



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE301	DCC	Material Technology	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 Educational Objectives (CEOs):**

1. To learn about various construction materials and understand their relevant characteristics.
2. To develop better understanding of various field applications of construction materials.

**Course Outcomes (COs):**

The students will be able to

1. Identify relevant construction materials.
2. Identify relevant natural & artificial construction materials.
3. Identify and use of processed construction materials.

**Syllabus**

**UNIT I**

**8 Hrs.**

**Overview of Construction Materials** - Scope of construction materials in Building Construction, Transportation Engineering, Environmental Engineering, Irrigation Engineering (applications only). Selection of materials for different civil engineering structures on the basis of strength, durability, Eco friendly and economy. Broad classification of materials –, Natural, Artificial, special, finishing and recycled.

**UNIT II**

**9 Hrs.**

**Natural Construction Materials** - Requirements of good building stone; general characteristics of stone; quarrying and dressing methods and tools for stone. Structure of timber, general properties and uses of good timber, different methods of seasoning for preservation of timber, defects in timber, use of bamboo in construction. Asphalt, bitumen and tar used in construction, properties and uses. Properties of lime, its types and uses. Types of soil and its suitability in construction. Properties of sand and uses Classification of coarse aggregate according to size

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME									
			THEORY			PRACTICAL			L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*					
DTCE301	DCC	Material Technology	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.

### UNIT III

**9 Hrs.**

**Artificial Construction Materials** - Constituents of brick earth, Conventional / Traditional bricks, Modular and Standard bricks, Special bricks –fly ash bricks, Characteristics of good brick, Field tests on Bricks, Classification of burnt clay bricks and their suitability, Manufacturing process of burnt clay brick, fly ash bricks, Aerated concrete blocks. Manufacturing process of Cement - dry and wet (only flow chart), Field tests on cement. Pre-cast concrete blocks- hollow, solid, pavement blocks, and their uses. Plywood, particle board, Veneers, laminated board and their uses. Types of glass: soda lime glass, lead glass and borosilicate glass and their uses. Ferrous and non-ferrous metals and their uses.

### UNIT IV

**8 Hrs.**

**Special Construction Materials**- Types of material and suitability in construction works of following materials: Termite proofing; Thermal and sound insulating materials. Fibers – Types –Jute, Glass, Plastic Asbestos Fibers, (only uses). Geopolymer cement: Geo-cement: properties, uses.

### UNIT V

**9 Hrs.**

**Processed Construction Materials** - Constituents and uses of POP (Plaster of Paris), POP finishing boards, sizes and uses. Paints- whitewash, cement paint, Distempers, Oil Paints and Varnishes with their uses. (Situations where used). Industrial waste materials- Fly ash, Blast furnace slag, Granite and marble polishing waste and their uses. Agro waste materials - Rice husk, Bagasse, coir fibres and their uses. Special processed construction materials; Geosynthetic, Ferro Crete, Artificial timber, Artificial sand and their uses.

### Text Books:

1. Rangwala, S.C., Engineering Materials, 43 Edition 2019, Charator publisher, Ahmedabad.
2. Duggal, S. K, Building Materials, Fourth Edition 2012 New International, New Delhi.
3. Varghese, P.C., Building Materials, Second Edition 2015, PHI learning, New Delhi.

**Chairperson**

Board of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**

Faculty of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE301	DCC	Material Technology	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.

**Reference Books:**

1. Ghose, D. N., Construction Materials, Tata McGraw Hill Fourth Edition, 1989, New Delhi.
2. S.K. Sharma, Civil Engineering Construction Materials, First edition 2019, Khanna Publishing House, Delhi
3. Rajput, R.K, Engineering Materials, S. Chand and Company; Third Revised Edition 2006.
4. Sood H., Laboratory Manual on Testing of Engineering Materials, New Age Publishers, New Delhi. 2003
5. Sharma C. P., Engineering Materials, PHI Learning, New Delhi. 2003

**List of Experiments.**

1. Identify various sizes of available coarse aggregates from sample of 10 kg in laboratory and prepare report (60,40, 20,10 mm)
2. Identify the available construction materials in the laboratory on the basis of their sources.
3. Select first class, second class and third-class bricks from the stake of bricks and prepare report on the basis of its properties.
4. Measure dimensions of 10 bricks and find average dimension and weight. Perform field tests- dropping, striking and scratching by nail and correlate the results obtained.
5. Identify the type of glasses from the given samples.
6. Prepare the cement mortar of proportion 1:3 or 1:6 using artificial sand as a special processed construction material.
7. Prepare mortar using cement and Fly ash or Granite/marble polishing waste in the proportion 1:6 or 1:3.

