



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
|-----------------|-----------|---|------------------------------|---------------|----------------------|-------------------------|----------------------|----|---|---|---------|
| | | | THEORY | | | PRACTICAL | | Th | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BBAI5 01 | ML | HUMAN VALUES AND PROFESSIONAL ETHICS | 60 | 20 | 20 | - | - | 4 | - | - | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in Class,
given that no component shall exceed more than 10 marks.

Course Objectives

The objective of the course is to disseminate the theory and practice of moral code of conduct and familiarize the students with the concepts of “right” and “good” in individual, social and professional context

Course Outcomes

1. Help the learners to determine what action or life is best to do or live.
2. Right conduct and good life.
3. To equip students with understanding of the ethical philosophies, principles, models that directly and indirectly affect business.

COURSE CONTENT

Unit I: Human Value

1. Definition, Essence, Features and Sources
2. Sources and Classification
3. Hierarchy of Values
4. Values Across Culture

Unit II: Morality

1. Definition, Moral Behaviour and Systems
2. Characteristics of Moral Standards
3. Values Vs Ethics Vs Morality
4. Impression Formation and Management

Unit III: Leadership in Indian Ethical Perspective.

1. Leadership, Characteristics
2. Leadership in Business (Styles), Types of Leadership (Scriptural, Political, Business and Charismatic)
3. Leadership Behaviour, Leadership Transformation in terms of Shastras (Upanihads, Smritis and Manu-smriti).



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

Unit IV: Human Behavior – Indian Thoughts

1. Business Ethics its meaning and definition
2. Types, Objectives, Sources, Relevance in Business organizations.
3. Theories of Ethics, Codes of Ethics

Unit V: Globalization and Ethics

1. Sources of Indian Ethos & its impact on human behavior
2. Corporate Citizenship and Social Responsibility – Concept (in Business),
3. Work Ethics and factors affecting work Ethics.

Suggested Readings

1. Beteille, Andre (1991). *Society and Politics in India*. Athlone Press:New Jersey.
2. Chakraborty, S. K. (1999). *Values and Ethics for Organizations*. oxford university press
3. Fernando, A.C. (2009). *Business Ethics - An Indian Perspective*.India: Pearson Education: India
4. Fleddermann, Charles D. (2012). *Engineering Ethics*. New Jersey: Pearson Education / Prentice Hall.
5. Boatright, John R (2012). *Ethics and the Conduct of Business*.Pearson. Education: New Delhi.
6. Crane, Andrew and Matten, Dirk (2015). *Business Ethics*. Oxford University Press Inc:New York.
7. Murthy, C.S.V. (2016). *Business Ethics – Text and Cases*. Himalaya Publishing House Pvt. Ltd:Mumbai
8. Naagrajan, R.R (2016). *Professional Ethics and Human Values*. New Age International Publications:New Delhi.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| | | | THEORY | | | PRACTICAL | | Th | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BTCE 701 | DCS | DESIGN OF HYDRAULICS STRUCTURES | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
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Course Objective

The students (A) will be able to design the different Hydraulic Structures (B) according to condition and nature of work (C) efficiently & economically (D)

Course Outcomes:

1. Explain the different Hydraulic structures and their utilization according to the work
2. Design different Hydraulic structures like Gravity Dam, Earth Dam, etc.
3. Identify the different theories which are required according to the field conditions
4. Design Spillways and Energy Dissipaters
5. Design the Canal Irrigation Structures & Hydro power plants

Syllabus:

UNIT I

Reservoir Planning: Investigations, Capacities, Zones of storage, Mass Inflow and Mass Demand curves, Life of Reservoir.

Earth Dams: Types, causes of failure and design criteria, soils suitability for earth dam construction, construction methods, foundation requirements, typical earth dam sections, estimation of seepage through and below the dam, seepage control, stability of slopes by slip circle method of analysis, pore pressures, sudden draw down, steady seepage and construction pore pressure condition.

UNIT II

Gravity dams:

Design Criteria, forces acting on gravity dams, elementary profile, low and high gravity dams, stability analysis, practical profile, evaluation of profile by method of zoning, foundation treatment, construction joints, galleries in gravity dams.

UNIT III

Spillways:

Ogee spillway and its design, details of syphon, shaft, chute and side channel spillways, emergency spillways. design of outlets and rating curves.

