Priyadarshini J. L. College of Engineering
An Autonomus Institute, Affiliated to RTM Nagpur University, Nag
Department of Civil Engineering
Scheme of Teaching & Examination
Eighth Semester for B-Tech Programe (NEP)

Scheme :- BTECH/CE/NEP-24/RO

Eighth Semester

Sr. No.	Type of Course	Credits as per 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	6	CE801T	Irrigation Engineering	3	0	0	3	40	60	100	---	15	45	3
2			CE802T	Construction Method and Equipment Management	3	0	0	3	40	60	100	---	15	45	3
3	PEC	6	CE803T	Program Elective-V Refer Program Elective Basket	3	0	0	3	40	60	100	---	15	45	3
4			CE804T	Program Elective-VI Refer Program Elective Basket	3	0	0	3	40	60	100	---	15	45	3
5	MDM	2	CSE / AI / ETC / EE / 805T	Branch wise Course (CSE / AI / ETC / EE)	2	0	0	2	20	30	50	---	8	23	2
6	RM	4	CE806T	Research Methodology	3	0	0	3	40	60	100	---	15	45	3
7			CE806P	Research Methodology Lab	0	0	2	1	25	25	50	---	---	25	---
8	Project	4	CE807P	Project	0	0	8	4	100	100	200	---	---	100	---
				Total =	17	0	10	22			800				

NOTE:- 1. Refer Annuxure - I for MDM Courses - CSE / AI / ETC / EE / 805T
Abbreviations:-
L- Lecture, T- Tutorial, P- Practical

PCC - Programme Core Course, PEC- Programme Elective Course; MDM - Multidisciplinary Minor, RM - Research Methodology.

Multidisciplinary Minor			
Sr. No.	Category	Course Code	Course Name
1	MDM	CE805T	Estimating and Costing

Programme Elective Basket			
Sr. No.	Category	Course Code	Course Name
1	PEC-V	CE803TA	Advanced Steel Design
2		CE803TB	Prestressed Concrete
3		CE803TC	Pavement analysis And Design
4		CE803TD	Hydraulic Engineering
5		CE803TE	Disaster Management
6	PEC-VI	CE804TA	Design of Earthquake Resistance Structure
7		CE804TB	Industrial Waste Water Treatment
8		CE804TC	Bridge Engineering
9		CE804TD	Digital Land Surveying and Mapping

Dr. Gulfam Pathan
Chairman, BOS (Civil Engg.)
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(M. D. Pidurkar)

(R. H. Mohankar) (Ovsapte)

Abhay Tawalare

(Y. D. Chitaray)

R. S. Bute

Mohd. R. M. Siddiqui

Lokmanya Tilak Jankalyan Shikshan Sanstha's
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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

SEMESTER VIII

COURSE :- IRRIGATION ENGINEERING **COURSE CODE: CE801T**

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

R.H.Mohankar

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 & 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

MUP

4-12 (COVS)

RSB

(RHM)

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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SEMESTER VIII

COURSE :-CONSTRUCTION METHOD AND EQUIPMENT MANAGEMENT

COURSE CODE: CE802T

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.

M. G. Pathan Y. D. Chitare R. H. Mohankar R. H. Mohankar R. S. Bute O. V. Ousapate

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 Book:

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

M.U.P

R.H.Mohankar R-S-Bute

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SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE-V

SEMESTER VIII

COURSE :-ADVANCED STEEL DESIGN **COURSE CODE: CEE803TA**

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	Analyse the forces and stresses acting on different steel structures.
2	To understand the design aspect of structural members.
3	Apply strength assessment checks to design structural members safely and efficiently.
4	To apply methods for ensuring the safety and stability of liquid storage tank.
5	To Understand concepts and design of storage vessels like bunkers and silos.

Course Outcomes:

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

CO1	Analyse loads acting on bridge and design of members.
CO2	Analyse industrial building members and their design.
CO3	Analyse forces acting on steel chimney and design of chimney superstructure.
CO4	Analyse loads acting on liquid storing tanks and their design.
CO5	Design bunkers and silos based on structural principles..

