

FACULTY OF ENGINEERING AND TECHNOLOGY
Proposed Syllabus Structure- 2014-2015
Final Year B. Tech (All)

Sub Code	SEMESTER-VII	Contact Hrs / Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	T W	P	Total	Credits	Duration of Theory Exam
CED 401	Structural Mechanics	3	1	-	4	20	80	-	-	100	4	3 Hours
CED 402	Environmental Engineering-II	3	1	-	4	20	80	-	-	100	4	3 Hours
CED 403	Project Planning & Management	4	-	-	4	20	80	-	-	100	4	3 Hours
CED 404	Transportation Engineering-II	4	-	-	4	20	80	-	-	100	4	3 Hours
CED 405	Elective-II(Green Building : Technology)	4	-	-	4	20	80	-	-	100	4	3 Hours
CED 406	Elective-II(Economics, Costing and Management)	4	-	-	4	20	80	-	-	100	4	3 Hours
CED 407	Elective-II(Earthquake Engineering)	4	-	-	4	20	80	-	-	100	4	3 Hours
CED 421	Laboratory-I (Structural Mechanics)	-	-	2	2	-	-	50	-	50	1	NA
CED 422	Laboratory-II(Environmental Engineering-II)	-	-	2	2	-	-	50	-	50	1	NA
CED 423	Laboratory-III(Construction Management)	-	-	2	2	-	-	50	50	100	1	NA
CED 424	Laboratory-IV(Transportation Engineering)	-	-	2	2	-	-	50	50	100	1	NA
CED 425	Project-II	-	-	6	6	-	-	100	100	200	3	NA
	Total of semester-VII	18	02	14	34	100	400	300	200	1000	27	-

Sub Code	SEMESTER-VIII	Contact Hrs /Week				Examination Scheme						
	Subject	L	T	P	Total	CT	TH	T W	P	Total	Credits	Duration of Theory Exam
CED 451	In-Plant Training (IPT) of around 20 weeks *	-	-	-	-	-	-	300	300	600	27	NA
	Total of semester-VIII	-	-	-	-	-	-	300	300	600	27	-
	Grand Total of VII & VIII	-	-	-	-	100	400	600	500	1600	54	-

L: Lecture hours per week T: Tutorial hours per week

TH: University Theory Examination TW: Term Work

P: Practical hours per week

P: Practical/Oral Examination

CT: Class Test

NA: Not Applicable

Elective-II

1. CED 405-Elective-II (Green Building Technology)
2. CED 406-Elective-II (Economics, Costing and Management)
3. CED 407-Elective-II (Earthquake Engineering)

***After every two weeks of In-Plant Training (IPT) student shall appraise the progress of training to the internal guide and get the required inputs.**

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering and Technology)
Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII

Code No.: CED 401
Teaching Scheme:
Theory: 03 Hrs/ week

Tutorial: 01 Hr/week
Credits:04

Course Title: Structural Mechanics
Class Test (Marks): 20
Theory Examination (Duration): 03hrs
Theory Examination (Marks): 80

Course Objectives	:	To develop the knowledge and skills of the students towards various advanced methods of structural analysis and design and to improve their knowledge regarding the behavior of <ul style="list-style-type: none"> • structural elements like plates and shells under strained conditions
Unit-I	:	Theory of elasticity: Basic concepts, strain compatibility, Stress and strain equilibrium, Hook's law (10)
Unit-II	:	Theory of plates : Laterally loaded plates with small deflection theory, Cylindrical bending of thin rectangular plates. (05)
Unit-III	:	Analysis of shells: membrane theory of thin cylindrical shells (05)
Unit-IV	:	Flexibility matrix method: flexibility coefficients, Applications to continuous beams, single bay single storey portal frames and pin Jointed frames. (15)
Unit-V	:	Stiffness Matrix Method: Stiffness coefficients, Applications to continuous beams , single bay single storey portal frames and pin jointed frames (15)
Unit-VI	:	Plastic Method of Analysis & Design: Plastic analysis and design of indeterminate structures, upper bound and lower bound theorems, and collapse load for rectangular portal frames. (10)

Text Books	:	1 Basic Structural Analysis C.S.Reddy 2 Matrix analysis of structures Gere Waver 3 Advanced theory of structures N.C. Sinha and P.K. Gayen 4 Theory of structures -II A.G. Deshpande 5 Theory of plates and shells Timoshenko & Goodier 6 Theory of Elasticity Timoshenko
References e- books, e- Journals	:	

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the course syllabus shall be divided in two equal parts of 3 units each. Question paper shall be set having two sections; Section A and Section B. The questions of Section A shall be set on first part and questions of Section B on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

1. Set ten questions in all with five questions in each section.
2. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
3. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

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Code No.: CED 402

Teaching Scheme:
Theory: 03 Hrs/ week

Tutorial: 01 Hr/week
Credits:04

Course Title:Environmental Engineering II

Class Test (Marks): 20
Theory Examination (Duration): 03hrs
Theory Examination (Marks): 80

