Faculty of Engineering & Technology
P.K.University
Shivpuri (MP)

Department of Civil Engineering

Evaluation Scheme & Syllabus for
B.Tech. Third Year (V & VI Sem)

(Effective from session 2025-26)

EVALUATION SCHEME

B.TECH. CIVIL ENGINEERING

3rd Year (5th Semester)

Study And Evaluation Scheme For B.Tech Civil Engineering

Year- 3rd /Semester -5th

Subject Code	Subjects Name	Study Scheme Periods/Week			Credits	Marks in Evaluation Scheme						Total Marks of Internal & External
						Internal Assessment			External Assessment			
		L	T	P		Th	Pr	Total Internal	Th	Pr	Total External	Grand Total
UMANACE501	Managerial Economics	4	0	0	4	30	-	30	70	-	70	100
UGEOTCE502	Geotechnical Engineering	3	0	0	3	30	-	30	70	-	70	100
UINDUCE503	Industrial Sociology	3	0	0	3	30	-	30	70	-	70	100
UQUANCE504	Quantity Estimation & Management	3	0	0	3	30	-	30	70	-	70	100
UCONCCE505	Concrete Technology	3	0	0	3	30	-	30	70	-	70	100
UDESICE506	Design of Structures-I	3	0	0	3	30	-	30	70	-	70	100
UGEOCE507	Geotechnical Engineering Lab	0	0	2	1	-	25	25	-	25	25	50
UCONCCE508	Concrete Technology Lab	0	0	2	1	-	25	25	-	25	25	50
Total		19	0	4	21	180	50	230	420	50	470	700
For pass the candidate is required to obtain 40% marks in each paper and 50% marks in aggregate.												350

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III Year V Semester

UMANACE501
MANAGERIAL ECONOMICS

L	T	P
4	0	0

Unit I: Introduction of Engineering Economics and Demand Analysis: Meaning and nature of economics, Relation between science, engineering, technology and economics; Meaning of demand, Determinants of Demand, Shifts in demand, Law of Demand, Price Elasticity of demand &Types, Income Elasticity, Cross price Elasticity, Determinants of Elasticity, uses and Importance of elasticity.

Unit II: Concept of Supply: Law of Supply, Factors affecting Supply, Elasticity of supply.
Demand Forecasting: Introduction, Meaning and Forecasting, Methods or Techniques of Demand Forecasting, Criteria for Good Demand Forecasting, Demand Forecasting for a New Product;

Unit III: Cost Analysis- Introduction, Types of Costs, Cost-Output Relationship: Cost Function, Cost-Output Relationships in the Short Run, and Cost-Output Relationships in the Long Run; Short run and long run, Break- Even Analysis; Production functions: laws of variable proportions, law of returns; Economies of scale: Internal and external.

Unit IV: Market Structure: Market Structure Perfect Competition, Imperfect competition – Monopolistic, Oligopoly, duopoly sorbent features of price determination and various market conditions.

Unit V: Nature and characteristics of Indian economy, concepts of LPG, elementary concepts of National Income, Inflation and Business Cycles ,Concept of N.I. and Measurement., Meaning of Inflation, Types and causes , Phases of business cycle .Investment decisions for boosting economy(National income and per capital income)

References:

1. Premvir Kapoor, Sociology and Economics for Engineers, Khanna Publishing House (Edition 2018)
2. Salvatore D, “Principles of Microeconomics”, Oxford University Press.
3. Koutsoyiannis A, “Modern Microeconomic”, Macmillan Education Ltd.
4. Dwivedi DN, “Principles of Microeconomics”, Pearson Education.
5. Cowell, FA, “Microeconomic Principles and Analysis”, Oxford University Press.

