

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **B.Tech**

Branch: **Civil Engineering**

Subject: **Structural Engineering Design – II**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Semester: **VI**

Code: **C020611(020)**

Assignments: **Two (Minimum)**

Maximum Marks: **100**

Minimum Marks: **35**

UNIT-1: Materials and Methods: Review of Methods of design: Limitations of Working stress, Advantages of Limit State Design, Limit States of Strength and Serviceability, Partial Safety Factors, Loads and Load Combinations,

Design specifications as per IS: 800: 2007-Types of Structural Steel, Physical and Mechanical Properties, Convention for Member Axes.

Steel as a structural material, Rolled Sections - Tapered Flange and Parallel Flange, Built up sections,

Plastic Theory: Shape factor, Plastic Hinge Mechanism, Length of plastic hinge, Fully Plastic Moment of section, Collapse mechanism, plastic analysis of simple beams and frames.

UNIT-2: Structural Steel Fasteners: Introduction: Location details of fasteners, simple, semi-rigid and rigid connections, Lap and Butt Joints, Bearing type bolts, Friction Grip type Bolting, Welds and Welding, Advantages and Disadvantages of Welded Connections, Behavior of bolted and welded connections (types, designations, properties, permissible stresses), failure of bolted and welded joints. Strength of bolt and strength of weld, Efficiency of joints, Design of simple, bolted and welded joint subjected to axial loads. Truss Joint Connections by bolts and welds.

UNIT-3: Tension Members: Geometrical Properties considerations for tension members, Maximum effective slenderness ratio, Terms: Shear-lag, Tension Splice, Gusset plate and Lug angles. Design Strength due to Yielding of Gross Section, Rupture of Critical Section, Block Shear. Design of Axially Loaded Tension Members, Steel Angles under Tension.

UNIT-4: Compression Members: Considerations for compression members as per IS: 800: 2007: Geometrical Properties, Effective length, Classification of Cross Sections (buckling), Imperfection factor, Maximum effective slenderness ratio. Column splice, Encased Columns. Design Strength, Design of Axially loaded compression members, Steel Angles under Compression, Design of built-up column with Lacing, Battered columns. Column Bases & Column cap.: Introduction, slab base, gusseted base, column cap, Design of Column bases under axial load.

UNIT-5: Flexural Members: Plastic behavior of beam in flexure, section modulus, Classification of Cross Sections (flexure), Limit state safety – Flexure and shear, Limit state serviceability – Deflection, Design Strength in Bending (Flexure), Effective length for lateral torsional buckling, Shear, web buckling, web crippling, built up beams, Design of Laterally Supported beams and Laterally Unsupported Beams with unstiffened webs.

Text Books:

1. Design of Steel Structures - N. Subramanian (Oxford University Press)
2. Limit State Design of Steel Structures – S. K. Duggal (Tata McGraw Hill)

Reference Books:

1. Indian Standard – General Construction in Steel – Code of Practice (3rd Revision) (IS:800 – 2007)
2. Design of Steel Structures – K. S. Sai Ram (Pearson Education)
3. Structural Steel Design : LRFD Method – J. C. McCormac, J. K. Nelson (Pearson Education)

4. Limit State design in Structural Steel – M. R. Shiyekar (PHI Learning)
5. Limit State Design of Steel Structures (IS:800-2007) – V. L. Shah, V. Gore (Structures Publications)
6. Design Manual for Designing Steel Structures according to New IS: 800, Publication Number INS/PUB/114 – Institute for Steel Development and Growth, Kolkata.
7. Teaching Resource for Structural Steel Design, Vol. I – III, Publication Number INS/PUB/051, Institute for Steel Development and Growth, Kolkata.

COURSE OUTCOME:

1. Learner is able to understand the difference between plastic and elastic analysis.
2. Learner has clarity about the various design philosophies used in structure engineering design
3. Learner is able analyze and design simple bolted and welded connections subjected to axial load.
4. Learner is able to analyze and design axially loaded Tension member and compression member using limit state method.
5. Learner is able to analyze and design Laterally Supported and Laterally Unsupported Beams using limit state method.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **B.Tech**

Branch: **Civil Engineering**

Subject: **Environmental Engineering**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Semester: **VI**

Code: **C020612(020)**

Assignments: **Two (Minimum)**

Maximum Marks: **100**

Minimum Marks: **35**

UNIT-1: Introduction to Water demand: Necessity and importance of water supply schemes. Sources of water. Classification of water demands, Per capita demand, factors affecting per capita demand, Population Forecasting Techniques.