Course Objectives	:	A Knowledge of Environmental Engineering help the engineers to analyse ,think logically and pursue the engineering approach for safe disposal of waste and therefore desires as an integral part of engineering education and training, irrespective of the branch specialization
Unit-I	:	Waste water Terminology Definitions of some common terms- Refuse, Sewage, Garbage, rubbish, storm water ,Sullage ,sewer, sewerage and components of sewerage system, system of sanitation, types of sewerage system, sewer layouts, patterns of collection system, various sewer sections, design of sewers, sewer appurtenances (10)
Unit-II	:	Quality and characteristics of waste water Physical, chemical and biological parameters,BOD and COD, first and second stage BOD,limitations of BOD, Problems on first stage BOD (8)
Unit-III	:	Natural methods of waste water disposal Methods of disposal, disposal by dilution, standards for waste water, self purification of streams, actions involved and zones of pollution, oxygen sag analysis, streeter-phelps equation, dilution into sea, disposal on land comparison of disposal methods, flow equalization inline-offline (12)
Unit-IV	:	Waste water treatment process and its design Screen, grit chambers,PST,trickling filters, sludge disposal methods and sludge drying beds ,design of various components of waste water treatment plant (12)
Unit-V	:	Low cost waste water treatment system and its design Aerated lagoon, stabilization pond , oxidation ditch, problems based on the same (12)
Unit-VI	:	Advance waste water system Nitrification and denitrification, phosphorous removal, removal of dissolved inorganic substances (8)

Text Books	:	<ol style="list-style-type: none"> 1. Water supply waste disposal and environmental engineering ---A.K.Chatterjee, Khanna publishers, sixth edition 2. Sewage disposal and air pollution --- S.K.Garg, Khanna publishers, twelfth edition 3. Waste water engineering --- B.C.Punmia,A.K.Jain,Laxmi publications, second edition 4. Water supply and sanitary engineering --- G.S.Birde, J.S.Birde,Dhanpat rai publishing company, eighth edition 5. Waste water treatment --- M.N.Rao ,A.K.Datta , Oxford and IBH ,second edition
References e- books, e- Journals	:	<ol style="list-style-type: none"> 1.Environmental Engineering--- Howard S Peavey and Donald R Rowe , McGraw-Hill, first International edition 2.waste water Engineering --- Metcalf and Eddy, Tata McGraw Hill ,second edition

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

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Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII

Code No.: CED 403

Teaching Scheme:
Theory: 03 Hrs/ week

Tutorial: 01 Hr/week
Credits:04

**Course Title: PROJECT
PLANNING AND MANAGEMENT**
Class Test (Marks): 20
**Theory Examination (Duration):
03hrs**
Theory Examination (Marks): 80

Course Objectives	:	<p>1. To develop the awareness students regarding scope of construction Industry and management, various acts, importance of safety etc.</p> <p>2. To make the students familiar with various techniques of project management</p> <p>3. To develop the knowledge of students towards material handling and management and various construction equipments used in the Industry.</p>
Unit-I	:	<p>Characteristics of Civil Engineering works, classification & types of construction, scheduling & controlling.</p> <p>Important Acts and Laws: Factory Act, minimum wages act, Insurance act, workmen's compensation act, other provisions of act.</p>
Unit-II	:	<p>Network Techniques & applications: Bar charts, their advantages & deficiencies, logic of dummy activities, network construction, activity time, float, prime cost, over heads, cost slopes, resource planning, resource allocation, project review & controlling, updating of network technique, crashing of network. Planning, resource allocation, project review & controlling, updating of network technique, crashing of network.</p>
Unit-III	:	<p>Program Evaluation & Review Technique: Introduction, advantages, time estimates, slack, project duration, comparison between CPM & PERT</p>
Unit-IV	:	<p>Planning for safety: Importance of safety in construction work , causes of accidents, remedial measures & precautions, accident hazards, safety program , injury frequency rate and indices.</p> <p>Material Management: General, aims & function, Inventory analysis, ABC analysis, material requirement planning, Inventory management, Inventory cost, Inventory models, Buffer stock.</p>
Unit-V	:	<p>Construction manpower management: a) Work- study & motion study: Definition & application, method study (motion study) symbols used procedure of method study basis time, Relaxation allowance, and standard time.</p> <p>b) Personnel Management: Introduction, importance of man power planning, Employees framing, motivation, welfare activities.</p>
Unit-VI	:	<p>Construction equipments: General, classification, Hauling equipments, Earth</p>

		moving machines, hoisting equipments, conveying equipments, ,vibrators , concepts of time for equipment operation, cost of owning & operating , down time cost, obsolescence cost.
Text Books	:	1. Construction Planning Equipment & Method --- R.L. Peurifoy 2. Construction Planning & management --- Mahesh Verma 3. Industrial Engineering & management --- O.P. Khanna 4. Construction Planning & Management --- Vazirani & Chandola 5. CPM & PERT --- B.C. Punmia & Khandelwal
References e- books, e- Journals	:	

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

Pattern of Question Paper:

The six units in the course syllabus shall be divided in two equal parts of 3 units each. Question paper shall be set having two sections; Section A and Section B. The questions of Section A shall be set on first part and questions of Section B on second part. Question paper should cover the entire syllabus.

For 80 marks Paper:

4. Set ten questions in all with five questions in each section.
5. Question no. 1 from section A and Question no. 6 from section B should be made compulsory and should cover the entire course syllabus of the respective section and should be set for ten marks each. The Question no.1 and 6 should be of objective nature.
6. Two questions of 15 marks each from remaining questions from each section A and B should be asked to solve.