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UGEOTCE502
GEOTECHNICAL ENGINEERING

L	T	P
3	0	0

Unit 1

Origin and classification: Preview of Geotechnical field problems in Civil Engineering, Soil formation, transport and deposit, Soil composition, Basic definitions, Weight volume relationships, Clay minerals, Soil structure, Index properties, sensitivity and thixotropy, Particle size analysis, Unified and Indian standard soil classification system. **[8]**

Unit 2

Soil Hydraulics: Stress conditions in soil- total, effective and neutral stresses and relationships. Permeability - Darcy's Law, hydraulic conductivity, equivalent hydraulic conductivity in stratified soil. Seepage, flow nets, seepage calculation from a flow net, flow nets in anisotropic soils, seepage through earth dam, capillarity, critical hydraulic gradient and quick sand condition, up lift pressure ,piping; **[8]**

Unit 3

Soil compaction, water content – dry unit weight relationships. Factors controlling compaction. Field compaction equipment; field compaction control; Proctor needle method.

Consolidation: Primary and secondary consolidation, Terzaghi's one dimensional theory of consolidation, Consolidation test, Normal and Over Consolidated soils, Over Consolidation Ratio, determination of coefficient of consolidation, Contact pressure **[8]**

Unit 4

Shear Strength: Mohr-Coulomb failure criterion, shear strength parameters and determination; direct and tri-axial shear test; unconfined compression test; pore pressure, Skempton's pore pressure coefficients. Earth pressure: Classical theories, Coulomb and Rankine's approaches for frictional and c-φ soils, inclined backfill, Graphical methods of earth pressure determination, Stability of slopes ,Culman method & Method of slices, Stability number &chart. **[8]**

Unit 5

Sub surface structure: Bearing capacity of shallow foundations, SPT, Plate load test; Effect of water table.

Deep foundations: Types of piles, Static and dynamic formulae, Pile group, Settlement of Pile Group, Negative skin friction. **[8]**

Text & References Books

1. V.N.S. Murthy – Soil Mechanics and Foundation Engineering (FifthEdition)
2. K.R. Arora – Soil Mechanics and Foundation Engineering
3. Narasinga Rao, B.N.D, "Soil Mechanics & Foundation Engineering", John Wiley & Sons, Wiley India Pvt. Ltd., Darya ganj, New Delhi – 110002.

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UINDUCE503
INDUSTRIAL SOCIOLOGY

L	T	P
3	0	0

Unit-I

Industrial Sociology: Nature,Scope and Importance of Industrial Sociology. Social Relations in Industry, Social Organisation in Industry- Bureaucracy,Scientific Management and Human Relations.

Unit-II

Rise and Development of Industry : Early Industrialism – Types of Productive Systems – The Manorial or Feudal system. The Guild system, The domestic or putting-out system,and the Factory system. Characteristics of the factory system.Causes and Consequences of industrialization.Obstacles to and Limitations of Industrialization.

Unit-III

Industrialization in India.Industrial Policy Resolutions – 1956.Science.Technology andInnovation Policy of India 2013.

Unit-IV

Contemporary Issues : Grievances and Grievance handling Procedure.

Industrial Disputes: causes, Strikes and Lockouts.Preventive Machinery of Industrial Disputes:Schemes of Workers Participation in Management- Works Committee,Collective Bargaining, Bi-partite & Tri-partite Agreement ,Code of Discipline, Standing Orders. Labour courts & Industrial Tribunals,

Text and References books:

1. GISBERT PASCAL, Fundamentals of Industrial sociology, Tata McGraw Hill Publishing Co., New Delhi, 1972.
2. SCHNEIDER ENGNO V., Industrial Sociology 2nd Edition, McGraw Hill Publishing Co., New Delhi, 1979.
3. MAMORIAC.B. And MAMORIA S., Dynamics of Industrial Relations in India.
4. SINHAG.P. and P.R.N. SINHA, Industrial Relations and Labour Legislations, New Delhi, Oxford and IBH Publishing Co., 1977.
5. NADKARNI, LAKSHMI, Sociology of Industrial Worker,Rawat,Jaipur,1998.
6. BHOWMICKSHARIT,Industry,Labour and Society,Orient,2012.