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**B.Tech. in Civil Engineering**  
**(2021-2025)**

COURSE CODE	CAT-EGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE302	DCC	Mechanics of Material	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 Educational Objectives (CEOs):**

Following are the objectives of this course:

1. To learn properties of area and structural material properties.
2. To understand the concept of stress and strain.
3. To calculate shear force, bending moment for different shapes of structural elements
4. To understand the concept of buckling loads for short and long columns.

**Course Outcomes (COs):**

After competing this course, student will be able to:

1. Articulate practical applications of moment of inertia of symmetrical and unsymmetrical structural sections.
2. Analyse structural behaviour of materials under various loading conditions.
3. Determine the bending and shear stresses in beams under different loading conditions.
4. Analyse the column for various loading and end conditions.

**Syllabus**

**UNIT I**

**8 Hrs.**

**Moment of Inertia** Moment of inertia (M.I.): Definition, M.I. of plane lamina, Radius of gyration, section modulus, Parallel and Perpendicular axes theorems, M.I. of rectangle, square, circle, semi-circle, quarter circle and triangle section.

**UNIT II**

**9 Hrs.**

**Simple Stresses and Strains** Definition of rigid, elastic and plastic bodies, deformation of elastic body under various Forces, Definition of stress, strain, elasticity, Hook's law, Elastic limit, Modulus of elasticity. Type of Stresses- Tensile and Compressive stresses.

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**B.Tech. in Civil Engineering**  
**(2021-2025)**

COURSE CODE	CAT-EGO-RY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE302	DCC	Mechanics of Material	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.

### UNIT III

8 Hrs.

**Shear Force and Bending Moment-** Types of supports, beams and loads, Concept and definition of shear force and bending moment, Shear force and bending moment diagram for cantilever and simply supported beams, Subjected to point loads, uniformly distributed loads and couple (combination of any two types of loading)

### UNIT IV

8 Hrs.

**Bending and Shear Stresses in beams -** Concept and theory of pure bending, assumptions, flexural equation (without derivation), bending stresses and their nature, bending stress distribution diagram. Concept of moment of resistance and simple numerical problems using flexural equation.

### UNIT V

9 Hrs.

**Columns -** Concept of compression member, short and long column, Effective length, Radius of gyration, Slenderness ratio, Types of end condition for columns, Buckling of axially loaded columns. Euler's theory, assumptions made in Euler's theory and its limitations, Application of Euler's equation to calculate buckling load.

### Text Books:

1. Bedi D.S., Strength of Materials, Khanna Publishing House, Delhi, Ed. 2018
2. Timoshenko, S., Strength of Materials, Vol. I, CBS, New Delhi.
3. Khurmi, R.S., Strength of Materials, S Chand and Co. Ltd. New Delhi.
4. Rattan S.S., Strength of Materials, McGraw Hill Education; New Delhi.
5. Bansal R K, Strength of Materials, Laxmi Publications.
6. Subramaniam R, Strength of Materials, Oxford University Press.

### Reference Books:

1. Ramamurtham, S, Strength of Materials, Dhanpat Rai and sons, New Delhi.
2. Punmia B C, Strength of Materials, Laxmi Publications (p) Ltd. New Delhi.

Chairperson

Board of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

Chairperson

Faculty of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

Controller of Examination

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

Joint Registrar

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**B.Tech. in Civil Engineering**  
**(2021-2025)**

COURSE CODE	CAT-EGO-RY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE302	DCC	Mechanics of Material	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.

**List of Experiments:**

1. To determine the Compressive Strength of Materials.
2. To determine the Tensile Strength of Materials.
3. To determine the Rockwell Hardness of Materials.
4. To determine the Toughness of the materials.
5. To determine the deflection of Beam using deflection-beam apparatus.
6. To determine young's modulus of Elasticity of different materials of beam (simply supported).

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATE-GORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE 303	DCC	Building Drawing and Design	60	20	20	30	20	2	0	2	3

**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 Educational Objectives (CEOs):**

The students should be able to learn basic principles and various byelaws of the building planning and drawing.