<p align="center">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering and Technology) Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII</p> <p>Code No.: CED 404</p> <p>Teaching Scheme: Theory: 04 Hrs/ week</p> <p>Tutorial: 0 Hr/week Credits:04</p> <p align="right">Course Title: Transportation Engineering II Class Test (Marks): 20 Theory Examination (Duration): 04hrs Theory Examination (Marks): 80</p>		
Course Objectives	:	The primary objective of this course is to introduce to transportation engineering principles for streets, highways and tunnels with emphasis on the safe and efficient operation of roadways. The students will be able to evaluate, analyze, design optimize, simulate, and present a through description of analysis process.
Unit-I	:	<p>Highway Planning & Financing: Historical Developments, classifications of roads, planning surveys, Preparation of master plan & its phasing. Nagpur Plan, Bombay Plan, Lucknow Plan</p> <p>Highway Materials: Soil & its characterization. CBR test, plate bearing test Various properties of aggregates and bituminous materials and Test, IS Specifications, (Regarding Highway materials) (9)</p>
Unit-II	:	<p>Highway Alignment & Geometric Design: Alignment Principles, surveys for location, cross sectional elements, Right of way, Camber, Gradient, Typical Highway cross section in embankment and in cutting. PIEV Theory, stopping sight distance, Overtaking the distance, Horizontal alignment - curves, design of super elevation, Extra widening, transition curves, and vertical alignment. Design of summit and valley curves. IRC Standards for Geometric design. (10)</p>
Unit-III	:	<p>Highway pavement design: Types of pavements- Flexible and Rigid pavement, structure. Functions & components, Design factors. ESWL. For dual wheels. Tire and contact pressure, and Flexible pavement design by Group index and C.B.R. Method. Westergards analysis for wheel load & Temperature stresses in rigid pavement, Combination of stresses, Joints in Rigid Pavement, Rigid and Flexible pavement failures, Highway maintenance. (10).</p>
Unit-IV	:	<p>Pavement Construction: Construction of earth roads, stabilized soil roads, water macadam roads, wet mix Macadam roads, bitumen Macadam. Asphalt concrete. Seal coat, mix seal surfacing, liquid spray grout, and construction of cement concrete roads.</p> <p>Highway construction machinery: Earth moving equipments, spreaders, rollers payers, finishers, binder, Sprayers, hot mix plant, vibromixers and tippers (06)</p>

Unit-V	:	<p>Traffic Control and regulations – Traffic characteristics, various traffic studies, Road Parking system, Accident Study, Traffic control devices, Marking, Signs, Signals, islands & its types, warrants for Traffic signal, Grade intersections - cloverleaf, Diamond. Rotary intersection & design elements</p> <p>Introduction to Elements of Docks and Harbors: Engineering, classification. Requirements, selection of site</p> <p>Introduction to Airport Engg: Engineering, classification. Requirements, selection of site. (11)</p>
Unit-VI	:	<p>Tunneling: Classification and geological consideration of Tunnels tunneling in hard and soft rocks, Tunnel Surveys including setting out & modern techniques, transfer of tunnel alignment, Geological condition for tunnels, equipments for drillings & driving, drill holes, explosives, types & use of firing delay techniques. Tunnel boring machine, mucking & rock bolting, methods, types of boring machine, mucking, supporting, shield methods for ordinary & pneumatic ,safety Tunnel Lining its necessity& Modern methods used for tunnel lining. Modern methods for tunneling. (13)</p>
Text Books	:	<p>7. Highway Engg- S.K.Khanna and Justo.</p> <p>8. Principles of Transportation Engg.- Partha Chakraborti & AnimeshDas</p> <p>9. Airport Engg.- G.Venkatappa Rao</p> <p>10. Transportation Engineering- N.L.Arora</p> <p>11. Airport Planning and design-S.K.Khanna and M.G.Arora</p> <p>12. The planning and design of airports-Robert Hornjeff</p> <p>13. Air Transportation Planning and design- Virender Kumar & Satish Chandra</p>
References e- books, e- Journals	:	<p>1. Highway Engg.- Kadiyali</p>

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Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII

Code No.: CED 405

Teaching Scheme:
Theory: 04 Hrs/ week

Credits:04

Course Title: EL-II (Green Building) Technology
Class Test (Marks): 20
Theory Examination (Duration): 03hrs
Theory Examination (Marks): 80

Course Objectives	:	Main object is to create interest among students in green buildings and motivate them to pursue knowledge in this field. At the end of this course student should gain basic knowledge of the green buildings and the related terminology. Also he should be able prepare for AP exams.		
Unit-I	:	Introduction: Definition, terminologies, objectives, Kyoto-protocol, LEED rating system, benefits to various buildings e.g. Industrial, residential, commercial complexes, educational institute, institutes working in this field ex. IGBC , TERI etc., business opportunity (6 Hrs)		
Unit-II	:	LEED Rating System: LEED credit systems, various points calculation, ratings e.g. Silver, Gold and Platinum, government policies, environmental norms, carbon credits, direct and indirect benefits (10 Hrs)		
Unit-III	:	Planning: Sun diagram, indoor air pollution, LEED credits calculation, resources, building elements e.g. door, window, HVAC, paints, landscaping , biodiversity , zero discharge concept, comparison between construction cost & operation cost Materials: Recycled, processed, locally available, sustainable material, new age green materials (10 Hrs)		
Unit-IV	:	Elements of Green Buildings (Detail study of): Light, Ventilation, Water recycle & optimization, HAVC SYSTEM, Electric efficiency, Finishing items, Furniture & fixtures, Landscaping, Maintenance (10 Hrs)		
Unit-V	:	Case Study: Industrial Building, Hotel, Residential Building, Commercial complex, Educational Institute, Government building Visit to these places which are in Operation, under construction, study and report (18 Hrs)		
Unit-VI	:	AP exam module brief , about the exam and benefits (6 Hrs)		
Text Books	:	Green Buildings: Professional guide to Concepts, Codes & Innovations	Anthony Floyd	Cenage Learning
		Green Buildings: Project planning & cost estimating	Kweku K. Bentil & Carl w. Linde	John Wiley & Sons