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UQUANCE504
QUANTITY ESTIMATION & MANAGEMENT

L	T	P
3	0	0

UNIT I: Quantity Estimation for Buildings

Measurement units for various building materials, Centre line method, Long and short wall method of estimates, PWD schedule of rate, Delhi schedule of rate. **[8]**

UNIT II: Rate Analysis, Specification and Tenders

Analysis of rates knowing cost of material, labour, equipment, overheads, profit, taxes etc, Specifications – Preparation of detailed and general specifications, Legal aspects of contracts, laws related to contracts, land acquisition, labour safety and welfare. Different types of contracts, their relative advantages and disadvantages. Elements of tender preparation, process of tendering, pre-qualification of contracts, Evaluation of tenders, contract negotiation and award of work, monitoring of contract extra items. **[8]**

UNIT III:

Elements of Management & Network Techniques Project cycle, Organization, planning, scheduling, monitoring, updating and management system in construction, Bar charts, milestone charts, work break down structure and preparation of networks. Network Techniques like PERT &CPM in construction management. Project monitoring and resource allocation through network techniques**. [8]**

UNIT IV: Equipment Management

Productivity, operational cost, owning and hiring cost and the work motion study. Simulation techniques for resource scheduling. Construction Equipment for earth moving, earth compaction, Hauling Equipment, Hoisting Equipment, Conveying Equipment, Concrete Production Equipment, Tunnelling Equipment **[8]**

UNIT V: Project Cost Management

Budgeting, Cost planning, Direct Cost, Indirect cost, Total Cost Curve, Cost Slope. Time value of money, Present economy studies, Equivalence concept, financing of projects, economic comparison, present worth method Equivalent annual cost method, discounted cash flow method, Depreciation and break even cost analysis. **[8]**

References:

1. Dutta, B.N., "Estimating and Costing in Civil Engineering", UBS Publishers & Distributors Pvt. Ltd.,2003

2. Srinath, L.S., "PERT and CPM Principals and applications" Affiliated East-West Press Pvt. Ltd., New Delhi.

3. Patil, B.S., "Civil Engineering Contracts and Estimates" University Press India, Pvt. Ltd. Hyderabad –500004

4. Construction Management by Ojha

5. Srivastava, U.K., "Construction Planning and Management", Galgotia Publications Pvt. Ltd., New Delhi

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III Year V Semester
UCONCEE505
CONCRETE TECHNOLOGY

L	T	P
3	0	0

Unit I

Cement: production, composition properties, types and cement chemistry. Introduction to supplementary cementitious materials. Aggregates: mineralogy, properties, test and standards. Quality of water for use in concrete. **[8]**

Unit II

Introduction & study of accelerators, retarders, water reducers, air entrainers , water proofers, super plasticizers. Study of supplementary cementing materials like fly ash, silica fume , ground granulated blast furnace slag, metakaoline and pozzolana; their production, properties and effect on concrete properties. **[8]**

Unit III

Principle of mix proportioning, properties related to mix design, Mix design method (IS method and ACI method). Mix design of concrete: packing density, Rheology, mix design examples. **[8]**

Unit IV

Concert production, batching, mixing and transportation of concrete. Workability: test for work ability of concrete (slump test, compacting factor test and Vee Bee test). Segregation and bleeding in concrete, curing of concrete and its methods. Determination of compressive and flexural strength as per BIS. Mechanical properties of concrete: elastic modules , poisson's ratio, creep, shrinkage and durability of concrete. **[8]**

Unit V

Study and uses of high strength concrete, self compacting concrete, fiber reinforced concrete, ferro cement, ready Mix Concrete, recycled aggregate concrete and statusin India. **[8]**

References

1. Neville, A.M. and Brooks, J.J.," CONCRETE TECHNOLOGY",ELBS.
2. Shetty, M.S, "Concrete Technology, Theory and Practice", S. Chand and CompanyLtd, New Delhi,2008.
3. Gambhir, M.L, "Concrete Technology", Tata McGraw Hill Publishing CompanyLtd, New Delhi,2004.
4. Santhakumar, A.R; "Concrete Technology" , Oxford University Press, New Delhi,2007.
5. Gupta B.L., Amit Gupta, "Concrete Technology", Jain Book Agency,2010.
6. Newman, K., "CONCRETE SYSTEMS in COMPOSITE MATERIALS".EDTBY L.Holliday. Elsevier Publishing Company.1966..