Quality of water: Common impurities, physical, chemical and biological characteristics of water/wastewater, Drinking water quality standards for municipal and domestic supplies.

Unit-2: Water Processing: Objects of water processing Theory of sedimentation, Design of sedimentation tanks, Sedimentation with coagulations, Theory of filtration, Design of slow sand and rapid sand filters, Methods of disinfection, Methods of Softening, Miscellaneous treatment methods.

UNIT-3: Distribution System: Methods of distribution, layouts of distribution system, functions and its types of distribution reservoirs, storage capacity of distribution reservoir.

Sewage and Sewerage Systems: System of sanitation, Estimation of domestic and storm sewage, Design of circular sewers, Sewer appurtenances,

Sewage Treatment: Preliminary treatment systems, Screens, grit chamber, detritus tanks. Primary treatment systems- Plain Sedimentation Process, Design of Septic Tanks.

UNIT-4: Secondary treatment Systems:Trickling filters, Design of standard and high rates, Activated Sludge Process, Oxidation Pond and oxidation ditch, Aeration and Mixing Techniques,

Sewage sludge Treatment: Importance, amount and characteristics of sludge, Sludge digestion process, Design of sludge digestion tank

UNIT-5: Sewage disposal: Disposal by dilution, self-purification of polluted streams, Oxygen Sag curve, Disposal on land surfaces. Stream standards and Effluent standards, Theories of waste treatment (Volume reduction, strength reduction, new Equalization and proportioning) Summary of Industrial waste, its origin, character and treatment.

Text Books:

1. Water Supply Engineering – S.K. Garg (Khanna Publication).
2. Water Supply Engineering – B.C. Punmia (Laxmi Publication, New Delhi)

Reference Books:

1. Environmental Engineering – Peavy & Rowe (Tata McGraw Hill, New Delhi).
2. Water Supply and Sanitary Engineering – G.S. Birdi (Dhanpat Rai Publications).
3. Introduction to Environmental Science – Y. Anjaneyulu (B.S. Publications)

COURSE OUTCOME:

1. The students must be able to apply the knowledge to plan, design, construct and monitor a water/wastewater treatment plant as per a city's water demand.
2. Students must be able to summarize complexities in the characteristics(s) of water/wastewater that is available and the correct treatment methods to be adopted.
3. Students must be able to justify the patterns of water storage and recommend the correct distribution methods suitable for the city under consideration.
4. The student must be able to analyze the wastes coming in for treatment and decide upon the techniques of treatment to be given.
5. Students must be able to apply the knowledge reused to develop a positive attitude to earth, environment and its protection against pollution and adopt safer methods of waste disposal.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **B.Tech**

Branch: **Civil Engineering**

Subject: **Engineering economics, Estimation & Costing**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Semester: **VI**

Code: **C020613(020)**

Assignments: **Two (Minimum)**

Maximum Marks: **100**

Minimum Marks: **35**

UNIT-1: Introduction: Estimation & its purpose, data required for estimation, factors to be considered for estimation, different types of estimates, approximate estimation – objective, purpose & various methods.

General Terms: Administrative approval, technical & expenditure sanction, competent authority, BOQ, SOR, Layout plan, Measurement book, establishment charges, contingencies.

UNIT-2: Detailed Estimate: Methods for detailed estimate, units of measurements of various items of work as per IS-1200, preparation of detailed quantity estimates for single storey residential building, preparation of schedule of reinforcements for RCC building components, determination of earth work in road and canals.

UNIT-3: Rate Analysis: Definition, market survey of basic materials, Purpose, factors affecting, Thumb rule for computation of material required for different works, Task works per day, Rate analysis of important items of work, Current Schedule of Rates (CSR). Introduction to Acts pertaining of minimum wages, Workmen's' compensation.

UNIT-4: Contracts and Tender Documents: Contracts & its essentials, types of engineering contract, conditions, termination of contract, brief idea about types of tenders, tender notice, preparation of tender document, procedure for inviting tender, security deposit, liquidated damages, arbitration, and escalation.

UNIT-5: Engineering Economics: Engineering Economics & its importance in construction industry, Basic Macroeconomic (GDP) Direct & Indirect taxes of construction projects, Interest rates, Cost, Types of costs, cost control techniques, budgets, break even analysis, property valuation, Depreciation, percentage breakup of cost.