Energy Dissipaters: Principles of energy dissipation Energy dissipaters based on tail water rating curve and jump height curves Spillway crest gates -vertical lift and radial gates, their



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

design principles. Design of canal regulating structures, Design of Channel transitions, Design of Sarda type Falls, Design of cross drainage works viz Syphon aqueduct and Canal syphon.

UNIT IV

Structures on Pervious formations: Bligh's creep theory, limitations, Khosla's theory of independent variable, Khosla's corrections, Design of Weir and Barrages: design of waterways and crest levels, design of impervious floors and protection works.

UNIT V

Canal Structures and Hydropower Plants: Design of canal falls, Regulators, Cross drainage works, Introduction of Hydropower development, general features of hydro-electric schemes, selection of turbines.

Text Books:

1. Irrigation & Water Power Engg. by B.C. Punmia & Pandey B.B.Lal
2. Irrigation Engineering by S.K.Garg

Reference Books:

1. Engineering for Dams (Volumes I, II & III) by Creager, Justin & Hinds
2. Hydroelectric Hand Book by Creager
3. Hydraulic Structures by Varshney
4. Water Power Engineering by Dandekar



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BTCE 702 | DCS | ESTIMATING AND COSTING ANALYSIS | 60 | 20 | 20 | 30 | 20 | 3 | 0 | 2 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

1. Demonstrate the knowledge of basic science, mathematics, material, engineering economy & techniques to evaluate the civil engineering construction project
2. To study estimates, rate analysis and valuation as per the detailing and specification of work.
3. To know about contracts and tenders in civil engineering construction project

Course Outcomes:

1. Prepare quantity estimates for buildings, roads, rails and canal works
2. Undertake rate analysis of Civil Engineering works
3. Calculate the quantity of materials required for Civil Engineering works as per specifications
4. Evaluate contracts and tenders in construction practices
5. Understand cost estimates and valuation.

Syllabus:

UNIT I

Introduction: Purpose and importance of estimates, principles of estimating. Methods of taking out quantities of items of work. Mode of measurement, measurement sheet and abstract sheet; bill of quantities. Types of estimate, plinth area rate, cubical content rate, preliminary, original, revised and supplementary estimates for different projects.

UNIT II

Analysis of rates: Preparation for analysis of rates. Quantity of materials per unit rate of work, labour estimate. Preparation for rates of important items of work. Current schedule of rates. (C.S.R.)

UNIT III

Detailed Estimates: Preparing detailed estimates of various types of buildings, R.C.C. works, earth work calculations for roads and estimating of culverts Services for building such as water supply, drainage and electrification.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

UNIT IV

Specifications: Necessity, types of specifications, specifications for different civil engineering materials.

Contracts: Essentials of contracts, types of engineering contracts – advantages and disadvantages.

Tenders: tender forms, tender documents & notices – time limits, necessity

UNIT V

Cost of Works: Factors affecting cost of work, overhead charges, Contingencies and work charge establishment, various percentages for different services in building. Preparation of DPR.

Valuation: Purposes, depreciation, sinking fund, scrap value, year's purchase, gross and net income, dual rate interest, methods of valuation, rent fixation of buildings.

Text Books:

1. Quantity Surveying & Costing – B.N. Datta
2. Estimating & Costing for Civil Engg. – G.S. Birdi
3. Quantity surveying & costing – Chakraborty
4. Estimating & Costing – S.C. Rangawala

Reference Books:

1. Estimating and Costing - Vazirani & Chandola
2. D.D and Kohli, R.C., A Text Book of Estimating and Costing (Civil), S.Chand & Company Ltd., 2004

List of Practical's:

1. Preparation of detailed estimate.
2. Detailed estimate for services of plumbing and water supply or Electrification work.
3. Detailed estimate for earth work for the road construction or arched culvert.
4. Rate analysis for at least 8 items of construction.
5. Preparation of DPR of Civil Engineering Project.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| BTCE703 | DCS | STRUCTURAL DESIGN –II (STEEL) | 60 | 20 | 20 | 30 | 20 | 3 | 0 | 2 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

Student will be able to analyze various loads acting and will be able to design different structural systems such as plate girders, water tank as per provisions of current code of practice.

Course Outcomes:

1. Ability to analyze various loads and design riveted and welded connections.
2. Ability to design compression and tension member with available steel sections.
3. Ability to design different types of beams and girders.
4. Ability to design structures i.e. Chimney, water tank.

Syllabus:

UNIT I

Properties of steel, Structural steel sections, Limit State Design Concepts, Loads on structures, Design of structural connections - Bolted and Welded connections. Eccentric connections,

UNIT II

Design of single section and compound section compression members, Design of laced and battened type columns.

UNIT III

Design of simple beams, Built-up beams, Design of plate girders.

UNIT IV

Design of connections in tension members, Use of lug angles, Concept of shear lag.
Roof trusses – Roof and side coverings – Design of purlin and elements of truss

UNIT V

Design of pressed steel water tank (Design of stays, Joints), Design of Chimney.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

Text Books:

1. Limit State Design of Steel Structures by S K Duggal
2. Design of Steel Structures –B.C Punmia
3. Design of Steel Structures – L.S. Negi

Reference Books:

1. Design and Analysis of Steel Structures- V.N. Vazirani & M.M. Ratwani
2. Design of Steel Structures – S.S Bhavikatti
3. Steel Structures. by Arya & Ajmani
4. Steel Structures`` by Ramchandra Vol II
5. Design of Steel Structures – Ramammutham

List of Practical's:

1. Detailed drawing of various structural systems as per the syllabus.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BTCE704[1] | DCS | ENVIRONMENTAL ENGINEERING-II | 60 | 20 | 20 | 30 | 20 | 3 | 1 | 2 | 5 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

The aim of this course is to teach students about the characteristics of waste water, selection of effective treatment with suitable disposal technique and environmental pollution with their causes and preventing measures

Course Outcomes:

1. To understand the importance of wastewater treatment in the global public health context
2. To perceive the treatment plant design and process selection
3. To determine the treatment efficiency of treatment units

Syllabus:

UNIT I

Quality of Waste Water : Characterisation & composition physical, chemical, microbiological, primary parameters of pollution BOD, COD, ThOD, total solids, total organic carbon, nitrogen & its forms, pH, Chlorides, Colour, Micro Organisms etc. Indian Standards of disposal into natural watercourses and on land. Relative stability, population equivalent.

Design of Sewerage System : Types of systems, sanitary sewers, storm sewers, combined and partially combined sewers, quantity of sewerage, design period, factors, self cleaning velocity, maximum velocity, Design of circular sewer for full and Partial Flow, laying of the sewer pipe, sewer appurtenances, ventilation of sewer,

UNIT II

Waste Water Treatment: Introduction to waste water treatment: Introduction, necessity of treatment, Layout plan of municipal wastewater treatment plant, primary treatment processes, screens, grit chambers, grease and oil removal, sedimentation tank, sedimentation with coagulation, Secondary treatment processes, trickling filters, principles of working, design criteria.

UNIT III

Process theory and design consideration of various units - Activated sludge process, oxidation ditch, oxidation ponds, types, advantage and disadvantage, aerated lagoons, anaerobic lagoons, septic tank, Imhoff tank, sludge digestion tank, sludge thickening and disposal.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

UNIT IV

Waste water Disposal: Disposal by dilution, standards of dilution, types of natural water bodies for sewage discharge- lakes, ocean, stream etc. comparison between ocean and stream dilution, self purification of natural stream, zones of pollution in stream, oxygen sag analysis, Streeter-Phelps equation, disposal by land treatment, comparison between disposal methods by land and dilution

UNIT V

Air pollution and solid waste management: air quality, primary and secondary pollutant, effect of air pollution on human health and plants. Control of particulate and gaseous pollutant with mechanical devices-cyclone separator, spray tower, wet- cyclone scrubber, and absorption units etc. Solid waste management: an introduction. Waste collection, storage and transport, waste disposal, waste processing techniques, solid waste utilization

Text Books:

1. Environmental engineering volume –II by S.K.Garg, Khanna publisher
2. Water Supply Engineering by B.C. Punmia - Laxmi Publications (P) Ltd. New Delhi
3. Environmental engineering volume 2 by B.C.Punamia, laxmi publication

Reference Books:

1. Environmental engineering volume 2 by Dr.P.M.Modi
2. Metcalf and eddy,(revised by G.Tchobanoglous) Wastewater Engineering: Treatment, disposal reuse, Tata-Mc Graw Hill, New Delhi
3. Environmental pollution engineering by C.S. Rao wiley eastern

List of Practical's:

1. To study the Effluent standard for waste water.
2. To study sampling procedure for water and wastewater analysis.
3. To determine total solids of the given waste water sample.
4. To determine dissolved solids of a given waste water sample.
5. To determine the dissolved oxygen in a given sample of waste water.
6. To determine the biochemical oxygen demand of the given sample of sewage.
7. To determine the chemical oxygen demand of a given sample of sewage.
8. To determine the sludge volume Index (SVI) of a given sample.
9. To study High volume air sampler, Respirable dust sampler.
10. To determine Total suspended particulate Matter & Respirable particulate matter with the help of RDS in the ambient air.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| | | | THEORY | | | PRACTICAL | | Th | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BTCE704[2] | DCS | URBAN TRANSPORTATION | 60 | 20 | 20 | 30 | 20 | 3 | 1 | 2 | 5 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning out comes

1. Justify the need for urban transportation system planning
2. Plan the process of trip generation and distribution
3. Understand the four steps of urban transportation demand forecasting
4. Communicate transportation planning ideas effectively

Course Outcomes:

1. To understand Principles and techniques of Traffic forecasting
2. To understand concept and purpose of trip generation
3. To analyze different distribution models and assignment of model.
4. Understand economic analysis in urban transportation.

Syllabus:

UNIT I

Introduction to transportation planning; Planning methods of transport system planning, stages of planning, Transportation study area, collection of travel data, external cordon and screen-line, survey, zoning types of surveys, concept of travel demand and supply

Traffic forecasting: Principles and techniques, Demand, price and capacity relationships, price elasticity, forecasting for long term demand, variables, determination of the design hourly volume

UNIT II

Trip Generation Models: Introduction and definition, Factors governing trip generation, multiple linear regression analysis, aggregated and disaggregated analysis, Category analysis.

UNIT III

Distribution Models: Methods of trip distribution, Growth factor models, Gravity model, Tanner model, intervening opportunity model, competing opportunity model.

Assignment models: General principle, Assignment techniques, All or nothing Assignment, multiple route assignment, capacity restraint assignment, diversion curves.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

UNIT IV

Economic analysis: Need, costs and Benefits, Time horizon in Economic assignment, basic principles, methods of Economic evaluation. Traffic and the Environment, effects of traffic on the environment.

UNIT V

Probability, statistics for traffic engineering design: Random variable and statistical measures, Basic concept of probability, probability – laws, Binomial, Poisson, Normal and Exponential distributions.

Sampling theory and regression analysis, General consideration of the accuracy, cost and time requirements of data collection, sampling theory and principles for determining sample size and accuracy relationship, principles of the population mean and standard deviation, regression analysis examples.

Text Books:

1. C. S. Papacostas and P. D. Prevedouros, Transportation Engineering and Planning, Prentice Hall of India Pvt. Ltd., 2001.
2. Kadiyali L.R., Traffic Engineering and Transport Planning.
3. Martine Wool and Brain V.Martin, Traffic System Analysis.

Reference Books:

1. Hutchinson B.G., Principles of UTS Planning, Mc Graw-Hill Pu1.
2. J. de D. Ortuzar and L.G. Willumsen, Modelling Transport, John Wiley and Sons, 2001.
3. C.J. Khisty and B.K. Lall, Transportation Engineering – An Introduction, Prentice Hall of India Pvt. Ltd., 2002.
4. Saxena, Traffic Planning and Design. Dhanpat Rai & Sons



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| BTCE 704[3] | DCS | STRUCTURAL DYNAMICS | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

1. Learning methods to analyze structures subjected to any kind of dynamic excitation and computing quantities like displacements, forces, stresses, etc.
2. Understanding the analytical methods and procedures in a way that emphasize physical insight.
3. Ability to apply the structural dynamics theory to real-world problems like seismic analysis and design of structures.

Course Outcomes:

At the conclusion of this course, the students will have an understanding of:

1. fundamental theory of dynamic equation of motion
2. fundamental analysis methods for dynamic systems
3. dynamic properties and behavior of civil structures
4. modeling approach of dynamic response in civil engineering applications

Syllabus:

UNIT I

Need For Structural Dynamics, Typical Dynamics Loadings, Idealization Components of Dynamic Model, Significance of Spring Mass, Dash Pot Types of Dynamics. Un damped free vibrations of Single Degree Freedom System (SDFS), Equation of Motion, Solution. Damped free vibrations of SDFS, Critical Damping, Under damped and Over damped Systems, Logarithmic Decrement.

UNIT II

Response of SDFS to Harmonic Loading, Response of Un damped and Damped Systems, Dynamic Magnification Factor, Resonance Response. Evaluation of Damping in SDFS, Free Vibration Method, Resonant Amplification, Half Power (band width) Method, Response Testing.

UNIT III

Response of SDFS to Periodic and Impulsive Loading, Fourier Series representation of loading response to Triangular and Rectangular Pulses. Response of SDFS to General Dynamic Loading, Duhamel Integration, Closed Form Solution for Typical Loadings, Numerical Integration of Duhamel Integral. Direct Integration Method, Newmark Method, Non Linear Structural Response.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

UNIT IV

Equation of Motion for Multi Degree Freedom Systems (MDFS) Multi-degree Spring Mass Dash pot Systems, Modelling of structure. Un damped free vibrations for MDFS Vector Iteration Method, Holzer Method, Orthogonalization of Modes. Lagrange's Equations - Derivation and Applications, Forced Vibration Analysis of MDFS Modal Analysis, Damping Matrix, Superposition of Modes. Continuous Systems Free Vibrations of Beams With Various End Conditions, Forced Vibrations, Effect of Shear and Rotary Inertia.

UNIT V

Earthquake Analysis Ground Motion, Characteristic Equations of Motion, Modal Participation Factor, Spectral Velocity. Earthquake Design, general Principles of Earthquake Design, Base Shear Method, Response Spectrum Method. Ductility requirements, Effect of different variables on the Ductility of Reinforced Concrete Members, Beam Column.

Text Books:

1. Clough, rayw and penzien, *J-Dynamics of Structures*, Mcgraw Hill.
2. IS-1893-2002
3. IS-4326-1976
4. IS;13920-1993

Reference Books:

1. Hurty Walter, C and Rkubinstein, Morshe - *Dynamics of Structures*, Prentice Hall of India Pvt. Ltd.
2. Biggs John M - *Introduction to Structural Dynamics*, Mcgraw Hill Book Co.
3. Fintel M - *Hand book of Concrete Engg.*, Van Nostrand Reinhold Co.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| BTCE705[1] | DCS | SYSTEM APPLICATION IN CIVIL ENGINEERING | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

Student will understand fundamentals of optimization, focusing on model formulation for civil engineering problems.

Course Outcomes:

1. To understand the use of systems approach in Civil Engineering
2. To analyze and understand different optimization process
3. To understand queuing theory and queuing models
4. To formulate Linear optimization models for Civil engineering applications

Syllabus:

UNIT I

Introduction to System approach, Operations Research and Optimization Techniques, Use of systems approach in Civil Engineering, Methods, Introduction to Linear and Non linear programming methods (with reference to objective function, constraints), Local & Global optima, unimodal function, convex and concave function

UNIT II

Single variable unconstrained optimization: Sequential Search Techniques-Dichotomous, Fibonacci, Golden section Multivariable optimization without constraints-The gradient vector and Hessian Matrix, Gradient techniques, steepest ascent/decent technique, Newton's Method Multivariable optimization with equality constraints - Lagrange Multiplier Technique

UNIT III

Sequencing– n jobs through 2, 3 and M machines

Queuing Theory : elements of Queuing system and it's operating characteristics, waiting time and ideal time costs, Kendall's notation, classification of Queuing models, single chanel Queuing theory

Simulation : Monte Carlo Simulation

UNIT IV

Multi stage decision processes, Principle of optimality, recursive equation, Applications of D.P.

UNIT V

Formulation of Linear optimization models for Civil engineering applications. The simplex method, Method of Big M, Two phase method, duality



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

Text Books:

1. Engineering Optimization: Methods and Application-- A. Ravindran, K. M. Ragsdell—
Wiley India
2. Engineering Optimization by S.S.Rao
3. Operations Research by Hamdy A. Taha
4. Quantitative Techniques in Management by N.D. Vohra (Mc Graw Hill)
5. Operations Research by Premkumar Gupta and D.S.Hira, S. Chand Publications (2014).

Reference Books:

1. Topics in Management Science by Robert E. Markland(Wiley Publication)
2. An Approach to Teaching Civil Engineering System by Paul J. Ossenbruggen
3. A System Approach to Civil Engineering Planning & Design by Thomas K. Jewell (Harper Row Publishers)



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
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| BTCE705[2] | DCS | CONSTRUCTION PLANNING AND MANAGEMENT | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

Demonstrate the knowledge of basic science, mathematics, material, engineering economy & techniques to execute the civil engineering construction project. Students also understand the importance of professional ethics, moral values and norms of civil engineering practices .

Course Outcomes:

1. Planning & allocation of various construction resources during construction of Building, Roads, etc.
2. Understand the importance & uses of tenders & contracts in civil engineering construction .
3. Understand the importance of specifications & able to prepare public accounts.
4. Understand the importance of various construction equipment & there uses .
5. Understand the Quality and Safety measures at Site in civil engineering construction .
6. Understand & Evaluate Engineering economy.

Syllabus:

UNIT I

Project Management & Management Techniques: Project Management, objective & elements of project management, methods of project management, Fundamentals of network, Programme evaluation review technique, Critical path method, crashing, updating & Resource allocation .

UNIT II

Tenders & Contracts: Different types of Tenders & Contracts, notice inviting tenders, contract document, departmental method of construction, rate list, security deposit and earnest money, conditions of contract, arbitration, administrative approval, technical sanction.

UNIT III

Specifications & Public Works Accounts: Importance, types of specifications, specifications for various trades of engineering works, various forms used in construction works, measurement book, cash book, materials at site account, imprest account, tools and plants, various types of running bills, secured advance, final bill.

UNIT IV



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

Construction Equipments: Factors affecting selection, investment and operating cost, output of

| COURSE | CATEGORY | COURSE NAME | TEACHING & EVALUATION SCHEME |
|--------|----------|-------------|------------------------------|
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various equipments, brief study of equipments required for various jobs such as earth work, dredging, conveyance, concreting, hoisting, pile driving, compaction and grouting.

UNIT V

Site Organization & Engineering Economy: Accommodation of site staff, contractor's staff, various organization charts and manuals, personnel in construction, welfare facilities, labour laws and human relations, safety engineering.

Concept of time value of money, Cash flow diagrams, nominal & effective interest rate, capitalized cost, depreciation, salvage value, methods for calculating depreciation, depletion.

Text Books:

1. Construction Management & Machinery by B.L. Gupta
2. Construction Management by S. Seetharaman
3. Construction Equipment & Job Planning by S.V. Deodhar
4. Project Planning & control with PERT & CPM by DR. B.C. Punmia & K.K. Khandelwal
5. PERT & CPM by P.N. Modi
6. Construction, Management & Accounts by Harpal Singh

Reference Books:

1. Construction Equipment by Peurify
2. CPM by L.S. Srinath
3. Construction Management by S. Seetharaman
4. CPM & PERT by Weist & Levy
5. Construction, Management & Accounts by Harpal Singh
6. Tendering & Contracts by T.A. Talpasai
7. CPM by L.S. Srinath
8. Construction Equipment & Job Planning by S.V. Deodhar
9. Project Planning & control with PERT & CPM by DR. B.C. Punmia & K.K. Khandelwal



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Civil Engineering)

SEMESTER VII

| CODE | | | THEORY | | | PRACTICAL | | Th | T | P | CREDITS |
|------------|-----|--------------------------|-------------------------|---------------|----------------------|-------------------------|----------------------|----|---|---|---------|
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BTCE705[3] | DCS | ADVANCED BUILDING DESIGN | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective

1. Be able to perform analysis and design of reinforced concrete members and connections.
2. Be able to identify and interpret the appropriate relevant industry design codes.

Course Outcomes:

1. To understand the general mechanical behavior of reinforced concrete portal frames.
2. To analyze and design reinforced concrete Multistoried Building.
3. To analyze and design reinforced concrete shells, domes and folded plates

Syllabus:

UNIT I

Design of R.C.C. Portal Frames. Knee Braced Portals in Steel for factory. Analysis of building frames for lateral loads by portal method, cantilever method, their assumptions and Limitations.

UNIT II

Design of R.C.C. Multistoried Building Frames, Design of Multistoried Buildings in Steel

UNIT III

Design of R.C.C. Circular Cylindrical shells, R.C.C. Domes, R.C.C. Folded Plates

UNIT IV

Design of Gantry Girders and Gantry Columns

UNIT V

Design of form work.

Text Books:

1. Reddy C.S., Basic Structural Analysis.
2. Krishna Raju, Advanced R.C.C.

Reference Books:

1. Billington D., Thin Concrete Shell Structures.
2. Ray and Sinha, R.C.C.
3. Vazirani V.N.and Dr. Ratwani M.M., Steel Structures & Tember Structures