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III Year V Semester
UDESICE506
DESIGN OF STRUCTURE I

L	T	P
3	0	0

Unit – 1

Analysis of fixed beams, Continuous beams and simple frames with and without translation of joint by Slope-Deflection method, Moment Distribution method and Strain Energy method. [8]

Unit – 2

Muller-Breslau's Principle and its applications for drawing influence lines for indeterminate beams, Analysis of two hinged and fixed arches, Influence line diagrams for maximum bending moment, Shear force and thrust in two hinge arches. Analysis of two and three hinged stiff ening girders. [8]

Unit – 3

Introduction to Suspension Bridges, Analysis of two and three hinged stiffening girders, Influence line diagrams for maximum bending moment and shear force for stiffening girders. [8]

Unit – 4

Basic Force and Displacement Matrix method for analysis of beams, frames and trusses. [8]

Unit – 5

Basics of Plastic Analysis. Applications of Static and Kinematic theorem for Plastic Analysis of Beams and Single Storied Frames. [8]

References:

1. Jain, A. K., "Advanced Structural Analysis ", Nem Chand & Bros., Roorkee.
2. Hibbeler, R.C., "Structural Analysis", Pearson Prentice Hall, Sector - 62, Noida-201309
3. C. S. Reddy "Structural Analysis", Tata Mc Graw Hill Publishing Company Limited,New Delhi.
4. Timoshenko, S. P. and D. Young, " Theory of Structures" , Tata Mc-Graw Hill Book Publishing Company Ltd., New Delhi.
5. Dayaratnam, P. " Analysis of Statically Indeterminate Structures", Affiliated East-West Press.
6. Wang, C. K. " Intermediate Structural Analysis", Mc Graw-Hill Book Publishing Company Ltd.
7. Thandavamoorthy, T.S., "Structural Analysis" Oxford University Press, New Delhi.
8. Martin, H. C." Introduction to Matrix Methods of Structural Analysis", Mc-Graw Hill Book Publishing Company Ltd, New Delhi.
9. Mau, "Introduction to Structural Analysis" CRC Press Taylor & Francis Group.
10. Ghali, " Structural Analysis: A Unified Classical and Matrix Approach" 5/e, CRC Press Taylor & Francis Group.
11. Wilbur and Norris, "Elementary Structural Analysis", Tata McGraw Hill.
12. Vazirani & Ratwani et al , "Analysis of Structures", Khanna Publishers

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III Year V Semester

L	T	P
0	0	2

UGEOTCE507

GEOTECHNICAL ENGINEERING LAB

1. Determination of water content of a given moist soil sample by (i) oven drying method,
2. (ii) pycnomete method.
3. Determination of specific gravity of a given soil sample by (i) density bottle, (ii) pycnomete method.
4. Determination of in situ dry density of soil mass by (i) core-cutter method, (ii) sand replacement method.
5. Determination of relative density of a given soil sample.
6. Determination of complete grain size distribution of a given soil sample by sieve analysis and sedimentation (hydrometer)analysis.
7. Determination of consistency limits (liquid, plastic and shrinkage limits) of the soil sample used in experiment no. 5 (grain-sizeanalysis).
8 Determination of shear strength of soil by Direct shear test.

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L	T	P
0	0	2

UCONCCE508: CONCRETE LAB

1. Study of IS codes for (i) Aggregates (ii) Cements (iii) Admixtures (iv) Fly ash
2. Concrete Mix design computation by ACI 211.1-91 method, IS code method as per 10262- 2007 & 456-2000, DOE method for given sample.
3. Preparation and testing of samples as per any one of the above mentioned computations (Minimum grade of concrete isM30)
4. Tests on Concrete- (a) Workability tests - Slump cone test, compaction factor test, Vee-bee consistmeter test, flow table test. (b) Strength tests- compressive strength, flexural strength, split tensile strength.
5. Effects of Admixture - Accelerator, Retarder, Super Plasticizer.
6. Non destructive Testing - Rebound Hammer test, Ultrasonic Pulse Velocitytest.