**Course Outcomes (COs):**

The students should be able to:

1. To learn basic principles of building planning and drawing.
2. To know graphical representation of various components of buildings.
3. To draw complete plan and elevation of a building.
4. To learn basics of perspective drawings and Computer Aided Drawings

**Syllabus**

**UNIT I**

**7 Hrs.**

**Conventions and Symbols:** Conventions as per IS 962, symbols for different materials such as earthwork, brickwork, stonework, concrete, woodwork, and glass; Graphical symbols for doors and windows, Abbreviations, symbols for sanitary and electrical installations; Types of lines-visible lines, center line, hidden line, section line, dimension line, extension line, pointers, arrowhead, or dots. Appropriate size of lettering and numerals for titles, sub-titles, notes and dimensions; Types of scale- Monumental, Intimate, criteria for Proper Selection of scale for various types of drawing; Sizes of various standard papers/sheets and reading and interpreting readymade Architectural building drawing

**UNIT II**

**5 Hrs.**

**Introduction of Building Elements and their Drawings:** Explain various building Elements (Foundation, Roof, Floor, walls, Lintels etc.); Drawing of various type of doors & window; Stair and their types (like Dog legged, Open well etc.)

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATE-GORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE 303	DCC	Building Drawing and Design	60	20	20	30	20	2	0	2	3

**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.

### UNIT III

**6 Hrs.**

**Planning of Building:** Principles of planning for Residential and Public building; Introduction to National Building Code; Space requirement and norms for minimum dimension of different units in the residential and public buildings as per IS 962; Rules and byelaws of sanctioning authorities for construction work; Plot area built up area, super built-up area, plinth area, carpet area, floor area and FAR (Floor Area Ratio).

### UNIT IV

**7 Hrs.**

**Drawing of Building:** Line plans for residential building of minimum three rooms including water closet (WC), bath and staircase as per principles of planning; Line plans for public building-school building, primary health center, restaurant, bank, post office, hostel, Function Hall, and Library; Draw Dimensional Plan and Elevation of Residential building.

### UNIT V

**5 Hrs.**

**Perspective Drawing:** Definition, Types of perspective, terms used in perspective drawing, principles used in perspective drawing; Explain Various Method of perspective with Example.

### Textbooks:

1. Shah. M.G. Kale, CM, Patki, S.Y., Building Drawing, Mcgraw Hill Publishing company Ltd. New Delhi.
2. Malik and Meo, Civil Engineering Drawing, Computech Publication Ltd New Asian Publishers, New Delhi.
3. M. G. Shah and C. M. Kale, Principles of Perspective Drawing, Mcgraw Hill Publishing company Ltd. New Delhi.

**Chairperson**

Board of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**

Faculty of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore





**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATE-GORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE 303	DCC	Building Drawing and Design	60	20	20	30	20	2	0	2	3

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

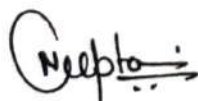
\*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

**Reference Books:**

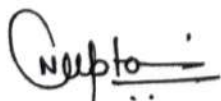
1. Swamy, Kumara; Rao, N, Kameshwara, A., Building Planning and Drawing, Charotar Publication, Anand.
2. Bhavikatti, S. S., Building Construction, Vikas Publication House Pvt. Ltd., New Delhi.
3. Mantri, Sandip, A to Z Building Construction, Satya Prakashan, New Delhi.
4. Singh, Ajit, Working with Auto CAD 2000, Mcgraw Hill Publishing company Ltd. New Delhi.
8. Sane, Y.S., Planning and design of Building, Allied Publishers, New Delhi

**List of Experiments.**

1. Draw various types of lines, graphical symbols for materials, doors and windows, symbols for sanitary, water supply and electrical installations and write abbreviations as per IS 962
2. Write summary of observations of all technical details from the given drawing (One/Two BHK) obtained from the professional architect or civil engineer (Group activity in four students)
3. Measure the units of existing building and Draw line plan of measured existing building with suitable scale.
4. Draw line plan to suitable scale (Minimum 1BHK, staircase, WC and Bathroom)
5. Draw line plans to suitable scale for any Five Public Buildings from the following (School Building, Primary Health Centre, Bank, Post Office, Hostel, Restaurant, Community Hall, and Library).
6. Draw the Dimensional plans and elevation of residential building (One/Two BHK)



**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE304	DCC	Building Construction	60	20	20	0	0	3	0	0	3

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 Educational Objectives (CEOs):**

1. To differentiate different components of building.
2. To categorise types of masonry and their construction.

**Course Outcomes (COs):**

The students will be able to

1. Identify different components of building structures.
2. Select suitable type of masonry for building structures.
3. Propose relevant means of communications for different types of buildings.
4. Choose a suitable type of floor for different field application.

**Syllabus**

**UNIT I**

**8 Hrs.**

**Overview of Building Components** - Classification of Buildings as per National Building Code, Building Components - Functions of Building Components, Substructure – Foundation, Plinth. Superstructure – Walls, Partition wall, Sill, Lintel, Doors and Windows, Floor, Roof, Columns, Beams, Parapet.