		Green Building Materials: A guide to product selection & specification	Ross Spiegel & Dru meadows	John Wiley & Sons
		Guide to Energy Conservation , energy planning for buildings	Seymour Jurlmul	Mc Grow-Hill
		Energy efficient buildings in India	Mili Muzumdar	Ministry of Non-conventional Energy sources
		LEED 2011 FOR INDIA Green Buildings rating system		IGBC ,Hyderabad
References e- books, e- Journals	:	Joint Implementation of climate commitments	Prodipto Ghosh & Jotsna Puri	Teri
		Green Architecture : Design for sustainable future	Brenda & Robert Vale	T & H

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Code No.: CED 406

Teaching Scheme:
Theory: 04 Hrs/ week

Credits:04

Course Title: Economics, Costing and Management

Class Test (Marks): 20

Theory Examination (Duration): 03hrs

Theory Examination (Marks): 80

Course Objectives	:	This course is tailored for the student desiring to learn the basics of economics and costing for qualitative and quantitative applications in the field of engineering. The course is intended to lead students to an appreciation of the role of the management in industry in the global economy and the issues associated with managing resource based economies.
Unit-I	:	Introduction to economics: Introduction to economics (Functions & Objectives).Types of economies (Capitalistic, Communalistic, Mixed, Laissez Faire.Economic Thought (Classical, Political, Marxism, Neo Classical and Keynesian Theory).Role of Economics in society & its problems (10)
Unit-II	:	Concepts of Micro Economics & Macro Economics: Marginal Analysis & Opportunity Cost, Elasticity of Demand, Demand Forecasting, Law of demand & its limitations, Market Equilibrium (6)
Unit-III	:	Elements of economics: Theory of Cost & Production, Law of return to scale, Break even analysis, Market Structures, Market Failure, Consumer Choice Theory (12)
Unit-IV	:	Cost Accounting - Nature and scope, Meaning, Objectives, functions, Advantages , Classification of cost, Elements of Cost - Materials, Labour and overheads and their Allocation and Apportionment, Methods and techniques of costing, Material Cost - Material cost Materials control and techniques ,Procurement Procedures and documentation, Methods of pricing material – Incoming and outgoing material, Overhead and variances – introduction and classification ,Treatment of under/ over absorbed overheads – Problems, Preparation of cost sheet (Problems (12)
Unit-V	:	Management Accounting – Nature and Scope, Tools and Techniques of Management Accounting, Comparison of Management Accounting with Financial and cost Accounting. Financial Statement Analysis – Fund Flow Statement and Cash Flow Statement –Problems. Marginal costing and cost Volume Profit Analysis – Meaning ,concept and Application , Problems (12)
Unit-VI	:	Budget and budgetary control – Meaning, Concept , advantages and types, Standard Costing and Variance Analysis, Capital Budgeting – Concept , Steps , Techniques – Discounted and non discounted (Problems),Time value of Money, Strategic Decision Making- Cost and non-cost factors in decision making, decision making and marginal

		costing, Differential cost analysis. (8)
Text Books	:	1.D N Dwivedi , Managerial Economics, 7th edition, Vikas Publication 2.D M Mithani, Managerial Economics, 6th edition, Himalaya Publishing House,2012 3. Abha Mittal, Microeconomics, S Chand , New Delhi 2012. 4. Cost Accounting and Management Accounting – By S N Maheswari, Publication Year: 2013, 14 th eddition. 5.Financial , Coat and Management Accounting by Dr. P.Perisamay, Himalaya Pub.,2011 6.Cost Accounting – M.N.Arora,Vikas Pub.,2009 Khan and Jain - Management Accounting, Tata McGrawHill Pub.,2005
References e- books, e- Journals	:	Khan and Jain - Management Accounting, Tata McGraw-Hill Pub.,2005

Section A: Includes Unit I, II and III; **Section B:** Includes Unit IV, V and VI.

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Code No.: CED 407

Teaching Scheme:
Theory: 04 Hrs/ week

Tutorial: 00 Hr/week
Credits:04

Course Title: Elective-II
(EARTHQUAKE ENGINEERING)
Class Test (Marks): 20
Theory Examination (Duration): 03hrs
Theory Examination (Marks): 80

Course Objectives	:	To make students familiar with the structural behavior of civil engineering structure (building) during earthquake. The Loading calculations and design of members to be adopted in Structural Consultancy practice shall strictly be in accordance with the relevant IS codes and also the analysis of structure shall be as per elastic methods developed and adopted widely all over the country.
Unit-I	:	Elements of seismology – terminology, structure of earth, causes of an earthquake, plate tectonic theory, continental drift theory, elastic rebound theory, seismic waves, magnitude and intensity, methods of measurement, seismic zoning of India, seismic coefficients for different zones, seismograph, strong motion earthquakes, accelogram. Lessons from past earthquake: - Study of damages caused due to past, earthquakes in India and remedial measures. (10)
Unit-II	:	vibrations :definition, causes, classification:, Single Degree of Freedom systems (SDOF) - free, forced , damped, un-damped vibrations. Introduction to Multi-degrees of Freedom systems (MDOF), concept of response spectrum. (10)
Unit-III	:	Equivalent static lateral earthquake force, study of IS 1893,2002 (10)
Unit-IV	:	Building forms for earthquake resistance. Seismic effects and liquefaction (08)
Unit-V	:	Earthquake Resistance Design Principles: Design philosophy, Behavior of RC building, ductility and ductile detailing, Design and detailing of beam and columns using IS 13920. (12)
Unit-VI	:	Seismic design of Masonry buildings Study of IS 4326, IS 13827, IS 13828, IS 13920 (10)
Text Books	:	1.Dynamics of Structures-Theory and Applications to Earthquake Engineering by A.K. Chopra – Prentice Hall Publications.