References:

1. Concrete Technology – A.M. Neville & J. J. Brooks ,Pearson
2. Concrete Technology Theory & Practice-M.S. Shetty, S. Chand Publishers
3. Concrete Technology Theory & Practice-M.L. Gambhir, TMH Publishers
4. IS:10262-2009-Concrete Mix Proportioning Guideline

STUDY AND EVALUATION SCHEME FOR B.TECH IN CIVIL ENGINEERING

YEAR 3Rd/SEMESTER-6TH

SUBJECT CODE	SUBJECTS NAME	STUDY SCHEME Periods/Week			Credits	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
						INTERNALASSESSMENT			EXTERNALASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
UINDUCE601	Industrial Management	3	0	0	3	30	-	30	70	-	70	100
UDESICE602	Design of Structures-II	3	0	0	3	30	-	30	70	-	70	100
UENVICE603	Environmental Engg.	3	1	0	4	30	-	30	70	-	70	100
UCONSCE604	Construction Technology & Management	3	1	0	4	30	-	30	70	-	70	100
UPRINCE605	Principal of Town Planning & Architecture	3	1	0	3	30	-	30	70	-	70	100
UDESICE606	Design of Structures-II -LAB	0	0	2	1	-	25	25	-	25	25	50
UENVICE607	Environmental Engg LAB.	0	0	2	1	-	25	25	-	25	25	50
Total		15	2	4	19	150	50	200	350	50	400	550

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III Year VI Semester
UINDUCE601: INDUSTRIAL MANAGEMENT

(L T P – 3 0 0)

Unit I

Introduction: Concept and scope of Industrial Management. Productivity: Definition, measurement, productivity index, types of production system, Industrial Ownership.

Unit II

Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Social responsibilities of Management,

Introduction to Human resources management: Nature of HRM, functions and importance of HRM.

Unit III

Work Study: Introduction, definition, objectives, steps in work study, Method study: definition, objectives, steps of method study, Work Measurement: purpose, types of study — stop watch methods — steps — allowances — standard time calculations — work sampling, Production Planning and Control

Inventory Control: Inventory, Cost, Models of inventory control: EOQ, ABC, VED

Unit IV

Quality Control: statistical quality control, Control charts for variables and attributes, Acceptance Sampling- Single sampling- Double sampling plans, Introduction to TQM.

Unit V

Project Management: Project network analysis, CPM, PERT and Project crashing and resource Leveling

References:

1. Engineering Management (Industrial Engineering & Management)/ S.C. Sharma &T.R. Banga, Khanna Book Publishing Co. (P) Ltd., Delhi (ISBN: 978-93-86173-072)
2. Industrial Engineering and Management/ P. Khanna, Dhanpatrai publications Ltd.
3. Production & Operation Management /Paneer Selvam /PHI.
4. Industrial Engineering Management/NVS Raju/ Cengage Learning.
5. Industrial Engineering Management I Ravi Shankar/ Galgotia.

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III Year VI Semester

UDESICE602:
DESIGN OF STRUCTURE- II

L	T	P
3	0	0

Unit – 1

Introduction to Various Design Philosophies, Design of Rectangular Singly and Doubly Reinforced Sections by Working Stress Method. Assumptions in Limit State Design Method, Design of Rectangular Singly and Doubly Reinforced beams, T-beams, L-beams by Limit State Design Method.