SYLLABUS:

UNIT I	**(8 Hours) (12 Marks)**
Design of Bridges Highway Bridge: Types of Bridges, IRC loadings, Economic span length, Impact factor, Design of deck and through type plate girder bridge. Foot over Bridge: Loading, types of decks. Design of truss bridge.	
UNIT II	**(7 Hours) (12 Marks)**
Design of Industrial Building Industrial sheds, Types & Design of mill bents, bracings. Design of crane and gantry girder. Introduction to Pre Engineered Building. Moment resisting welded and bolted connections. Open web sections : Introduction, design of open web sections.	
UNIT III	**(7 Hours) (12 Marks)**
Design of steel Chimney Types of chimney, chimney plates, linings, Breech opening, Forces acting on steel chimney. Design of self-supporting steel chimney.	
UNIT IV	**(7 Hours) (12 Marks)**
Design of Liquid storage steel tanks Types of steel tanks, forces acting on elevated tanks, staging, wind bracings. Design of rectangular, circular and pressed steel tanks. Design of staging.	
UNIT V	**(7 Hours) (12 Marks)**
Design of storage vessels Storage Vessels : General concepts, design of Bunker & Silo.	

List of Books:

Text Books:

1. Design of Steel structures, N Sbramanian, Oxford university press.
2. Fundamentals of Structural Steel Design, M L Gambhir, McGraw Hill Education Pvt ltd.
3. Design of Steel structures, S Ramamurtham, Dhanpat Rai publishijng Company.
4. Design of Steel structures- Volume II, Ram Chandra, Standard Book House, Delhi Design of Steel structures, S K Duggal, Tata McGraw.

List of Code/Handbook

1. Indian Standard For General Construction In Steel – Code of Practice 2007.
2. Steel Structural Handbook / Steel Table.

MGP

Y.D.Mohankar R.H.Mohankar R.S.Bite

Scheme :- BTECH/CE/NEP-24/RO

R.H.Mohankar

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PROGRAM ELECTIVE COURSE-V

SEMESTER VIII

COURSE :- PRE-STRESSED CONCRETE **COURSE CODE: CE803TB**

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 familiarize the students with concept of pre-stressed concrete.
2	To impart knowledge to design pre-stressed concrete structures.
3	Study of in situ condition for structural elements.

Course Outcomes:

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

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

M.G.P.

R.H.Mohankar A.S.Bute

SYLLABUS:

UNIT I	**(7 Hours) (12 Marks)**
Analysis and design of End Blocks as per IS 1343 Method. (Only comparative study with the other methods is expected). Types of pre-stressed concrete structures - Type – I, II, and III. Deflection of pre-stressed concrete beams (short-term, and long term). Behavior of unbounded and bonded pre-stressed concrete beams	
UNIT II	**(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. Analysis and design of circular water tank, fixed, hinged, use of (IS-3370-2021)	
UNIT III	**(7 Hours) (12 Marks)**
Design of pre-stressed concrete poles, Special problems in pre-stressed concrete structures like corrosion, fatigue, dynamic behavior of pre-stressed concrete beams, behavior of pre-stressed concrete structures under fire. Analysis of single-storey, single-bay fixed portal frame.	
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, Publ

List of Code/Handbook

1. IS 1343 Pre-stressed Concrete-Code of Practice 2012

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE-V

SEMESTER VIII

COURSE : PAVEMENT ANALYSIS AND DESIGN **COURSE CODE: CE803TC**

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.	The student shall understand fundamental parameters required in the design of flexible and rigid pavement of highway and airfield pavements.
2.	The student shall understand the tests to be performed on highway materials and analyze highway and airfield pavements.
3.	The student shall understand design of flexible and rigid pavements by various methods..
4.	The student shall have the knowledge of field tests on pavements and can analyze, apply and evaluate the design strengthening of pavements.

Course Outcomes:

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

CO1	differentiate between rigid and flexible pavement and calculate design parameters.
CO2	evaluate material quality by use of tests and analyze the stresses in a flexible pavement using multi-layered elastic theory.
CO3	Design a flexible pavement and rigid pavement including joints using various methods.
CO4	analyse condition of existing pavement by condition survey and other methods
CO5	Comprehend the concept of strengthening of existing pavements and pavement management system

SYLLABUS:

UNIT I	**(8 Hours) (12 Marks)**
General : Structural action of flexible and rigid pavements, Characteristics of highway and airfield pavements **Design parameters :** Standard axile load and wheel assemblies for road vehicles, Under carriage systems for aircrafts, tyre and contact pressure, Contact area imprints, computations of ESWL for pavements	
UNIT II	**(7 Hours) (12 Marks)**
Materials characteristics AASHO sub grade soil classification, Group index, CBR test, Dakota cone bearing test, Plate load test for 'K', Layer equivalent concepts **Analysis of flexible pavements:** Stress-Strain deflection analysis for single, two, three and multilayer flexible pavement systems **Analysis of rigid pavements:** wheel load stresses, warping stresses, frictional stresses, combined stresses.	
UNIT III	**(7 Hours) (12 Marks)**
Flexible Pavement design : North Dakota Cone, Group index method, CBR method (including modified CBR method), IRC-37, Burmister's method, Triaxial (Kansas) method **Rigid pavement design:** IRC -58, Design of joint details for longitudinal joints, contraction joints and expansion joints	
UNIT IV	**(7 Hours) (12 Marks)**
Condition analysis of pavements: Pavement failures in both flexibleand rigid, Yield lines patterns, Condition surveys and surfacee evalution for unevenness, Benkalman Beam deflection Study method along with numerical, Case studies of highways and Airfield pavement projects	
UNIT V	**(7 Hours) (12 Marks)**
Strengthening of pavements : Design of composite and rigid overlays for flexible and rigid pavements, Repairs, maintenance and rehabilitation of pavements, Indian standards for highway and airfield constructions, Cost evalution and comparative study	

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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PROGRAM ELECTIVE COURSE-V
SEMESTER VIII

COURSE :-HYDRAULIC ENGINEERING **COURSE CODE: CE803TD**

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 the boundary layer theory and concept of drag and lift
2.	To understand the various losses occurring in pipe flow, various phenomenon occurring in this case.
3.	To compute uniform flow through open channel and understand the concept of specific energy.
4.	To analyse the gradual varied flow and hydraulic jump concept.
5	To understand the design principle of various hydraulic machines likes turbines and pumps

Course Outcomes:

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

CO1	Understand the concepts related to boundary layer theory and determination of drag and lift forces
CO2	Apply the knowledge of theories and equations of pipe flow in analyzing and designing the pipe network systems and to discuss effects of water hammer pressures.
CO3	Use the concepts of uniform and critical flow through open channels, design of efficient channel sections and application of specific energy concept.
CO4	Understand gradually varied flow analysis and its computation, and its application in open channel flow
CO5	Understand and apply basics principles related to turbines & Pumps in water Resources planning

MGP Y-D-Chutan R-H-Mohankar R-S Bute

SYLLABUS:

UNIT I	**(8 Hours) (12 Marks)**
Real Fluid Flow **Viscous Flow**: Reynold's experiment, viscous flow through a circular pipe, velocity and shear stress distribution, Hazen poisuillee equation **Boundary layer concept:** Nominal thickness, displacement thickness, momentum thickness of the boundary layer, Boundary layer along a thin plate and its characteristics; Laminar boundary layer; turbulent boundary layer. **Real, Incompressible Fluid Flow Around Immersed Bodies:** General definition of drag and lift; flowpast plates, cylinders and spheres; drag on sphere; drag on sphere, cylinder and flat plate	
UNIT II	**(7 Hours) (12 Marks)**
Flow through Pipes: **Hydraulically smooth and rough pipes:** Frictional resistance to flow of fluid in smooth and rough pipes; Moody's chart; Darcy-Weisbach & Hazen-William's equation for frictional head loss; **Hydraulic gradient and energy gradient:** Pipes in series and parallel; Branched pipes; Siphon; transmission of power through pipes; Hardy-Cross methods of pipe networks; Water-hammer, pressure head due to sudden closure of valve.	
UNIT III	**(8 Hours) (12 Marks)**
Uniform Flow Through Open Channels **General:** Types of channel and their geometrical properties; Types of flow in open channel. **Uniform Flow:** Chezy's and Manning's equations;Hydraulically most efficient rectangular, triangular and trapezoidal sections; Computations of normal depth of flow, conveyance of channel, section factor for uniform flow, normal slope and normal discharge. **Critical Flow:** Specific energy and its diagram; alternate depths; Computations of critical depth, section factor for critical flow, critical slope; normal, critical slope, Specific force and its diagram; Conditions of critical flow.	
UNIT IV	**(7 Hours) (12 Marks)**
Non Uniform Flow through Open Channel **Gradually Varied Flow:** Dynamic equation for GVF; Classification and characteristics of surface profiles; direct Step method of computing profile length **Rapidly Varied Flow:** Definition of hydraulic jump; Equation of hydraulic jump in horizontal, rectangular channel; Length & height of jump; Energy loss in jump classifications of jump **Concept of Impact of Jet** Force exerted on stationary and moving plate and curved surface, concept of velocity triangles	
UNIT V	**(7 Hours) (12 Marks)**
Fluid Machinery **Turbines:** Definition: Gross and net heads; different efficiencies; Classification of turbines; component parts and working principles; selection of turbines on the basis of head and specific speed. **Reciprocating Pumps:** Components parts, working principle, Work done of single & double acting pumps; Negative slip, Air vessels-Working principle and necessity, indicator diagram **Centrifugal Pump:** Component parts; working principle; Static and manometric heads; different efficiencies; Priming & priming devices, Specific speed; Theoretical aspects of multistage pumps; Trouble & remedies; operating characteristics curves.	

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SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

PROGRAM ELECTIVE COURSE-V

SEMESTER VIII

COURSE:- DISASTER MANAGEMENT **COURSE CODE: CE803TE**

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

MGP Y.D Chutan R.H.Mohankar R.S.Buse O.V.Sapate

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

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M4P

T.D.Chitare

O.V.Gupte

R.S.Bite

Lokmanya Tilak Jankalyan Shikshan Sanstha's
PRIYADARSHINI J. L. COLLEGE OF ENGINEERING, NAGPUR
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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

SEMESTER VIII

COURSE :- PROJECT **COURSE CODE: CE807P**

Hours/ Week	Credits	Duration of End Sem Exam	Continuous Evaluation	End Sem Exam	Total Marks
8 Hrs	4	--	100	100	200

Course Objectives:

1.	To integrate knowledge acquired from previous civil engineering courses and apply it to a comprehensive engineering project.
2.	To understand modern engineering tools, software and techniques for modeling, analysis, and presentation of project
3.	To promote professional and ethical responsibility in engineering decision-making and design processes.
4.	To develop project planning and management skills, including scheduling, resource allocation, and documentation.

Course Outcomes:

At the end of the course the students shall be able to

CO1	Apply foundational and advanced civil engineering knowledge to identify, formulate, and solve real-world problems through project work
CO2	Select and use modern engineering tools, software, and techniques for modeling, analysis, and presentation of project outcomes.
CO3	Understand ethical responsibilities and the impact of engineering solutions in societal and environmental contexts; engage in lifelong learning.
CO4	Demonstrate knowledge of project planning, resource management, budgeting, and scheduling in a civil engineering context.

- A group of students is expected to take up a project from Civil Engineering/ Interdisciplinary field. A group shall not be of students more than Five/Six.

The student project group will carry out following tasks for Project

1. finalization of topic and scope of the project
2. Survey and study of published literature on the topic selected
3. Introduction, Aim / Objectives and Methodology
4. Synopsis and Progress seminar presentation before a departmental committee
5. Working out a preliminary approach to the problem relating to the topic
6. Conducting Analysis / Simulation / Experiment / Design / Feasibility
7. Final development of product/process, testing, results, conclusions and future directions
8. Preparing a paper for Conference presentation / Publication in Journals
9. Preparing a dissertation in the standard format for being evaluated by the Department
10. Final Submission seminar as oral presentation before a departmental committee

R.H.Mohankar

DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF FOURTH YEAR BACHELOR OF TECHNOLOGY

SEMESTER VIII

COURSE :- RESEARCH METHODOLOGY **COURSE CODE: CE806T**

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 introduce students to the principles of research methodology.
2.	To enable understanding of various research designs, methods, and tools.
3.	To develop analytical and critical thinking skills in research
4.	To equip students with basic knowledge of report writing and referencing.
5.	To explore trends, tools, in modern research.

Course Outcomes:

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

CO1	Understand the basic concepts of research methodology.
CO2	Identify different research designs, methods, and tools.
CO3	Develop critical and analytical thinking in research.
CO4	Write simple research reports and use proper referencing.
CO5	identify key trends, tools, in modern research.

MGP (R.H.Mohankar) (C.V.Sapate) (Y.D.Chintanwar) R.S.Bute

(M.D.Pidurkar)

SYLLABUS:

UNIT I	**(7 Hours) (12 Marks)**
Meaning and objectives of research Types of research: Basic, Applied, Descriptive, Analytical, Qualitative & Quantitative. Research process and steps, Ethics in research Identifying and defining a research problem.	
UNIT II	**(7 Hours) (12 Marks)**
Research design: Exploratory, Descriptive, Experimental Hypothesis: Types, formulation, and testing Sampling: Probability and non-probability sampling techniques Data collection methods: Primary vs Secondary data Tools: Questionnaire, Interviews, Observation	
UNIT III	**(7 Hours) (12 Marks)**
Classification and tabulation of data. Measures of central tendency and dispersion (basic understanding). Basics of statistical analysis using software/tools Interpretation of results. Common errors in data analysis.	
UNIT IV	**(7 Hours) (12 Marks)**
Structure of a research report Citation styles: APA, MLA (basic overview) Plagiarism and tools for checking originality Preparing research proposals Presentation techniques	
UNIT V	**(8 Hours) (12 Marks)**
Role of technology in research (digital tools, AI, databases) Literature review techniques and use of online resources Interdisciplinary research: Importance and examples Challenges in modern research: Misinformation, data privacy, and publication ethics	

List of Books:

Text Books:

1. Research Methodology: Methods and Techniques by C.R. Kothari
2. Research Methodology: A Step-by-Step Guide by Ranjit Kumar
3. Research Methods for Business Students by Saunders, Lewis & Thornhill

References:

1. MLA & APA Handbooks for citation guidance

M.G.P.

(R. H. Mohankar) (Y. D. Chintawar) (S. S. Bute)

(M. D. Pidurkar)

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DEPARTMENT OF CIVIL ENGINEERING

SYLLABUS OF THIRD YEAR BACHELOR OF TECHNOLOGY

SEMESTER VIII

COURSE :- RESEARCH METHODOLOGY LAB **COURSE CODE: CE806P**

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 research methodology and CO's.**
2) **Minimum 08 practicals, from the list given below shall be performed:**

List of Experiments
1. Formulation of a Research Problem
2. Preparation of a Research Design (Exploratory/Descriptive/Experimental)
3. Designing Questionnaire and Collecting Data using Google Forms
4. Demonstration of Sampling Techniques (Probability & Non-Probability)
5. Data Classification and Tabulation using MS Excel/SPSS/R
6. Statistical Analysis (Mean, Median, Mode, SD) using Excel/SPSS/R
7. Literature Review using Google Scholar/Scopus/ResearchGate
8. Citation and Referencing using Mendeley/Zotero (APA, MLA formats)
9. Plagiarism Detection using Tools (Turnitin/Grammarly/QuillBot)
10. Preparation and Presentation of a Mini Research Proposal (Written + PPT)

(R.H.Mohankar) (C.V.Sapate) (Y.D.Chintanwar) R.S.Bute

M.G.P. (M.D.Pidurkar)