Text Books:

1. Estimating and Costing in Civil Engineering – B.N. Dutta (UBS Publishers, New Delhi)
2. Estimating and Costing and specifications – M. Chakrabarty (UBS Publishers, New Delhi)

Reference Books:

1. Textbook of Estimating and Costing – G.S. Birdi (Dhanpat Rai Publications)
2. Valuation of real properties – S.C. Rangwala (Charotar Publication)
3. A Textbook of Estimating and Costing – Kohli&Kohli (S. Chand & Co.)
4. Engineering Economics – R. Panneerselvam, (PHI)

COURSE OUTCOME:

1. Learner is able to identify various items of building and able to determine approximate estimation of buildings.
2. Learner is able to determine detailed quantity estimate and Bar bending schedule of civil engineering works from given details.
3. Learner is able to determine quantities of materials and rate analysis of any items in residential building works.
4. Learner is able to understand Contracts and Tender Documents
5. Learner is able to understand basic Engineering Economics in construction industry.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **B.Tech**

Branch: **Civil Engineering**

Semester: **VI**

Subject: **Professional Elective-II (Structural Analysis by Matrix Methods)** Code: **C020631(020)**

Class Tests: **Two (Minimum)**

Assignments: **Two (Minimum)**

ESE Duration: **Three Hours**

Maximum Marks: **100**

Minimum Marks: **35**

UNIT I: INTRODUCTION

Review of force and displacement methods of structural analysis, Degree of Static Indeterminacy, Degree of Kinematic Indeterminacy, Basic Concepts of Matrix methods in structural analysis, Determinants and Matrices.

UNIT II: FLEXIBILITY METHOD FOR BEAMS

Flexibility coefficients, development of flexibility matrix, Analysis of continuous beams by flexibility method.

UNIT III: FLEXIBILITY METHOD FOR FRAMES

Analysis of rigid jointed plane frame and pin jointed plane frame by flexibility method.

UNIT IV: STIFFNESS METHOD FOR BEAMS

Stiffness coefficient, development of stiffness matrix, relationship between flexibility matrix and stiffness matrix, Analysis of continuous beams by stiffness method.

UNIT V: STIFFNESS METHOD FOR FRAMES

Analysis of rigid jointed plane frame and pin jointed plane frame by stiffness method.

Text Books:

1. Pandit G.S. and Gupta S.P., Structural Analysis – A Matrix Approach, Tata McGraw- Hill Publishing Company Limited, New Delhi
2. Weaver W. and Gere J. M., Matrix Analysis of Framed Structures, CBS Publishers and Distributors, Delhi

Reference Books:

1. Krishanmurthy C.S., Finite Element Analysis – Theory and Programming, Tata McGraw- Hill Publishing Company Limited, New Delhi.
2. Proceedings of recent seminars / workshops / conferences and Papers from relevant National and International Journals.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **B.Tech**

Branch: **Civil Engineering**

Subject: **Professional Elective-II (Concrete Technology)**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Semester: **VI**

Code: **C020632(020)**

Assignments: **Two (Minimum)**

Maximum Marks: **100**

Minimum Marks: **35**

UNIT I Concrete Making Materials:

Review of Hydration and structure of hydrated cement, Classification of Aggregates, Properties, grading requirements, Methods of combining aggregates, Surface index, specified grading, Alkali aggregate reaction, Quality of mixing and curing water. Sustainability issues in concrete making materials.

UNIT II Admixtures and Fresh Concrete:

Chemical admixtures – Functions of Admixtures, Classification of Admixtures.

Mineral Admixture – (Flyash, Silica fumes, GGBS, Rice husk ash) sources and utilization. Effects of use of chemical and mineral admixtures on the properties of fresh concrete, Rheology, Workability, Factors affecting workability, Measurement of Workability, Requirements of Workability, Segregation, Bleeding and terms related to fresh concrete.

UNIT III Hardened Concrete and Durability:

Compressive strength and parameters affecting it: water cement ratio, compaction, curing. Gain of strength with age, Shrinkage and its Types, Maturity Concept, Time dependent behavior of concrete -creep, shrinkage and fatigue. Elasticity, porosity, Durability of Concrete, Permeability of Concrete relation between durability and permeability, Corrosion of steel rebars, Carbonation of concrete. Quality control in concrete. Effects of use of chemical and mineral admixtures on the properties of hardened concrete.