Unit –2

Behaviour of RC beam in Shear, Shear Strength of beams with and without shear reinforcement, Minimum and Maximum shear reinforcement, design of beam in shear.
Introduction to development length, Anchorage bond, flexural bond. (Detailed Examples by Limit State Design Method), Failure of beam under shear, Concept of Equivalent Shear an

Unit – 3

Design of one way, One way continuous and cantilever solid slabs by Limit State Design Method, Design of RCC staircases.
Design of lintels and chajjas. Design of two way slabs by limit state method, Serviceability Limit States, Control of deflection, cracking and vibrations. [8]

Unit – 4

Design of Columns by Limit State Design Method- Effective height of columns, Assumptions, Minimum eccentricity, Short column under axial compression, requirements for reinforcement, Column with helical reinforcement, Short column under axial load and uni-axial bending, Design of columns under bi-axial loading by Design Charts. [8]

Unit – 5

Structural behaviour of footings, Design of isolated footings, combined rectangular and trapezoidal footings by Limit State Method, Design of strap footings.
Structural behaviour of retaining wall, stability of retaining wall against overturning and sliding, Design of cantilever retaining wall by Limit State Method. [8]

References

1. IS: 456 – 2000.
2. Reinforced Concrete Design by S. U. Pillai & D. Menon, Tata Mc.- Graw, New Delhi
3. Reinforced Concrete – Limit State Design by A. K. Jain, Nem Chand & Bros., Roorkee.
4. Reinforced Concrete Vol. - II by H.J. Shah, Charotar Publisher, Gujarat.
5. RCC Designs (Reinforced Concrete Structures) by B.C. Punmia, Ashoka Kumar Jain and Arun Kumar Jain, Laxmi Publishers, New Delhi.
6. Reinforced Concrete Structures by R. Park and Pauley.

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III Year VI Semester

UENVICE603: ENVIRONMENTAL ENGINEERING

L	T	P
3	1	0

Unit I

Fresh water, water demands, variation in demands, population forecasting by various methods, basic needs and factors affecting consumption, design period.

Transmission of water: Various types of conduits, capacity and sizes including economical sizes of rising main, structural requirements; laying and testing of water supply pipelines; pipe materials, joints, appurtenances and valves; leakages and control. [8]

Unit-II

Storage and distribution of water: Methods of distribution, pressure and gravity distribution systems, Concept of service and balancing reservoirs.

Capacity of distribution reservoirs: general design guidelines for distribution system. [8]

Unit-III

Physical, chemical and bacteriological examination of water and wastewater: Temperature, pH, colour and odour, solids, nitrogen and phosphorus, chlorides, toxic metals and compounds, BOD, COD etc. quality requirements, standards of water and waste water, disposal of wastewater on land and water bodies..

Unit-IV

Objectives of water treatment: unit operations, processes, and flow sheets.

Water treatment: screening, sedimentation, determination of settling velocity, efficiency of ideal sedimentation tank, design of settling tanks, grit chamber.

Primary sedimentation and coagulation, filtration: theory of filtration; hydraulics of filtration; slow sand, rapid sand and pressure filters, backwashing; design of slow and rapid sand filters.

Disinfection: requirements of an ideal disinfectant; various disinfectants, chlorination and practices of chlorination, water softening and ion-exchange process [8]

Unit-5

Objectives of waste water treatment: unit operations, processes, and flow sheets.
Secondary and tertiary treatment: secondary sedimentation and theory of organic matter removal. Working of activated sludge process, trickling filters; aerated lagoons, waste stabilization ponds, oxidation ditches, rotating biological contactors (RBC).
Anaerobic digestion of sludge: design of low and high rate anaerobic digesters and septic tank. Working of up flow anaerobic sludge blanket (UASB) reactor and other emerging technologies for wastewater treatment [8

Text Books:

1. Peavy, Howard S., Rowe, Donald R and Tchobanoglous, George, "Environmental Engineering" McGraw Hill Education (India) Pvt. Ltd., New Delhi.
2. Metcalf & Eddy "Wastewater Engineering: Treatment & Reuse", Tata Mc-Graw Hill.
3. M. P. Poonia and SC Sharma: Environmental Engineering, kahnna publishing house
4. Keshav Kant, "Air Pollution Control Engineering", Khanna Publishing House
5. OP Gupta, Elements of Environmental Polluton Control, Khanna Publication
6. Davis, M.L. & Cornwell, D.A.: Introduction to Environmental Engineering, Mc-Graw Hill.