		2 Earthquake Resistance Design of Structure – S. K. Duggal , Oxford Uni. press 3 Earthquake Engineering by Manish Shrikhande 4. Earthquake Engineering by D. S. Joshi, Indian Society of Structural Engineering 5. Elements of Earthquake Engineering – Jai Krishna, South Asian Pub. New Delhi 6. Earthquake Resistant, Design of Masonry and Timber Structures – A.S. Arya 7. BMTPC Earthquake Engineering Tips
References e- books, e- Journals	:	1. Structural Dynamics - Mario Paz CBS Publication 2. Earthquake Resistant Design of R. C. C. Structures – S. K. Gosh 3. IS 1893:2002 : Criteria for Earthquake Resistant Design of structures 4. IS 4326:1993 : Earthquake Resistant Design and Construction of Buildings- code of practice 5. IS 13827 : Improving Earthquake Resistance of Earthen Buildings- Guidelines 6. IS 13828 : Improving Earthquake Resistance of low strength Masonry Buildings- Guidelines 7. IS 13920 : Code of practice for Ductility Detailing of reinforced concrete structures subjected to seismic forms.

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Code No: CED 421

Course Title: Structural Mechanics

Teaching Scheme:

Practical's: 02 hrs/week

Term Work (Marks): 50

Credits: 01

Practical Examination (Marks): 50

Course Objectives	:	To develop the knowledge and skills of the students towards various advanced methods of structural analysis and design and to improve their knowledge regarding the behavior of structural elements like plates and shells under strained conditions
List of Assignments	:	Assignments: 1. Theory of elasticity 2. Theory of plates 3. Analysis of shells 4.. Flexibility matrix method 5. Stiffness Matrix Method 6. Plastic Method of Analysis & Design

Term Work assessment shall be done on the basis of

Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

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Code No: CED 422

Course Title: Environmental Engineering II

Teaching Scheme:

Practicals: 02 hrs/week

Term Work (Marks): 50

Credits: 01

Course Objectives	:	A Knowledge of Environmental Engineering help the engineers to analyse ,think logically and pursue the engineering approach for safe disposal of waste and therefore desires as an integral part of engineering education and training, irrespective of the branch specialization
List of Practical's	:	Experiments: Waste water quality analysis for the following parameters <ol style="list-style-type: none"> 1. PH 2. Total solids 3. SVI 4. BOD 5. COD 6. Characterisation of waste water from any two sources, interpretation of results 7. Design of waste water system 8. Visit to waste water treatment plant 9. Visit to dairy industry 10. Layout of the treatment plant

Term Work assesment shall be done on the basis of

Performing the experiments in the laboratory and
Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering and Technology)
Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII

Code No: CED 423

Course Title: PROJECT PLANNING AND MANAGEMENT

Teaching Scheme:

Practicals: 02 hrs/week

Credits: 01

Term Work (Marks): 50

Course Objectives	:	Knowledge helps the engineers to plan, scheduled, analyse and think logically to pursue an engineering project to achieve its completion in target time with most viable economy. Hence practical assignments are designed.
Practical's	:	<p>Each student will be required to submit assignments on the topics mentioned in the syllabus. The assessment of term work shall be done on the following criteria.</p> <ul style="list-style-type: none"> • Continuous assessment • Oral examination conducted internally on the syllabus and the term work mentioned above. <p>The practical examination shall consist of the viva voce based on the syllabus and the term work submitted by the candidate. The assessment shall be done on the following criteria,</p> <p>Record of the term work submitted by the candidate.</p> <p>Oral examination conducted externally on the syllabus and the term work mentioned above</p>

<p align="center">Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Faculty of Engineering and Technology) Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII</p> <p>Code No.: CED 424 Course Title: Transportation Engineering-II</p> <p>Teaching Scheme: Practicals: 02 hrs/week Term Work (Marks): 50 Credits: 01</p>		
Course Objectives	:	A Knowledge Transportation Engineering help the engineers to have a strong analytical and practical knowledge of Planning, Designing and solving the transportation problems. To introduce the students with the principles and practice of transportation engineering this focuses on Traffic and Transportation Engineering and Highway Engineering. To strength the students knowledge and technical knowhow to be efficient Transport Engineers.
List of Practical's	:	Experiments(any 10) 1. Aggregate impact test. 2. Aggregate crushing test. 3. Los Angles abrasion Test. 4. Shape and size test - Flakiness index and Elongation index. 5. Specific Gravity and water absorption 6. Penetration test. 7. Softening point test. 8. Viscosity test 9 .Ductility test. 10 C.B.R. Test 11. Traffic volume study. 12. Spot speed study. 13 .Flash point test.
		Transportation Engg.-Laboratory Manual - S.L. Dhingra, GV. Rao

Term Work assessment shall be done on the basis of
 Performing the experiments in the laboratory and
 Continuous assessment

Practical Examination, if applicable, shall be conducted on the syllabus and term work mentioned above.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering and Technology)
Syllabus of Final Year B. Tech. (Civil Engineering) Semester VII

Code No: CED 425

Course Title: Project

Teaching Scheme:

Practical's: 02 hrs/week

Credits: 01

Term Work (Marks): 50

Practical Examination (Marks): 50

Course Objectives	:	The practical implementation of theoretical knowledge gained during your study to till date is important for Engineering Education. The student should be able implement their ideas/real time industrial problem/ current application of their engineering branch which they have studied in curriculum. This will definitely help in building the confidence in the student what he has learnt theoretically. The dependent study of the state of the art topics in a broad area of his/her specialization.
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GUIDELINES FOR STUDENTS AND FACULTY:

1. Students have to finalize their project title based on Industrial Assignments.
2. The projects selected should be such so as to ensure the satisfaction of the urgent need to establish a direct link between education, national development and productivity and thus reduce the gap between the world of work and the world of study. The term work will consist of a report prepared by the student on the project allotted to them.
3. Project topics may be chosen by the student or group of students (maximum 3 students) with advice from the faculty members.
4. To design a project at adequate scale level for the following applications- It may be based (i) Entirely on study and analysis of a typical Instrumentation and Control System, (ii) Experimental verification, or (iii) Design, fabrication, testing and calibration of an Instrumentation system. The software based project can be considered based on its application for instrumentation and control purpose. The students are required to submit the report based on project work done.
5. Use appropriate tools for the preparation of the report.
6. Each student/group is required to.
 - a. Submit a one page synopsis before the project talk for display on the notice board in the first week of their academic semester.
 - b. Give a 10 minutes presentation through OHP, PC, and Slide projector followed by a 10 minute discussion in the second week of their academic semester.
 - c. Submit a report on the project topic with a list of required hardware, software or other equipment for executing the project in the third week of their academic semester.
 - d. Start working on the project and submit initial development and CPM/PERT planning drawing in the fourth week of their academic semester.
 - e. Preparation of PCB layout, wiring diagram, purchase of components, software demo, flow chart, algorithm, program/code, assembling, testing, etc. should be submitted by student/s within next five/Six weeks and minimum one page report should be there for each major activity.
 - f. Overall assembling, wiring, code writing, testing, commissioning, should completed within next two weeks.
 - g. At the last but one week of end of academic semester the internal assessment of project will be done by panel of internal faculties and they will decide marks out 25
 - h. In the last week, student/group will submit final project report to guide and thereafter guide will finalize marks out of the remaining 25 marks for term work (TA).
7. Projects are to be scheduled in the weekly scheduled time-table during the semester and any change in schedule should be discouraged.
8. Every assigned faculty/s should maintain separate file for evaluating progress of each student or group.
9. Award 50 TA, Sectionals marks based on the assessment done by internal guide and panel during semester and the involvement of student/group in the work assigned related to the topic and its application.
10. The format and other guidelines for the purpose of the Project Submission in hard bound copies should be as follows:

REPORT STRUCTURE

Index/Contents/Intent

List of Abbreviations

List of Figures

List of Graphs

List of Tables

and List of if any other inclusion

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REPORT STRUCTURE

Index/Contents/Intent

List of Abbreviations

List of Figures

List of Graphs

List of Tables

and List of if any other inclusion

1. Introduction

2. Literature survey

3. System development

4. Performance analysis

5. Conclusions

References

Appendices

Acknowledgement

1. INTRODUCTION

1.1 Introduction

1.2 Necessity

1.3 Objectives

1.4 Theme

1.5 Organization

2. LITERATURE SURVEY

Literature Survey

Related information available in standard Books, Journals, Transactions, Internet Websites *etc.*

till date (More emphasis on last three to five years)

3. SYSTEM DEVELOPMENT

Model Development

- Analytical
- Computational
- Experimental
- Mathematical
- Statistical

. PERFORMANCE ANALYSIS

- Analysis of system developed either by at least two methods depending upon depth of standard

4. PERFORMANCE ANALYSIS

- Analysis of system developed either by at least two methods depending upon depth of standard.
- These methods normally used are Analytical/Computational/Statistical/Experimental/ or Mathematical.
- Results at various stages may be compared with various inputs.
- Output at various stages with same waveforms or signals or related Information /parameters.
- Comparison of above results by at least two methods and justification for the differences or error in with theory or earlier published results.

5. CONCLUSIONS

5.1 Conclusions

5.2 Future Scope

5.3 Applications

Contributions (if any,)

The innovative work/invention/new ideas generated from the analysis of the work which can be taken from the conclusions

REFERENCES

- Author, “Title”, Name of Journal/Transactions/ Book, Edition/Volume, Publisher, Year of Publication, page to page (pp.__).

These references must be reflected in text at appropriate places in square bracket In case of web pages complete web page address with assessing date has to be enlisted.

List of references should be as per use in the text of the report

APPENDICES

Related data or specifications or referred charts, details computer code/program, etc.

(1 Page)

Expression of gratitude and thankfulness for helping in completion of the said task with name Signed by the candidate

- General Guidelines

Text should be printed on front and correct side of the watermark on quality bond paper

Paper size- A4, 75 to 85 gsm paper

Left Margin-1.5”

Right Margin-3/4”

Top Margin-1”

Bottom Margin-1”

- First page of first chapter need not be printed anywhere ,second page onwards at right hand corner at ½ inch from right and top side from second chapter onwards starting page number of chapter should be printed at bottom center place report total pages –around.

Sub-Subchapter –First Alphabet Capital case-12 Font

Page numbers for Index/Contents/Intent should be in roman

Title of the Report should not be more than two lines

Text pages should be in times new roman

The page of the Index/Contents/Intent heading should be below the words for appropriate

sub chapter or sub-sub chapter as shown in sample copy

Cover page should have (Mission statement of Institute) in inverted commas, Symbol of

Institute, Name of Department, and Institute

Suitable flap with name of the candidate, Department and Institute name and symbol can

	<p>Title of the Report should not be more than two lines.</p> <p>Text pages should be in times new roman The page of the Index/Contents/Intent heading should be below the words for appropriate sub chapter or sub-sub chapter as shown in sample copy Cover page should have (Mission statement of Institute) in inverted commas, Symbol of Institute, Name of Department, and Institute Suitable flap with name of the candidate, Department and Institute name and symbol can be used with nylon strip.</p> <p>For more information and sample of hard copy please contact the respective Head of the Department</p>
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Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
(Faculty of Engineering and Technology)
Syllabus of Final Year B. Tech. (Civil Engineering) Semester VIII

Code No.: CED 451

**Course Title: In-plant training (IPT) of
around 20 weeks**

Teaching Scheme:

Practical's: 0hrs/week

Credits: 27

Term Work (Marks): 300

Practical/ oral exam: 300

Course Objectives	:	1) The students of B.Tech course shall get an opportunity to work on live problems of the industry. 2) He/She shall apply his leaving concepts in the real work situation. 3) He/She shall get an exposure to the industrial environment and thereby enable himself/herself to appreciate the other related aspects of industry vis, human, economic, commercial and regulatory. 4) He/She shall identify career paths taking into account their individual strengths and aptitude. 5) He/She shall contribute for the achievement of economic goals and aspirations of the industry and our country as a whole.
Curriculum	:	1) In plant training for a period of one full term, and the period of the term shall be as prescribed by the university from time to time. 2) A project on live problems of the industry shall be undertaken by the student/group of students undergoing training in the same establishment. 3) The term work shall consist of the in plant training record-daily diary, work diary, progress report, a record containing the literature survey in the field of appropriate branch of Engineering, a preliminary report related to project work etc. 4) Seminars will be arranged after successful completion of period specified in the scheme of semester VIII of B.Tech. The date and times will be decided according to the convenience of guide and student.
		<p>General Provisions, Rules And Regulation Of In-Plant Training</p> <p>1. Definition</p> <ul style="list-style-type: none"> • In-plant training means a course of training in any industry or establishment Undergone in pursuance of memorandum of understanding between industry and institute and under the prescribed terms and conditions of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Institution means an academic Institution of higher learning associated and admitted under the privileges of university, I.e. Maharashtra Institute of Technology, affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. • Industry means any industry or business in which any trade, occupation or subject field in engineering or technology may be specified as a designated trade. • Establishment includes any place where any industry is carried on. • University means any of the universities mentioned in the schedule of Maharashtra University Act, 1994 i.e. Dr. Babasaheb Ambedkar Marathwada University,

	<p>Aurangabad.</p> <ul style="list-style-type: none"> • Collaboration means collaborative academic activity of the Institute with industry. • Student means a B Tech Course student. <p>2. Memorandum of understanding: Maharashtra Institute of Technology, Aurangabad will enter into an agreement with the industry through ‘Memorandum of Understanding’ for creating facilities of in-plant training in the appropriate branch of Engineering according to the Course Curriculum and keep this agreement for a period of 10 years to foster a healthy industry- institute interaction for mutual benefits of both.</p> <p>3. Admission to in-plant training: No student will be deputed for in-plant training unless he produces testimonial of having kept one term for the subject under B Tech Semester – VIII of final year course satisfactorily in Maharashtra Institute of Technology after passing the TY B Tech Examination (in the appropriate branch).</p> <p>4. Period of in-plant training: The period of in-plant training will be the period of one term for the subject under B Tech course semester-VIII, which will be notified by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad</p> <p>5. Contract of In-plant Training :</p> <ul style="list-style-type: none"> • The student of Maharashtra Institute of Technology shall enter into a contract of inplant training with the employing industry. • The in-plant training shall be deemed to have commenced on the date, on which the contract of in-plant training has been entered into. • Every contract of in-plant training will contain the Terms and Conditions to be agreed by both the parties. • Every contract of in-plant training shall be registered with the Maharashtra Institute of Technology within 15 days from entering into the contract. <p>6. Violation of contract: Where an employer, with whom a contract for in-plant training has been entered into, is for any reason, unable to fulfill his obligation under the contract, the contract end with the consent of Maharashtra Institute of Technology. It is agreed between the employer, the student and any other employer that the student shall be engaged as an “in-plant trainee” under the other employer till the expiry period of the in-plant training. The agreement on registration with Maharashtra Institute of Technology shall be deemed to be the contract of in-plant training between the student and other employer, and from the date of such registration, the contract of in-plant training with the first employer shall terminate and no obligation under that contract shall be enforceable at the instance of any party to contract against the other party thereto.</p> <p>7. Termination of Contract: The contract of in-plant training shall terminate on the expiry of the period of in-plant training. Either party to the contract of in-plant training make an application to Maharashtra Institute of Technology, Aurangabad for the termination of the contract. After considering the content of the application, and objection, Maharashtra</p>
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	<p>Institute of Technology by order in writing, will terminate the contract, if it is satisfied that the parties to the contract have/has failed to carry out the Terms and Conditions of the contract.</p> <p>Provided that where a contract is terminated-</p> <ul style="list-style-type: none"> • For the failure on the part of the Employer, Maharashtra Institute of Technology will depute students to another Employer for providing facilities of in-plant training to the remaining period of training. • For the failure on the part of the student, the student will not be allowed to continue his/her in-plant training in that term. The student shall be deputed for in-plant training in the next coming term <p>8. Expectation from the Employer/Industry:</p> <p>The following expectations are derived for effective in-plant training.</p> <ul style="list-style-type: none"> • To provide legitimate facilities for the training and learning of all the processes. • To guide the student for understanding a project of immense importance to industry and to help him/her for his/her career advancement. <p>9. Obligation of Students:</p> <ul style="list-style-type: none"> • To learn his/her subject field in Engineering or Technology conscientiously and diligently at his place of training. • To carry out all orders of his Employer and the Superior in the establishment. • To abide by the Rules and Regulations of the Industry/Establishment in all matters of conduct and discipline. • To carry out the obligation under the contract of in-plant training. • The student shall maintain a report of his work during the period of his in-plant training in a proforma Annexure. • Except in case of extreme urgency, the B.Tech student shall submit an application for all other leaves except the medical leave to the Manager/Gen. Manager (Personnel) of the concerned industry, where he is undergoing an in-plant training and obtain sanction before the leave is taken. In case of Medical Leave, he shall submit an application to Maharashtra Institute of Technology, Aurangabad. The shortage in attendance will be subjected to extending the period of in-plant training in which case, the student may not be allowed to appear for the test, project seminar and assessment of term work etc. which will be held immediately after successful completion of the in-plant training. <p>10. Maintenance of Record:</p> <p>Every student of B.Tech course shall maintain a daily record of the work done by him/her relating to the in-plant training in the proforma (Annexure).</p> <p>11. Industry Sponsored Student Projects:</p> <p>The scheme envisages working out suitable programme for B.Tech students. They are required to complete their in-plant training in a given period. During this period, they shall be familiar with the understanding of the shop process and activities. The students can be asked to solve the mini-shop problem, which will make them think and try out short experiments as an improvement in the process, tools and equipment.</p> <p>The student here is not expected to acquire the skills in operating machines values. He should appreciate the application of theory learnt. The students in a group alone can undertake a project of immense importance for the benefit</p>
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	<p>of the industry and also useful for the students for their advancement of career. Industry staff and Maharashtra Institute of Technology faculty can plan in advance to effectively complete the practical training with the project for preliminary studies on the floor.</p> <p>The projects should aim mainly-</p> <ul style="list-style-type: none"> • Cost reduction • Reducing cycle time • Enhancing productivity • Energy conservation measures • Process Improvement technique • Inventory control • Quality control Technique • Improvement in Material handling system • Bottlenecks in material flow system and so on. <p>12. What will form a good project?</p> <p>Through the project, it is hoped to provide the students an exciting experience in solving line problems under practical constraints. Hence it is desired that the project should be a well defined problem, which can be completed and implemented within the project period. It may be a problem, evolving analysis, design, fabrication and/or testing.</p> <p>13. Time Schedule for the Project:</p> <p>The following time schedule should be planned by each student or groups of students, who undertake the project.</p> <ul style="list-style-type: none"> • Proposal to be received before specifies date. • Project acceptance before. • Commencement of the project. • Completion of the project. <p>14. Commitment on the part of the Institute:</p> <ul style="list-style-type: none"> • Providing a faculty member to supervise the project. • Providing the Institute facilities to complete the project. • Coordinator from industry will be invited to participate in the stage wise assessment of the student's performance. <p>15. Assistance for completion of the Project:</p> <p>All the projects undertaken by the students are time bound. Although, every attempt results may not be achieved within the period available for the student. In such cases, the services of the associated faculty members can be sought for the completion of the same on mutually agreed terms.</p> <p>16. Monitoring of In-Plant Training:</p> <p>The B.Tech students are expected to follow all the rules and discipline of the industry. However, because of other academic requirements and the nature of the project, the student may have to work in other places outside the industry. The faculty and Industry supervisor will work out a suitable arrangement to review the progress of the work from time to time. Maharashtra Institute of Technology, Aurangabad will monitor the progress of in-plant training in association with industry authority.</p> <p>17. Conduct and Discipline:</p> <p>In all matters of the conduct and discipline, B.Tech student shall be governed</p>
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	<p>by the rules and regulations (applicable to employees of the corresponding category) in the Establishment, where he/she is undergoing training.</p> <p>18. B.Tech Students are Trainees and not Workers:</p> <ul style="list-style-type: none"> • Every B.Tech student undergoing an in-plant training in the respective branch of Engineering & Technology in any Establishment shall be treated as a trainee and not a worker and- • The provision of any law with respect to labour will not apply to such a trainee. <p>19. Settlement of Disputes:</p> <p>Any disagreement or dispute between an industry and a B.Tech student trainee arising out of the contract of in-plant training shall be resolved both by Maharashtra Institute of Technology and the industry with mutual cooperation. The decision of both Maharashtra Institute of Technology and the industry shall be final.</p> <p>20. Holding of Test and Grant of Certificate:</p> <p>The progress in in-plant training of every student shall be assessed by the industry and Maharashtra Institute of Technology faculty from time to time. Every B.Tech student undergoing an in-plant training shall be issued a certificate of Proficiency on completion of his training to the satisfaction of the industry.</p> <p>21. Offer of Stipend / Other Welfare Activities and Employment:</p> <p>It shall not be obligatory on the part of the Employer / Industry to offer any stipend and other welfare amenities available, if any, to the students of B.Tech courses undergoing in-plant training. However, if the industry desirous to do so, it will be a privilege for the students and also for Maharashtra Institute of Technology in view of the bonding of better understanding and cooperation forever.</p> <p>PRACTICAL EXAMINATION</p> <p>The Practical examination will be conducted after successful completion of the in-plant training for which guide will be internal examiner and external examiner will be appointed by the university. The date of practical examination will be same for the students of a branch and will be notified by the university. The assessment of the practical examination shall consist of</p> <ol style="list-style-type: none"> 1. Seminar Performance 2. An oral on the project work done. 3. Assessment of the term work. <p>Note: A 'Guide Note' on In-Plant training approved by the University is prepared and made available in each faculty of B.Tech course.</p>
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