UNIT IV Concrete Mix Design :

Principles of Concrete mix design, Target strength, nominal mix, design mix, sampling, statistical interpretation of cube results, understanding of normal distribution curve, characteristic strength of concrete, factors in the choice of mix proportion.

Concrete mix design using OPC, PPC, PSC as per Indian standard Code 10262 :2019, study of IS 10262: 2019, American & British methods, Non-destructive tests on concrete.

UNIT V Special Concrete & Concreting Methods:

Behavior of concrete in extreme environment; temperature problem in concreting, hot weather, cold weather and under water conditions, Resistance to freezing, Need of special concrete, properties, ingredients, method of development and applications of Light weight concrete, Fibre reinforced concrete, Polymer Concrete, self-compacted concrete, High performance concrete, Ready mix concrete, special concreting methods, Vacuum dewatering - underwater concrete, special form work.

Text Books:

1. Concrete Technology – M.L. Gambhir (Tata McGraw Hill)
2. Concrete Technology Theory and Practice - M. S. Shetty, (S.Chand and Company Ltd. Delhi)

Reference Books:

1. Concrete Technology – A. M. Neville, J. J. Brooks, (Pearson Education)
2. Light Weight Concrete Academic Kiado – Rudhani G. (Publishing Home of Hungarian Academy of Sciences)
3. Concrete Technology – R.S. Varshney (Oxford, IBH Publishers)

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **B.Tech**

Branch: **Civil Engineering**

Subject: **Professional Elective-II (Traffic Engineering and Management)**

Class Tests: **Two (Minimum)**

ESE Duration: **Three Hours**

Semester: **VI**

Code: **C020633(020)**

Assignments: **Two (Minimum)**

Maximum Marks: **100**

Minimum Marks: **35**

Unit 1

Traffic Engineering and Management:

Traffic Forecast: General travel forecasting principles, different methods of traffic forecast - Mechanical and analytical methods, 3E's of traffic Engineering, Special problems due to mixed traffic and other conditions in developing countries, Concept of PCU.

Unit 2

Traffic measurement

Traffic measurement procedures: Measurement at a point: Traffic volume measurement, equipment for flow measurements, data analysis, concepts of ADT, AADT;

Measurement over a short section: Speed measurements, 15th and 85th percentile speeds, design speed, speed distributions;

Measurement along a length of road: Density measurement, travel time measurement;; Capacity studies - Capacity of different highway facilities including unsignalised and signalized intersections. Problems in Mixed Traffic flow; Case studies;

Unit 3

Traffic safety

Accident Analysis: Analysis of individual accidents and statistical data; Methods of representing accident rate;

Factors in traffic accidents; influence of roadway and traffic conditions on traffic safety; accident coefficients; Driver strains due to roadway and traffic conditions; Highway lighting,

Unit 4

Traffic intersection control: Principles of traffic control: Requirements, basic driving rules, priority movements, principles of traffic control, intersections conflicts;

Traffic signs and road markings: Regulatory, warning, and information signs; longitudinal, transverse, and object marking;

Uncontrolled intersection: Level of service concept, priority streams, conflicting traffic, critical gap and follow-up time, capacity, queue length, control delay;

Channelization: channelizing devices, geometrical aspects, turning radius

Traffic rotary: Conflict resolution in a rotary, geometric layout, design elements

Unit 5

Traffic signal design:

Elements of traffic signal: Definitions, analysis of saturation headway, saturation flow, lost time, critical flows, derivation of cycle length;

Design principles of a traffic signal :Phase design, cycle time determination, green splitting, pedestrian phases, and performance measures;

Evaluation of a traffic signal: Definitions and measurement of stopped and control delay, Webster's delay model, oversaturated conditions;

Text Books:

- (1) Traffic Engineering and Transport Planning – Kadiyali, L.R. (Khanna Publishers, Delhi, 1996)
- (2) Kadiyali, LR (1987), Traffic Engineering and Transportation Planning, Khanna.
- (3) Transport Planning and Traffic Engineering – Flaherty, CAO (John Wiley & Sons, Inc., New York, 1997)
- (4) Khanna, S.K. and Justo, C.E. G. (1991), Highway Engineering, Nemchand.