References:

1. Manual on Water Supply and Treatment, C. P. H. E. E. O., Ministry of Urban Development, Government of India, New Delhi
2. Manual on Sewerage and Sewage Treatment, C. P. H. E. E. O., Ministry of Urban Development, Government of India, New Delhi
3. Steel and McGhee: Water Supply and Sewerage
4. Fair and Geyer: Water Supply and Wastewater Disposal
5. Hammer and Hammer Jr.: Water and Wastewater Technology
6. Raju: Water Supply and Wastewater Engineering
7. Rao: Textbook of Environmental Engineering
8. Davis and Cornwell: Introduction to Environmental Engineering
9. Kshirsagar: Water Supply and Treatment and Sewage Treatment Vol. I and II
10. Punmia: Water Supply and Wastewater Engineering Vol. I and II
11. Birdie: Water Supply and Sanitary Engineering
12. Ramalho: Introduction to Wastewater Treatment Processes
13. Davis Mackenzie L., Cornwell, David A., "Introduction to Environmental Engineering" McGraw Hill Education (India) Pvt. Ltd., New Delhi.
14. Birdie: Water Supply and Sanitary Engineering
15. Ramalho: Introduction to Wastewater Treatment Processes
16. Parker: Wastewater Systems Engineering
17. A.K. Jain, Environmental Engineering, Khanna Publishing House

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III Year VI Semester

UCONSCE604: CONSTRUCTION TECHNOLOGY & MANAGEMENT

L	T	P
3	1	0

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Unit-1
Elements of Management and Network Techniques: Project Cycle, Organization, Planning, Scheduling, Monitoring, updating and Management System in Construction.

Unit-2
Network Techniques: Bar Chart, Mile stone chart, work break down structure, and preparation of networks. Network techniques like PERT and CPM. In construction Management, Project Monitoring and resource allocations through network hniques.

Unit-3
Project Cost Control: Cost Planning, Direct Cost, Indirect Cost, Total Cost Curve, Cost Slope. Time Value of Money, Present Economy studies, Equivalence Concept, financing of projects, Economic comparisons present worth method, Equivalent annual cost method, discounted cash low method. Depreciation and break even cost analysis of construction projects.

Unit-4
ContractManagement:LegalAspectsofContracts,lawsrelatedtocontracts, landacquisition,laboursafetyandwelfare,Differenttypesofcontracts,their relative advantages and disadvantages, Elements of Tender Preparation, Process of tendering, pre qualifications of contracts, Evaluation of tenders, contractnegotiationandawardofwork,monitoringofcontract,settlementof disputes, arbitration and commissioning of project.

Unit-5
Equipment Management: Productivity, operational cost, owing and hiring cost. Constriction equipment: Earth moving, Hauling equipments, Hoisting equipments, Conveying Equipments, Concrete Production equipments, Tunneling equipments.

References Books:

Robert L. Peurifoy, Clifford J., Schexnayder, Aviad Shapira " Construction Planning Equipment and Methods" McGraw Hills Education (India), Private Ltd.,New Delhi.
Srinath, L.S., "PERT and CPM Principals and applications" Affiliated East-West Press Pvt. Ltd., New Delhi.
Patil, B.S., "Civil Engineering Contracts and Estimates" University Press India, Pvt. Ltd. Hyderabad – 500004

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III Year VI Semester

UPRINCE605 : PRINCIPLES OF TOWN PLANNING AND ARCHITECTURE

L	T	P
3	1	0

Unit- 1

Principles and history of town planning, Comprehensive planning of towns: Contemporary planning concepts,Problem so furban growth.Landuseclassification andpatterns,Housingdemographicaridsocialsurveys,economicandenvironmental aspects. Concept of master plan, Zoning and Density. Transportation network and planning.Planningstandardsfordifferentlandu seallocation.Roleoftownplanners.

