Draft Detailed specification for 8 major items.
3. Detailed estimate of Load bearing structure.
4. Detailed estimate of Frame structure.
5. Calculation of steel with Bar bending Schedule.
6. Detailed estimate of earthwork of road for Approximate 1km length.
7. Analysis the unit rate of 8 major items of work contained.
8. Market survey for material and labour rates for various items.
9. Collection of four different types of Tenders.
10. Calculation of annual and total Depreciation and book value of the end of each year.
11. Fixation of standard rent of property.

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

SEMESTER VII

COURSE :- IRRIGATION ENGINEERING **COURSE CODE: CE702T**

Hours/ Week	Credits	Duration of End Sem Exam	Continuous Evaluation	End Sem Exam	Total Marks
3 Hrs	3	3 Hrs	40	60	100

Course Objectives:

1.	To know Necessity and water requirement of crops.
2.	To get the knowledge of reservoirs and earthen dams
3.	To know about the forces and design of dams with use and importance of spillways
4.	To study diversion head works in irrigation.
5.	To design the canal with various methods

Course Outcomes:

After completion of the course, the student will be able to

CO1	Identify, describe and explain the necessity and scope of irrigation engineering.
CO2	Summarize the reservoir schemes, its components and design the basic component of earthen dam.
CO3	Application of knowledge to design the gravity dam as well as spillways.
CO4	Use the basic knowledge distribution system and cross drainage works.
CO5	Apply knowledge of various methods for design of various components of canals.

M.G.P.

R.H. Mohankar R.S. Bute Y.D. Chitare M.D. Pidurkar

SYLLABUS:

UNIT I **(7 Hours) (12 Marks)**
Introduction : Necessity ,Importance, Benefits and ill effects of Irrigation; Classification of Irrigation schemes; General principles of flow, lift, perennial, inundation Irrigation systems; Comparative study of sprinkler and drip Irrigation systems. **Water Requirement of Crops :** Suitability of soils for Irrigation, Standards of Irrigation water; PET-R method of crop water requirements; Depth & frequency of Irrigation; Command area classification, Relation between duty and delta; Factors affecting duty; Principal crops in India; Crop rotation; Methods of assessment of Irrigation water.
UNIT II **(7 Hours) (12 Marks)**
Reservoir: Types, Investigations, Site selection, Zones of storage, Safe yield, Reservoir storage capacity, Reservoir sedimentation and control. **Earthen Dams:** Types of dams, Earth and rock-fill dams, typical sections of earth and rock-fill dams Analysis and design of earthen embankments, seepage control in earth dams
UNIT III **(7 Hours) (12 Marks)**
Gravity Dam: Definition; forces acting on gravity dam; stability requirements; Theoretical and practical profile of gravity dam;Low & High dam;Galleries. **Spillways :** Types of spillway, design principles of Ogee spillway; Spillway gates – vertical lift, radial,rolling and drum; Energy dissipation methods on downstream of spillways.
UNIT IV **(7 Hours) (12 Marks)**
Diversion Head Works : Component parts of diversion head works; Causes of failure of weirs on permeable foundation; Bligh's Creep theory; Dr. Khosla's theory for design of weirs on permeable foundations. **Cross Drainage Works :** Theoretical aspects of location, objects, classification, components and schematic section of aqueducts, siphon aqueducts, super passage, canal siphon, inlets and level crossings. **Water Logging and Land Drainage :** Causes, effects, preventive measures of water logging, Types of drains, Layout of tile drains system, flow of ground water to drains.
UNIT V **(8 Hours) (12 Marks)**
Canals: Types of canal; Alignments of canal; Cross section of Irrigation canals; Balancing depth; Losses in canals. **Canals in Alluvial Soils :** Kennedy's silt theory– Design procedure, silt supporting capacity, drawbacks; Lacey's silt theory - Definition of initial, final and permanent regime channels, Lacey's Regime equation, channel design procedure, drawbacks; **Lined Canals :** Design procedure, types of lining, relative merits and demerits of canal lining, Economics of canal lining

LIST OF BOOKS:

TEXT BOOKS:

1. Irrigation Engineering and Hydraulic Structures, Santosh Kumar Garg, Khanna Publishers.
2. Irrigation Engineering and water Power Engineering, B.C.Punmia, LaxmiPublications.
3. Engineering and Hydraulic Structures, K. R. Arora, Standard Publishers.
4. Irrigation Engineering and Hydraulic Structures, R.K. Sharma, S.Chand Publications.
5. Irrigation Engineering, P.N.Modi, Standard Publishers.

REFERENCE BOOKS:

1. Irrigation and Water Resources Engineering, G.L.Asawa , New Age International Publishers.

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY,

SEMESTER VII

COURSE :-CONSTRUCTION METHOD AND EQUIPMENT MANAGEMENT

COURSE CODE: CE703T

Hours/ Week	Credits	Duration of End Sem Exam	Continous Evaluation	End Sem Exam	Total Marks
3 Hrs	3	3 Hrs	40	60	100

Course Objectives:

1.	To have knowledge about construction industry and construction projects.
2.	To know about project organization.
3.	To understand construction planning methods.
4.	To understand construction labour and equipment management.
5.	To have knowledge about construction materials management

Course Outcomes:

After completion of the course, the student will be able to

CO1	Have the knowledge about construction industry and construction projects.
CO2	Show the knowledge about project organization.
CO3	Exibit the knowledge about construction planning methods.
CO4	Explain about construction, labour and equipment management.
CO5	Have knowledge about construction materials management.

SYLLABUS:

UNIT I	**(8 Hours) (12 Marks)**
Introduction - Importance of construction industry, Types of Construction, Selection of Professional Services, Construction Contractors, Legal and Regulatory Requirements, Role and responsibility of project Manager, Role of PMC (Project Management Consultants) on major projects. Various construction equipments with its advantages, disadvantages and its use, Phases of a construction project, participants or stakeholders of a construction project.	
UNIT II	**(7 Hours) (12 Marks)**
Construction company, forms of business organization, structure of construction organization, organizing for project management, management levels, traits of a project manager, ethical conduct for engineers, factors behind the success of a construction organization	
UNIT III	**(7 Hours) (12 Marks)**
Work break down structure, Planning Techniques- terminologies used, bar charts, Milestone charts, preparation of network diagrams, Activity cost and time estimation in PERT and CPM techniques, Line of Balance Technique, network technique advantages, Precedence Network Analysis, software's in Construction scheduling (MSP, Primavera)	
UNIT IV	**(7 Hours) (12 Marks)**
Need for legislation, Acts regarding fixing terms of employment, Acts regarding providing proper working conditions. Acts regarding social security, need for mechanization, financial aspects of construction plants and equipments. factors affecting selection of construction equipments, planning of construction equipments, factors affecting the cost of owning and operating the construction equipments.	
UNIT V	**(7 Hours) (12 Marks)**
Importance of material management and its role in construction industry, material management functions, Material procurement process in construction organization, inventory management. inventory related costs, functions of inventory, ABC analysis, Integrated approach to materials management, Role of material manager	

List of Books:

Text Books:

1. Scheduling Construction Projects by John Wiley & Sons, Willis, E. M
2. Civil Engineering Contracts and Estimates by B. S. Patil, Universities Press
3. The Indian Contract Act (9 of 1872), 1872- Bare Act- 2006 edition.

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE -III

SEMESTER VII

COURSE:- PRESTRESSED CONCRETE **COURSE CODE: CEE704TA**

Hours/ Week	Credits	Duration of End Sem Exam	Continuous Evaluation	End Sem Exam	Total Marks
3Hrs.	3	03 Hrs.	40	60	100

Course Objectives:

1.	To familiarize the students with concept of pre-stressed concrete.
2.	To impart knowledge to design pre-stressed concrete structures.

Course Outcomes:

After completion of the course, the student will be able to

CO1	Understand the behaviour of pre-stressed concrete.
CO2	Design of the pre-stressed concrete structures.
CO3	Understand the knowledge of basic theories and fundamental behaviour of prestress concrete
CO4	Perform the analysis and design of pre-stress elements.
CO5	Apply the fundamental knowledge to the solution of practical problems.

SYLLABUS

UNIT I	**(7 Hours) (12 Marks)**
Partial pre-stressing, Analysis and design of End Blocks as per IS 1343 Method. (Only comparative study with the other methods is expected) Use of un-tensioned reinforcement. Types of pre-stressed concrete structures - Type – I, II, and III. Effect of post-tensioning on axial Compression and tension members	
UNIT II	**(8 Hours) (12 Marks)**
Design of pre-stressed concrete rectangular beam and one way slab by Limit state method, cable profile, Limiting zone of cable profile. Deflection of pre-stressed concrete beams (short-term, and long term) Shear and Torsional resistance of the pre-stressed concrete members, principal tension. Behavior of unbounded and bonded pre-stressed concrete beams	
UNIT III	**(7 Hours) (12 Marks)**
Composite construction of pre-stressed concrete structures and in-situ concrete, Differential shrinkage, deflection, flexural strength, serviceability (Limit state) of the composite sections. Introduction to application of pre-stressing to continuous beams, primary and secondary moment, Linear transformation and concordant cables	
UNIT IV	**(7 Hours) (12 Marks)**
Flexibility Influence coefficient, Analysis of single-storey, single-bay fixed portal frame. Analysis and design of circular water tank, fixed, hinged, use of (IS-3370-2021)	
UNIT V	**(7 Hours) (12 Marks)**
Design of pre-stressed concrete poles, Special problems in pre-stressed concrete structures like corrosion, fatigue, dynamic behavior of prestressed concrete beams, behavior of pre-stressed concrete structures under fire.	

List of Books:

Text Books

1 Pre-stressed Concrete by Dr, N. Krishna Raju

2 Pre-stressed Concrete by Dr. TY Lin

3 Pre-stressed Concrete by N. Rajgopalan, Narosa Publishing House, Mumbai, Ed. II- 2007.

4 Pre-stressed Concrete Design & Construction- Leonhardt F. Ernst Wilhelm and Sohen,

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PROGRAM ELECTIVE COURSE -III

SEMESTER VII

COURSE:- REPAIRS & REHABILITATION OF CIVIL ENGINEERING STRUCTURES

COURSE CODE: CEE704TB

Hours/ Week	Credits	Duration of End Sem Exam	Continuous Evaluation	End Sem Exam	Total Marks
TH- 3Hrs.	3	03 Hrs.	40	60	100

Course Objectives:

1.	To Familiarize Students with deterioration of concrete in structures
2.	To Equip student with concepts of NDT and its evaluation
3.	To Understand failures and causes for failures in structures
4.	To get Familiarized with different materials used for repairs of structures.
5.	To Understand procedure to carryout physical Investigation of structure and its repair Techniques.

Course Outcomes:

After completion of the course, the student will be able to

CO1	Explain deterioration of concrete in structures
CO2	Carryout analysis using NDT and evaluate structures
CO3	Assess failures and causes of failures in structures.
CO4	Identify and Assess different materials used for repairs and rehabilitation of structures.
CO5	Carryout physical investigation of structure and assess various repair Techniques.

M.G.P. Y.D. Chitawar R.H. Mohankar M.D Pidurkar R.S. Bute O.V. Kapate

SYLLABUS

UNIT I	(7 Hours) (12 Marks)
Deterioration of Concrete in Structures Physical processes of deterioration like Freezing and Thawing, Wetting and Drying, Abrasion, Erosion, Pitting, Chemical processes like Carbonation, Chloride ingress, Corrosion,Alkali aggregate reaction, Sulphate attack Acid attack,Cracks: Cracks in concrete, type, pattern, measurement & preventive measures.	
UNIT II	**(7 Hours) (12 Marks)**
Non Destructive Testing Nondestructive test methods for concrete including Rebound hammer, Ultrasonic pulse velocity, Rebar locator, Corrosion meter, Penetration resistance and Pull out test, Core cutting. Corrosion: Methods for corrosion measurement and assessment including half-cell potential and resistivity, Mapping of data.	
UNIT III	**(7 Hours) (12 Marks)**
Failure of buildings Definition of building, failure- types of failures, Causes of Failures- Faulty Design, Accidental over Loading, Poor quality of material and Poor Construction practices, Fire damage - Methodology for investigation of failures, diagnostic testing methods and equipments, repair of cracks in concrete.	
UNIT IV	**(7 Hours) (12 Marks)**
Materials for Repair and Rehabilitation Various repair materials, Criteria for material selection, Health and safety precautions for handling and applications of repair materials,Admixtures- types of admixtures, purposes of using admixtures, chemical composition, Natural admixtures- Fibres, wraps, Glass and Carbon fibre wraps, Steel Plates, Concrete behavior under corrosion, disintegrated mechanisms, moisture effects and thermal effects.	
UNIT V	**(8 Hours) (12 Marks)**
Investigation of Structures & Repair Techniques Visual investigation:Distress, observation and preliminary test methods. Case studies: related to rehabilitation of bridge piers, dams, canals, heritage structures, corrosion and erosion damaged structures. Repair Techniques: Grouting, Jacketing, Shotcreting,Acoustical emission methods , Corrosion activity measurement,Ultrasound pulse velocity methods - Pull out tests, externally bonded plates, Nailing,Underpinning and under water repair Materials, Equipments, Precautions and Processes.	

of Books:

Text Books:

1. Maintenance & Repair of Civil Structures : B.L. Gupta & Amit Gupta
2. Rehabilitation of Concrete Structures : B. Vidivelli , Standard Publishers

Reference Book:

1. Concrete repair and maintenance Illustrated: Peter.H.Emmons, Galgotia publications Pvt. Ltd., 2001.
2. Repair and protection of concrete structures: Noel P.Mailvaganam, CRC Press, 1991.

R. H. Mohankar

M G P

M D Pidurkar

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PROGRAM ELECTIVE COURSE-III

SEMESTER VII

COURSE :- GEOTECHNICAL ENGINEERING-II **COURSE CODE: CEE704TC**

Hours/ Week	Credits	Duration of End Sem Exam	Continous Evaluation	End Sem Exam	Total Marks
3 Hrs	3	3 Hrs	40	60	100

Course Objectives:

1.	To know the importance shear strength and stresses of soil.
2.	To impart knowledge about soil samples and ground exploration and its codal provision.
3.	To understand the the findings of earth pressure theory with its importance.
4.	To learn the basics of stability in slopes in foundation.
5.	To get information about ground improvement techniques

Course Outcomes:

After completion of the course, the student will be able to

CO1	Analyze and calculate various stresses, shear Strength distribution, seepage losses.
CO2	Plan the Geotechnical exploration program for major civil engineering structure.
CO3	Predict the earth pressure on the resisting structures.
CO4	Analyze the stability of slopes and solve the field problems.
CO5	Use appropriate ground improvement techniques in required projects

MGP Y.D. Chatarey R.H. Mohankar M.D. Pidurkar R.S. Bute O.V. Sapate

SYLLABUS:

UNIT I	**(7 Hours) (12 Marks)**
SHEAR STRENGTH AND STRESS DISTRIBUTION Introduction, Mohr Coulomb's theory, Drainage condition. Measurement of shear strength by direct shear test, tri-axial test, unconfined compression test. Vane shear test, sensitivity. Shear strength of clay's and sands. Stress distribution in soil mass, Boussinesq's theory, point load, uniformly Loaded rectangular & circular areas, Newmark's influence chart, Equivalent point load method	
UNIT II	**(8 Hours) (12 Marks)**
GEOTECHNICAL EXPLORATION Principle methods of subsurface exploration, geophysical methods, open pits and shafts, types of boring, location and depth of boring for different structures, types of soil samples and samplers. Collection & shipments of samples, plotting of bore log and sampling record. Standard penetration test, corrections for field N- values & correlations for obtained design soil parameters,pressure meter test.	
UNIT III	**(7 Hours) (12 Marks)**
LATERAL EARTH PRESSURE Earth pressure at rest, active and passive pressure, general & local states of plastic equilibrium in soil. Rankine's and Coulomb's theories of earth pressure, Effects of surcharge, submergence. Graphical construction by Culmann and Rebhans methods for simple cases of wall- soil system for active pressure condition. Concept of reinforced earth retaining wall.	
UNIT IV	**(7 Hours) (12 Marks)**
STABILITY OF SLOPES Causes and types of slope failure, stability analysis of infinite slopes and finite slopes, center of critical slip circle, slices method and friction circle. Slopes with pore pressure consideration. Taylor's stability numbers & stability charts, method of improving stability of slopes, types, selection and design of graded filter, concept of soil nailing.	
UNIT V	**(7 Hours) (12 Marks)**
GROUND IMPROVEMENT Introduction to different methods of ground improvement.	

List of Books:

Text Books:

1. Soil Mechanics &Foundation Engg, B.C.Punmia
2. Soil Mechanics &Foundation Engg, K.R. Arora
3. Soil Mechanics &Foundation Engg, Dr. P.N. Modi
4. Soil Mechanics &Foundation Engg, V.N.S. Murthy

References:

1. Das, B.M. (2008). Advanced Soil Mechanics. Taylor and Fracis Group, London, Second edition.
2. Powrie, W. (2002). Soil Mechanics concepts and applications. Spon Press, Taylor and Fracis Group, London, Second edition.
3. Terzaghi, K., Peck, R.B. and Mesri, G. (1996). Soil Mechanics in Engineering Practice.

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE - IV

SEMESTER VII

COURSE:- ADVANCED REINFORCED CEMENT CONCRETE DESIGN

COURSE CODE: CEE705TA

Hours/ Week	Credits	Duration of End Sem Exam	Continuous Evaluation	End Sem Exam	Total Marks
3Hrs.	3	3 Hrs.	40	60	100

Course Objectives:

1.	To understand the philosophies of design of reinforced cement concrete and to justify this is the best
2.	To know design of advanced structural elements with safety, stability and economical way
3.	To study of provisions in IS 1893 and IS 456 for design of structures

Course Outcomes:

After completion of the course, the student will be able to

CO1	Understand the conceptual design of overhead circular service reservoirs.
CO2	Analysis and design of Highway Bridge: Slab type and Girder type
CO3	Analyze and Design building frames using Limit state Method.
CO4	Select the parameters in beam theory for design cylindrical shells
CO5	Design Silos using Limit state Method.

R.H.Mohankar

SYLLABUS

UNIT I	**(7 Hours) (12 Marks)**
Design of overhead circular service reservoirs. (IS 3370-2021) Analysis of staging by cantilever method. Analysis and design for earthquake as per relevant IS codes. (IS 1893-Part-II-2014)	
UNIT II	**(8 Hours) (12 Marks)**
Design of highway bridge with IRC loading and equivalent UDL Slab type, Two/Three girder type (IRC-06-2017)	
UNIT III	**(7 Hours) (12 Marks)**
Design of building frames up to two bay/two storey, including design of foundation. Using Limit state Method	
UNIT IV	**(7 Hours) (12 Marks)**
Design of cylindrical shells by beam theory, advantages, assumptions, ranges of validity and beam analysis.	
UNIT V	**(7 Hours) (12 Marks)**
Design of shells with or without edge beam. Design of Silos. (Using Limit state Method)	

List of Books:

Text Books

1. Dr. B. C. Punmia, Arun Kumar Jain, Ashok Kumar Jain, Comprehensive RCC Design, 8th Edition, Laxmi Publication Pvt. Ltd., 2005
2. V. L. Shah, S. R. Karve, Illustrated Reinforced Concrete Design, 3rd Edition, Structures Publication, 1996
3. Advanced Reinforced Concrete Design 3ED (PB 2016) Paperback – 1 January 2016 by RAJU N.K. (Author), ASIN: 8123929609, Publisher: CBS; 3rd Revised edition (1 January 2016), ISBN-10: 9788123929606

Reference Book

1. Ashok K. Jain, Reinforced Concrete: Limit State Design, 4th Edition, Nem Chand, 1993
2. T.R. Jagadeesh, M.A. Jayaram, Design of Bridge Structures, 2nd Edition, PHI Learning Pvt. Ltd., 2010

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SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE - IV

SEMESTER VII

COURSE:- DISASTER MANAGEMENT **COURSE CODE: CEE705TB**

Hours/ Week	Credits	Duration of End Sem Exam	Continuous Evaluation	End Sem Exam	Total Marks
3Hrs.	3	3 Hrs.	40	60	100

Course Objectives:

1.	To Familiarize Students with types of Disaster and their Management.
2.	To Increase Knowledge and understanding Regarding various Case studies , Acts and Policies on Disaster Management.
3.	To Familiarize students regarding types of Hazards and its impact on Refugees.
4.	To Equip students with various strategies , plans for Disaster Risk Reduction.
5.	To Familiarize Students with Various Response and recovery operations in Disaster Relief Management.

Course Outcomes:

After completion of the course, the student will be able to

CO1	Understand various types of Disaster and its phases of Management.
CO2	Understand and Analyze disaster case studies and Policies on Disaster Management.
CO3	Assess potential causes of Hazards and its impact on Lives of Refugees.
CO4	Analyze and Explain various strategies, plans for Disaster Risk Reduction.
CO5	Explain Various Response and recovery operations in Disaster Relief Management.

SYLLABUS

UNIT I	(7 Hours) (12 Marks)
Introduction to Disaster Management Defination of Disaster, Concept of Disaster management and its cycle,Phases and Issues Concerned with Disaster Management, Types of Disaster:Simple and complex,slow onset and Rapid onset disaster ,Introduction to Natural and Man-made Disaster.	
UNIT II	**(8 Hours) (12 Marks)**
Overview of Disaster Case Studies and Management in India Disaster Case Studies on: Bhopal Gas Tragedy-1984, Bhuj Earthquake-2001,Tsunami-2004, Cyclone Phallin-2013, Kerala Floods-2018.Evolution of Disaster Management in India, National Disaster Management Act-2005, National Policy on Disaster Management-2009, National Plan on Disaster Management- 2016, National Institute of Disaster Management.	
UNIT III	**(7 Hours) (12 Marks)**
Hazard Analysis and Refugee Problems Estimation of Potential Causes, Characteristics and Impact of Hazards,Multi hazard Assessment,Short term and Long term Predictions,Impact of Disaster on lives of Refugees,Principles of Psychosocial care,Issues and Recovery during Emergency. Issues of Rehabilitation and Resettlement among Disaster Survivors.	
UNIT IV	**(7 Hours) (12 Marks)**
Disaster Risk Reduction Disaster Risk Reduction Strategies, Risk Reduction Preparedness Plans, Action Plan and Procedures ,Early Warning System, Prevention and Mitigation Strategies, Factors Contributing to Vulnerability, Master planning for Future, Capacity Building Rehabilitation Measures.	
UNIT V	**(7 Hours) (12 Marks)**
Response and Recovery Operations in Disaster Relief Management Introduction to Response and Recovery Operations, Role of NDRF, SDRF, DDMA, Role of Armed Forces, Training of Personnel, Necessary Equipment's, Public Awareness creation, Mass Casualty Management, Response and Recovery Policies.	

List of Books:

Text Books:

1. Disaster Management: H.K.Gupta , University Press,2001
2. Disaster Management: R.B.Singh , Rawat Publications ,NewDelhi ,2000
3. Disaster Science and Management: Tushar Bhattacharya, McGraw Hill Education,2012

Reference Book:

1. An overview on natural and man-made disasters and their reduction, .K.Bhandani, CSIR, New Delhi.
2. Encyclopedia of Disaster management ,Vol I,II and III,Disaster management policy and administration, S.L.Goyal, Deep & Deep ,New Delhi,2006

R. H. Mohankar

M D Pidurkar

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O V Sapate.

R. S. Bite

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE - IV

SEMESTER VII

COURSE :- ADVANCED TRAFFIC ENGINEERING AND MANAGEMENT

COURSE CODE: CEE705TC

Hours/ Week	Credits	Duration of End Sem Exam	Continous Evaluation	End Sem Exam	Total Marks
3 Hrs	3	3 Hrs	40	60	100

Course Objectives:

1.	To introduce the students with the principles and practice of transportation engineering which focuses on traffic and transportation engineering and highway engineering.
2.	To enable the students to have a strong analytical and practical knowledge of planning, designing and solving the transportation problems.
3.	To introduce the recent advancements in the field of sustainable urban development, traffic engineering and management, systems dynamics approach to transport planning, highway design and construction, economic and environment evaluation of transport projects.
4.	To strength the student knowledge and technical knowhow to be efficient transport engineers.

Course Outcomes:

After completion of the course, the student will be able to

CO1	define and describe various traffic studies and traffic characteristics
CO2	have knowledge of statistical tools in traffic engineering
CO3	understand the various aspects related to geometry of a pavement with respect to traffic movement
CO4	explain various theories related to traffic signals and understand importance for legal side related to traffic
CO5	design parking systems as required and to know the safety issues related to traffic movement

SYLLABUS:

UNIT I	**(8 Hours) (12 Marks)**
1. General Road, Road user and Road Vehicle Characteristics **2. Traffic Surveys:** Speed, Journey, time and delay studies, methods of measurement of spot speed, capacity of roadwat, factors affecting capacity, methods for measurement of capacity, measurements of running and journey speeds, Origin Destination surveys necessity, level of service concepts	
UNIT II	**(7 Hours) (12 Marks)**
Traffic Events: Statistical method for interpretation, Regression application of Binomial, Normal Poission distributions, Discrete and continuous distribution to traffic flow, Test of significance – Chi square and 'T' test for finding out probabilities of traffic events	
UNIT III	**(7 Hours) (12 Marks)**
Road geometry: Hierarchy of urban roads and their standards , Diverging, merging crossing weaving maneuver's conflict points, types of road junctions, channelization of traffic flow, traffic rotary design, Grade separated intersections, Drive ways	
UNIT IV	**(7 Hours) (12 Marks)**
Traffic Control: Traffic signs, road markings, traffic signals, design of signalized intersections and signaling systems, queing Theory **Enforcement and Education:** Motor Vehicle act and Rules, Education, Air pollution and Noise Pollution by traffic	
UNIT V	**(7 Hours) (12 Marks)**
Parking: On and street parking and parking systems, parking demand, design of off-street parking lot, underground and Multistoried parking. **Traffic Safety:** Laws and enforcement, traffic accident conditions in India, Analysis of Accidents, Pedestrian cyclist and auto vehicle drivers safety, Traffic regulation 3R and 5E's of traffic management.	

List of Books:

Text books:

1. Highway Engineering, Khanna S.K. and Justo C.E.G., 1991, Nem Chand & Bros.
2. Traffic engineering and transportation planning, Kadiyali, Khanna Publications, 1987
3. Transportation Engineering: An Introduction, C. JotinKhisty , B. Kent Lall
4. Transportation Engineering and Planning ,C.S. Papacostas, P.D. Prevedouros

Reference books:

1. Highway Engineering, Rangawala B.S. Charotar Publishing House, 2011
2. IRC Handbook and MOST Specifications, Indian Road Congress, 2012

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY,

SEMESTER VII

COURSE :-INDUSTRIAL CASE STUDY AND PROJECT PHASE -I

COURSE CODE: CEP707P

Hours/ Week	Credits	Continous Evaluation	End Sem Exam	Total Marks	Min Passing
8 Hrs	4	50	50	100	50

Course Objective:

1	The objective of the course is to give awareness of practical application of various theoretical concepts in the field of Civil Engineering.
2	The objective of ICS and Project Work Phase-1 is to enable the student to take up investigative study in the broad field of Civil Engineering, either fully theoretical / practical or involving both theoretical and practical work to be assigned by the department having minimum two / maximum six students in a group under the guidance of Project Guide/ Co Guide.

Course Outcome:
After completion of syllabus student shall be able to

CO 1	Understand organizational skills and professional practices
CO 2	Interpret the communication skills of organizational members with each other
CO 3	Study literature review and define his/her problem statement along with scope of project
CO 4	Collect the data for analyze / design the Civil Engineering problem by using appreciate methodology in a team work

SYLLABUS

PART A: INTERNSHIP

After successful completion of internship of 3 to 4 weeks, students have to submit internship report in prescribed format.

PART B: SEMINAR

A group of students is expected to take up a project from Civil Engineering field which is to be started in Semester VII and to be completed in Semester VIII.

The students will carry out following tasks for Project Phase – I

1. finalization of topic and scope of the project
2. Survey and study of published literature on the topic selected
3. Introduction, Aim and Methodology
4. Working out a preliminary approach to the problem relating to the topic
5. Conducting Analysis / Simulation / Experiment / Design / Feasibility
6. Preparing a written report on the study conducted for presentation
7. Final seminar as oral presentation before a departmental committee

MARKS DISTRIBUTION FOR INDUSTRIAL CASE STUDY AND PROJECT PHASE -I

Marks distribution of Internal Marks:

SN	NAME OF ACTIVITY	EXPECTED WORK	ALLOTTED MARKS
1	Submission of Internship Report	Submission of report within 15 days of commencement of 7th semester	20
2	Seminar-1	Title finalization and approval of topic	15
4	Seminar-2	Submission of Project Phase -1 report	15
		TOTAL	**50**

Marks distribution of External Marks:

SN	NAME OF ACTIVITY	EXPECTED WORK	ALLOTTED MARKS
1	Presentation	Student project group wise presentation along with report and oral exam	25
2	Viva voice		25
		TOTAL	**50**

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PRIYADARSHINI J. L. COLLEGE OF ENGINEERING, NAGPUR
SYLLABUS OF BACHELOR OF TECHNOLOGY (SEMESTER VII)
Indian Knowledge System (Theory)

(Audit Course) **Subject Code: HUT706**

Teaching Scheme **Examination scheme**

Lectures: 2 Hrs/ Week **Internal Assessment**: 50 Marks

Course Objective:

The course aims to provide an overview of Indian Knowledge System (IKS) and create awareness among the students about the rich cultural heritage of our country and its relevance in the contemporary scenario.

Course Outcomes: On completion of the course, students will be able to-

CO1: Interpret basic knowledge of Indian Knowledge system.

CO2: Integrate the teaching of Indian culture and civilization to the present day.

CO3: Analyze Indian architectural system.

CO4: Practice methods to attain physical and mental well being.

Syllabus:

UNIT 1: Introduction to Indian Knowledge System
Definition & overview of Indian Knowledge system, The Vedic Corpus -Vedas, Types of Vedas, Upavedas, Types of Upavedas (6 Hours)

UNIT 2 : Indian Culture and Civilization (6 Hours)
Indian culture and its characteristics, Difference between Culture & Civilization, Indus valley civilization, Vedic civilization.

UNIT 3 : Indian Architecture and Town Planning (6 Hours)
The Importance of Sthapattya-veda, The ancient cities of the Indian Saraswati region - Harappa and Mohenjo-Daro civilization, Town planning and drainage system

UNIT 4: Health and Wellness (6 Hours)
Well-being: Mental & Physical, Dimensions of Wellness,Ways to Build Resilience, Concept of healthy living in Ayurveda. Tri- doshas – Relationship to Health

Activity: Prepare a PPT on any one topic:
Traditional Indian knowledge of Medicinal plants and its benefits, Role of indigenous Folk Medicinal plants among Tribal, How to build Resilience? Integrated Approach to Health care

Books Recommended:

1. Introduction to Indian Knowledge System by Mahadevan, B, Bhat, Vinayak Rajat, Nagendra Pavana R.N., Prentice Hall India Pvt., Limited, 2022.
2. Indian knowledge Systems, Kapil Kapoor, Avadhesh Kumar Singh, D.K, Printworld.
3. Traditional Knowledge System in India by Amit Jha, Atlantic Publishers, 2002
4. Sri Prashant Pole, Treasure Trove of Indian knowledge, Prabhat Prakashan, 2021..
5. Indian Art & Culture (E), By Anurag Kumar, Arihant Publication India Limited, 2016
6. Indian Architecture by Percy Brown, D. B. Taraporevala sons & co. Pvt. Ltd., Bombay, 1959.
7. Sri Suresh Soni, Sources of our cultural heritage, Prabhat Prakashan, 2018.
8. A Beautiful Tree by Dharampal, Rashtrotthana Sahitya, 2021
9. A New Look into Social Sciences- Shabbir, Sheik and Dwadashiwar

Shikar

(Mrs R. P. Kashikar)