Reference Books:

- (1) Principles of Urban Transport Systems Planning – Hutchinson, B.G. (Scripta Book Company, Washington, D.C., 1974)
- (2) Modelling Transport – Ortuzar, title D. and Willumson, L.G. (John Wiley & Sons, New York, 1995)
- (3) Highway Capacity Manual (2000), Transportation Research Board, USA.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:**B.Tech**

Branch:**Civil Engineering**

Subject: **Structural Engineering Lab**

Maximum Marks:**40**

Semester:**VI**

Code: **C020621(020)**

Minimum Marks:**20**

List of Experiments: (At least Ten experiments are to be performed by each student)

Experiments to be performed using latest version of a Standard Structural Engineering Design Package such as STAAD Pro or ETABS:

1. Introduction to latest version of a Standard Structural Engineering Design Package such as STAAD Pro, STAAD.etc

RCC Design Using Design Package:

2. Geometrical Modelling of RCC Frame.
3. Modelling of loads and load combinations on RCC Frame.
4. Analysis and Interpretation of Results of Analysis of RCC Frame.
5. Design of RCC Frame.
6. Interpretation of Results of Design of RCC Frame.
7. Design of R.C.C. Column (STAAD.etc)
8. Design of R.C.C. Isolated Footing (STAAD.etc)
9. Case Study of design of a RCC Multistorey Building

Steel Design Using Design Package:

10. Geometrical Modelling of Steel Frame.
11. Modelling of loads and load combinations on Steel Frame.
12. Analysis and Interpretation of Results of Analysis of Steel Frame
13. Design of Steel Frame.
14. Interpretation of Results of Design of Steel Frame.
15. Case Study of design of a Steel Industrial Building.

Equipment/Machines/Instruments/Tools/Software Required:

1. Latest Release of Software Package STAAD Pro (Research Engineers International, Kolkata)
2. Latest Release of Software Package STAAD.etc (Research Engineers International, Kolkata)

Recommended Books:

1. Reference Manual for Respective Software
2. Verification Manual of Respective Software

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:**B.Tech**

Branch:**Civil Engineering**

Subject: **Environmental Engineering Lab**

Maximum Marks:**40**

Semester:**VI**

Code: **C020622(020)**

Minimum Marks:**20**

List of Experiments: (At least Ten experiments are to be performed by each student)

1. To determine acidity of water/wastewater sample.
2. To determine alkalinity of water/wastewater sample.
3. To determine hardness of water/wastewater sample.
4. To determine chloride content of water/wastewater sample.
5. To determine D.O. content of water/wastewater sample.
6. To estimate the quantity of BOD from water/wastewater sample.
7. To determine the availability of chlorine in bleaching powder for drinking water.
8. To determine the residual Cl_2 Content in drinking water.
9. To determine the quantity of Optimum Coagulant Dose and pH of water sample.
10. To determine the Total Solids in water/wastewater sample.
11. To determine the COD in Sewage / Industrial wastewater.
12. To determine the MPN in Sewage / Industrial wastewater.
13. To determine the Fluoride content in Sewage / Industrial wastewater.
14. To determine the Nitrates in Sewage / Industrial wastewater.
15. To determine the Phosphates in Sewage / Industrial wastewater.
16. To determine the Iron in Sewage / Industrial wastewater.
17. Microbiological Examination of Sewage / Industrial wastewater

Equipment/Machines/Instruments/Tools/Software Required:

1. BOD Incubator
2. Dust Sampler
3. Turbidity meter
4. Microscope
5. pH meter
6. Muffle Furnace
7. Hot Air Oven
8. Jar Test Apparatus

Text Books:

1. Environmental Engineering Lab Manual – Dr. B. Kottaiah& N. Kumaraswamy (Charotar Publications)
2. Water Supply Engineering – S.K. Garg (Khanna Publication).
3. Water Supply Engineering – B.C. Punmia (Laxmi Publication, New Delhi)
4. Environmental Science and Engineering – Henry and Heinke (Pearson Education).

COURSE OUTCOME:

1. Students will be able to determine the pH using Ph meter, acidity and alkanity in a water/wastewater sample.
2. Students will be in a position to find hardness and turbidity in water/wastewater using turbidity meter.
3. Students can determine the chloride content in various water/wastewater samples.
4. Will determine the DO content in any water/Sewage/Industrial waste water sample.
5. Students can find and compare the BOD and COD values for a given Sewage/Industrial waste water sample in BOD incubator.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:**B.Tech**

Branch:**Civil Engineering**

Subject:**Computer Aided Civil Engineering Drawing Lab**

Maximum Marks:**40**

Semester:**VI**

Code: **C020623(020)**

Minimum Marks:**20**

1. **Introduction ToAutocad Drafting Package.**(Week 1 & 2)

Review of concept of drawings, Introduction to Computer-Aided Drawing, co-ordinate systems, reference planes.

Commands: Initial settings, drawing aids, drawing basic entities, Modify commands, Layers, Text and Dimensioning, Blocks.

Drawing presentation norms and standards (to show information concisely and comprehensively); optimal layout of drawings and Scales; Dimensioning standards

Symbols and Sign conventions: materials, architectural, structural, electrical, and plumbing symbols. Use of Notes to improve clarity.

2. **Building Drawing:**(Week 3 & 4)

Terms, Elements of planning building drawing, Methods of making line drawing, and detailed drawing.

Building Drawing: Floor plan and Elevation

- i. Primary school building.
- ii. Hostel building.
- iii. Hospital building.

3. **Residential Building Drawing.**(Week 5 to 8)

To draw Site plan, floor plan, Roof drainage plans, elevation and section drawing of small residential buildings (single storey and double storey) with load-bearing walls and frame structure including details of doors and windows.

To draw the front elevation and section for the above plan showing area statement and schedule of openings (doors and windows).

4. **Cross-Section of Walls.**(Week 9)

- i. To draw the cross-section of a wall and its foundation.
- ii. To draw the foundation details of internal and external walls.
- iii. To draw section of a Single storey 2 BHK residence.
- iv. To draw the section of a Double storey with staircase.

5. **Perspective View.**(Week 10)

One point and two-point Perspective view of simple blocks.

Introduction to 3D

6. **Interpretation of Typical Drawings.**(Week 11 & 12)

Taking standard drawings of a typical two-storeyed building including all MEP (Mechanical and Electrical engineering with Plumbing design), joinery, rebars, finishing and other details and write out a description of all the facility in about 500 – 700 words.

List of Experiments: (At least Ten experiments are to be performed by each student)

1. To draw plan and section of footing and foundation for load bearing wall and framed structure.
2. To draw plan and section of load bearing and partition walls and its foundation.
3. To draw the single line plan of a primary school building.
4. To draw the line plan of a hostel building.
5. To draw the line plan of a hospital building.
6. To draw working drawing of single storey of 2BHK residential building
7. To draw elevation and section of single storey of 2BHK residential building
8. To draw working drawing of 3BHK double storey residential building

9. To draw elevation and section drawing 3BHK double storey residential building.
10. To draw One point and two-point Perspective view of simple blocks.
11. Perspective view using 3D for single storey buildings.

Equipment/Machines/Instruments/Tools/Software Required:

1. PC system.
2. AutoCAD Software.

Recommended Books:

1. AutoCAD 2000 Complete – et. al. (BPB Publications)
2. An introduction to AutoCAD 2000 – A. Yarwood (Pearson Educations)

COURSE OUTCOME: The course should enable the students:

1. To develop graphical skills for communicating concepts, ideas and designs of engineering products graphically/ visually.
2. To get exposure to desired standards relating to technical drawings using Computer Aided Design and Drafting practice
3. Develop Parametric design and the conventions of formal engineering drawing
4. Produce and interpret 2D & 3D drawings
5. Examine a design critically and with understanding of CAD software.
6. To do a detailed study of an engineering artefact

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:**B.Tech**

Branch:**Civil Engineering**

Subject:**Concrete Technology Lab**

Maximum Marks:**40**

Semester:**VI**

Code: **C020624(020)**

Minimum Marks:**20**

List of Experiments: (At least Ten experiments are to be performed by each student)

Test on Aggregates:

1. Determination of Soundness test on aggregate
2. Determination of Deleterious materials in fine aggregate
3. Determination of Grading curve of Mix aggregate & sieve analysis

Properties of Fresh Concrete:

4. To study the effect of use of mineral admixture and chemical admixture on the workability of fresh concrete using Slump Cone test.
5. To study the effect of use of mineral admixture and chemical admixture on the workability of fresh concrete using Compaction Factor Test.
6. To study the effect of use of mineral admixture and chemical admixture on the workability of fresh concrete using Vee-bee test
7. To study the effect of use of mineral admixture and chemical admixture on the workability of fresh concrete using Flow table test

Properties of Hardened Concrete:

8. Determination of Compressive Strength (3d, 7d and 28d) of concrete
9. Determination of Compressive strength of concrete by non-destructive test – Rebound Hammer
10. Determination of flexural strength of concrete (28d)
11. Determination of Modulus of elasticity of concrete and strain measurement by longitudinal compressometer

Mix Design:

12. Mix Design by I.S. Code method (with OPC Cement)
13. Mix Design by I.S. Code method (with Slag Cement)
14. Mix Design by I.S. Code method (with Admixtures Cement)

Self Compacting Concrete:

15. Parametric study of self-compacting concrete.

Equipment/Machines/Instruments/Tools/Software Required:

1. Slump Cone with Tamping Rod
2. Concrete Cubes (15 x 15 x 15) cm³
3. Tray (45 x 60) cm², (60 x 60) cm², (30 x 45) cm²
4. Trowel (6 Nos.)
5. I.S. Sieves for Coarse and Fine Aggregate
6. Compression Testing Machine (200 T)
7. Weighing Balance
8. Sieve Shaker

9. Compaction Factor Test Apparatus
10. Vee-Bee Consistometer
11. Flow Table
12. Longitudinal Compressometer
13. Cylindrical Mould
14. Concrete Test Hammer
15. Graduated Glass Cylinder (500 ml, 1000 ml)
16. Beaker (500 ml)
17. Rebound Hammer

Recommended Books:

1. Lab Manual Concrete – M.L. Gambhir (Tata McGraw Hill)
2. Concrete Technology – M.S. Shetty (S. Chand & Co.)
3. Concrete Technology – M.L. Gambhir (Tata McGraw Hill)

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Program / Semester: B.Tech (VI)	Branch: Humanities
Subject: Technical Communication & Soft Skills	Course Code: C000601(046)
Total Marks (Internal Assessment): 10	L: 0 T:0 P: 2 Credit(s): 0
Internal Assessments to be conducted: 02	Duration (End Semester Exam): NA

UNIT-1 Communication Skills-Basics: Understanding the communicative environment, Verbal Communication; Non Verbal Communication & Cross Cultural Communication, Body Language & Listening Skills; Employment Communication&writing CVs, Cover Letters for correspondence.Common errors during communication, Humour in Communication.

UNIT-2 Interpersonal communication: Presentation, Interaction and Feedbacks, Stage Manners, Group Discussions (GDs) and facing Personal Interviews, Building Relationships, Understanding Group Dynamics- I, Emotional and Social Skills, Groups, Conflicts and their Resolution, Social Network, Media and Extending Our Identities.

UNIT- 3 Vocational skills: Managing time: Planning and Goalsetting, managing stress: Types of Stress; Making best out of Stress, Resilience, Work-life balance, Applying soft-skills to workplace.

UNIT-4 Mindsets and Handling People: Definitions and types of Mindset, Learning Mindset, Developing Growth Mindset, Types of People, How to Lead a Meeting, How to Speak Effectively in Meetings, Behavior & Roles in Meetings, Role Play: Meeting.On Saying “Please”, How to say “NO”.

UNIT-5Positive Psychology: Motivating oneself, Persuasion, Survival Strategies, Negotiation, Leadership and motivating others, controlling anger, Gaining Power from Positive Thinking.

Text Books:

1. Petes S. J., Francis. Soft Skills and Professional Communication. New Delhi: Tata McGraw-Hill Education, 2011.
2. Stein, Steven J. & Howard E. Book. The EQ Edge: Emotional Intelligence and Your Success. Canada: Wiley & Sons, 2006.
3. Dorch, Patricia. What Are Soft Skills? New York: Execu Dress Publisher, 2013.

Reference Books:

- Kamin, Maxine. Soft Skills Revolution: A Guide for Connecting with Compassion for Trainers, Teams, and Leaders. Washington, DC: Pfeiffer & Company, 2013.
- Peale Norman Vincent. The Power of Positive Thinking: 10 Traits for Maximum Result. Paperback Publication. 2011.
- Klaus, Peggy, Jane Rohman& Molly Hamaker. The Hard Truth about Soft Skills. London: Harper Collins E-books, 2007.

Course Outcomes

1. Learn to listen actively to analyse audience and tailor the delivery accordingly.
2. Increase their awareness of communication behaviour by using propriety-profiling tool.
3. Master three “As” of stressful situation: Avoid, Alter, Accept; to cope with stressors and create a plan to reduce or eliminate them.
4. Develop growth mind-set and able to handle difficult person and situations successfully.
5. Develop technique of turning negativity into positivity and generate self-motivation skills.