Unit - 2

An overview of ancient human settlements, Evolution of towns: Garden city movement,Linearcityandconcentriccityconcepts,NeighbourhoodandRadburn,La-cite industrielle, Radiant city to present day planning, Satellite town concepts. Concepttofhabitat,Neighborhoodplanning,problemsofmetropolis.

Unit -3

Factors influencing architectural development.Impact of development of materials and techniques through ages. Evolution of architectural forms.Brief history of architecture.

Unit - 4

Elements of Architectural Design: Line. Form, Shape, Space, texture, value and colour. Principles of Architectural Design: Balance, Rhythm, Emphasis, Proportion and Scale, Movement, Contrast, Unity, Harmony, Repetition, Hierarchy. Creation of 2 D and 3 D compositions.Role of architects.

Unit - 5

Functional planning of buildings: Occupancy classification of buildings, Generalrequirementsofsiteandbuilding.Buildingcodes,ActsandBye-laws,
Licensing of building works. Functional planning of building such as residential,institutional,public,commercial,industrialbuildings-identifying activity areas and linkages, checking for circulation, ventilation, structural requirements and other constraints. Different symbols used in building industryasperNBCandpreparingsketchplan,workingdrawingetc.

References:

1. Sir Banister Fletcher's, A History of Architecture, CBSPublisher.
2. G.K.Hiraskar,FundamentalsofTownPlanning,DhanpatRaiPublications..
3. Percy Brown, Indian architecture (The Islamic Period), D. B. Taraporevala Sons &Co.,Bombay.
4. G.K.Hiraskar,Great AgesofWorldArchitecture,DhanpatRaiPublications.
5. Geoffrey Broadbent, Design in Architecture: Architecture and the Human Sciences, John Wiley & Sons,London.
6. S.C. Agarwala, Architecture and Town Planning, DhanpatRai& Co.

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P.K. University, Shivpuri (MP)
III Year VI Semester

UDESICE606 DESIGN OF STRUCTURE II LAB

L	T	P
0	0	2

1. Study of SP34/IS13920/IS456:2000 for detailing of structural elements.
2. Preparation of working hand sketches and Auto CAD drawings for the following-
- RC Beams- Simply supported, Continuous, Cantilever
- T – beam / L-beam floor
- Slabs – Simply supported, Continuous, One way and two way slabs.
- Columns – Tied Columns and Spirally reinforced columns.
- Isolated footings for RC Columns.
- Combined rectangular and trapezoidal footings.
3. Preparation of bar bending schedule
4. Detailing of Buildings with respect to Earthquake Resistant Design
5. Study of full set of structural drawing of a building as made available by Institute.

References: Krishna Raju N., “Structural Design and Drawing” University Press (India), Pvt.Ltd., Hyderabad.

Department of Civil Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
III Year VI Semester

UENVICE607 ENVIRONMENTAL ENGINEERING LAB

L	T	P
0	0	2

1. Determination of turbidity and conductivity.
2. Determination of pH, alkalinity and acidity.
3. Determination of hardness and chlorides.
4. Determination of residual chlorine.
5. Determination of MPN (most probable number) of coliforms.
6. Measurement of SPM and PM10 with high volume sampler.
7. Measurement of sound level with sound level meter.
8. Determination of total , suspended and dissolved solids.
9. Determination of BOD.
10. Determination of COD.
11. Determination of kjeldahl nitrogen.
12. Determination of fluoride.
13. Determination of optimum dose of coagulants by Jar Test Apparatus.
14. Field Visit of Water/ Sewage Treatment Plant of a nearby area.

Note: 1. Experiment at S.NO. 14 is mandatory.
2. Any 8 Experiments out of the S.NO 1 to 13 are to be performed.

References:

1. A.P.H.A. “Standard Methods for the Examination of Water and Waste water”, American Public
Health Association.
2. Sawyer, C.N., McCarty, P.L. & Parkin, G.F. “Chemistry for Environmental Engineering”, Mc-Graw Hill.
3. Mathur, R.P. “Water & Wastewater Testing”, Lab Manual, Roorkee.
4. O P Gupta, Environmental Chemistry, " Khanna Publishing house