**UNIT II**

**9 Hrs.**

**Construction of Substructure** - Job Layout: Site Clearance, Layout for building, Precautions, Earthwork: Excavation for Foundation, Material for plinth Filling, Types of Foundation-Deep and Shallow foundation.

**UNIT III**

**8 Hrs.**

**Construction of Superstructure**

**Stone Masonry** - Terms used in stone masonry- facing, backing, hearting, corner stone, cornice. Types of stone masonry: Rubble masonry, Ashlar Masonry and their types. Joints in stone masonry and their purpose.

**Chairperson**

Board of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**

Faculty of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE304	DCC	Building Construction	60	20	20	0	0	3	0	0	3

**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.

**Brick masonry:** Terms used in brick masonry- header, stretcher, closer, quoins, course, face, back, hearting, bat bond, joints, lap, frog line, level and plumb. Bonds in brick masonry- header bond, stretcher bond, English bond and Flemish bond. Requirements of good brick masonry. Junctions in brick masonry and their purpose and procedure. Comparison between stone and Brick Masonry. Hollow concrete block masonry and composite masonry.

#### UNIT IV

**8 Hrs.**

**Building Communication and Ventilation** - Types of Doors & Windows, Ramps, Lift, Elevators and Escalators. Terms used in staircase-steps, tread, riser, nosing, soffit, waist slab, baluster, balustrade, scotia, hand rails, newel post, landing, headroom, winder. Types of staircase-Straight, dog-legged, open well, Spiral, quarter turn, bifurcated, three quarter turn and Half turn.

#### UNIT V

**9 Hrs.**

**Floors and Roofs:** Types of Floor Finishes and its suitability- Kota, Marble, Granite, Ceramic Tiles, Vitrified, Chequered Tiles, Paver Blocks, Concrete Floors, wooden Flooring, Skirting and Dado. Process of Laying and Construction, Finishing and Polishing of Floors, Roofing Materials-RCC, Mangalore Tiles, AC Sheets, G.I. sheets, Corrugated G.I. Sheets, Plastic and Fibre Sheets. Types of Roofs: Flat roof, Pitched Roof-King Post truss, Queen Post Truss, terms used in roofs. Wall Finishes: Types of Plastering & Pointing, Painting –Necessity, Surface Preparation for painting, Methods of Application.

#### Text Books:

1. Rangawala, S. C., Building Construction, Charotar Publishing House Pvt. Ltd. 2012
2. Punmia B. C., and Jain A. K., Building Construction, Laxmi Publication; Eleventh edition 2016
3. Sushil Kumar., Building Construction, Standard Publication. 2020
4. S. P. Arora and Bindra., Building Construction, Fifth Revised Edition 2005 Reprint in 2014Dhanpat Rai Publication, Delhi.

**Chairperson**

Board of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**

Faculty of Studies

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE304	DCC	Building Construction	60	20	20	0	0	3	0	0	3

**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.

**Reference Books:**

1. Sharma S. K., Building Construction, S. Chand and Co. Pvt. Ltd., New Delhi. 2013
2. Janardan Zha , Building Construction, Second Edition 1981 Khanna Publication.
3. Bhavikatti S. S., Building Construction, 2018 Vikas Publication House Pvt. Ltd., Delhi.
4. Mantri S., A to Z Building Construction, Satya Prakashan, New Delhi. 2011

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME									
			THEORY			PRACTICAL			L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*					
DTCE305	DCC	Surveying	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 Educational Objectives (CEOs):**

1. To apply the knowledge of surveying for field survey.
2. To know the types of method and equipments to be used for different surveys.
3. To know the use and operational details of various surveying equipments.

**Course Outcomes (COs):**

The students will be able to

1. Select the type of survey required for given situation.
2. Compute area of open field using chain, tape and cross staff.
3. Conduct traversing in the field using chain and compass.
4. Use digital planimeter to calculate the areas.

**Syllabus**

**UNIT I**

**8 Hrs.**

**Overview and Classification of Survey - Survey- Purpose and Use.** Types of surveying- Primary and Secondary, Classification: Plane, Geodetic, Cadastral, Hydrographic, Photogrammetry and Aerial. Principles of Surveying. Scales: Engineer's scale, Representative Fraction (RF) and diagonal scale.

**UNIT II**

**9 Hrs.**

**Chain Surveying - Instruments used in chain survey:** Metric Chain, Tapes, Arrow, Ranging rod, Line ranger, Offset rod, Open cross staff, Optical square. Chain survey Station, Base line, Check line, Tie line, Offset, Tie station. Ranging: Direct and Indirect Ranging. Methods of Chaining, obstacles in chaining. Errors in length: Instrumental error, personal error, error due to natural cause, random error. Principles of triangulation. Types of offsets: Perpendicular and Oblique. Conventional Signs, Recording of measurements in a field book.

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME									
			THEORY			PRACTICAL			L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*					
DTCE305	DCC	Surveying	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.

### UNIT III

**8 Hrs.**

**Compass Traverse Survey** - Compass Traversing- open, closed. Technical Terms: Geographic/ True Magnetic Meridians and Bearings, Whole Circle Bearing system and Reduced Bearing system and examples on conversion of given bearing to another bearing (from one form to another), Fore Bearing and Back Bearing, Calculation of internal and external angles from bearings at a station, Dip of Magnetic needle, Magnetic Declination. Components of Prismatic Compass and their Functions, Methods of using Prismatic Compass-Temporary adjustments and observing bearings. Local attraction, Methods of correction of observed bearings - Correction at station and correction to included angles. Methods of plotting a traverse and closing error, Graphical adjustment of closing error.

### UNIT IV

**10 Hrs.**

**Levelling and Contouring** - Basic terminologies: Level surfaces, Horizontal and vertical surfaces, Datum, Benchmarks-GTS, Permanent, Arbitrary and Temporary, Reduced Level, Rise, Fall, Line of collimation, Station, Back sight, Fore sight, Intermediate sight, Change point, Height of instruments. Types of levels: Dumpy, Tilting, Auto level, Digital level, Components of Dumpy Level and its fundamental axes, Temporary adjustments of Level. Types of Leveling Staff: Self-reading staff and Target staff. Reduction of level by Line of collimation and Rise and Fall Method. Leveling Types: Simple, Differential, Fly, Profile and Reciprocal Leveling. Contour, contour intervals, horizontal equivalent. Uses of contour maps, Characteristics of contours, Methods of Contouring: Direct and indirect

### UNIT V

**8 Hrs.**

**Measurement of Area and Volume** - Components and use of Digital planimeter. Measurement of area using digital planimeter. Measurement of volume of reservoir from contour map.

**Chairperson**

Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**

Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE305	DCC	Surveying	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.

**Textbooks:**

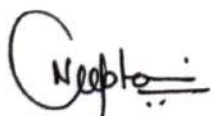
1. Duggal, S. K., Surveying Volume I, McGraw Hill Education, Fifth Edition 2019 New Delhi.
2. Punmia, B.C.; Jain, Ashok Kumar; Jain, Arun Kumar, Surveying I, Laxmi Publications, seventeenth edition 2016 New Delhi.
3. Basak, N. N., Surveying and Levelling, McGraw Hill Education, Second Edition 2017 New Delhi.

**Reference Books:**

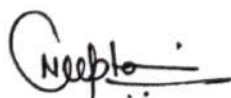
1. Kanetkar, T. P.; Kulkarni, S. V., Surveying and Levelling volume I, 2006 Pune Vidyarthi Gruh Prakashan.
2. Saikia, M.D.; Das. B.M.; Das. M.M., Surveying, PHI Learning, 2010 New Delhi.
3. Subramanian, R., Fundamentals of Surveying and Levelling, Second edition 2014, Oxford University Press. New Delhi.
4. Rao, P. Venugopala Akella, Vijayalakshmi, Textbook of Surveying, PHI Learning New Delhi. 2015
5. Bhavikatti, S. S., Surveying and Levelling, Volume 1, I. K. International, New Delhi. 2013
6. Arora K R , Surveying Vol. I, Seventeenth edition 2019, Standard Book House.

**List of Experiments:**

1. Measure distance between two survey stations using chain, tape and ranging rods when two stations are inter-visible.
2. Undertake reciprocal ranging and measure the distance between two stations.
3. Determine area of open field using chain and cross staff survey.
4. Measure Fore Bearing and Back Bearing of survey lines of open traverse using Prismatic Compass.
5. Measure Fore Bearing and back bearing of a closed traverse of 5 or 6 sides and correct the
6. bearings and included angles for the local attraction.



**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Choice Based Credit System (CBCS) in Light of NEP-2020**  
**Diploma in Civil Engineering**  
**(2021-2024)**

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE305	DCC	Surveying	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.

7. Undertake Survey Project with chain and compass for closed traverse for minimum 5 sides around a building.
8. Undertake simple leveling using dumpy level/ Auto level and leveling staff.
9. Measure area of irregular figure using Digital planimeter.

**Chairperson**  
Board of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Chairperson**  
Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Controller of Examination**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

**Joint Registrar**  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore