GANPAT UNIVERSITY

FACULTY OF DIPLOMA ENGINEERING

Programme	Diploma in Civil / Electrical Engineering.				
Semester	I		Version	1.0.0.0	
Effective from Academic Year	2025-26		Effective for the batch Admitted in		JULY 2025
Course code	1ES1102	Course Name	Elements Of Civil Engineering		

I.TEACHING-LEARNING AND ASSESSMENT SCHEME

Course Type	Course Code	Learning Scheme						Assessment Scheme										
		Actual Contact Hrs./Week			SLH	NLH	Credits	Theory				Practical				Based on SL		Total Marks
		CL	TL	LL				FA-TH	SA-TH	TOTAL		FA-PR	SA-PR	TOTAL		SLA		
								MAX	MAX	MAX	MIN	MAX	MAX	MAX	MIN	MAX	MIN	
DSC	1ES1102	2	-	2	2	6	3	40	60	100	40	30	20	50	20	-	-	150

Abbreviation:	**CL-** Classroom Learning	**TL -** Tutorial Learning	**LL -** Laboratory Learning
	SLH - Self Learning Hours	**NLH -** Notional Learning Hours	**SLA -** Self Learning Assessment
	FA - Formative Assessment (Term work +Mid Sem Exam +Attendance)		**SA -** Summative Assessment

II. PRE-REQUISITES

The students have to know about unit conversion & calculation.
The student must able to draw and understand the drawings.

III. INDUSTRY / EMPLOYER EXPECTED OUTCOMES

Use and able to understand need of basic Civil Engineering concept for construction materials, rules of survey, bye-laws and NBC of local / national body for construction on field.

IV. COURSE LEARNING OUTCOMES

At the end of the course, students will be able to achieve the followingcourselearningoutcomes:
CO1. Describe fundamental concepts of civil engineering and its interdisciplinary integration.
CO2. Apply basic principles of measurement and surveying techniques in field operations.
CO3. Interpret and utilize building bye-laws in the planning of industrial buildings.
CO4. Aware about suitable construction materials and its properties standards, and economic factors.
CO5. Analyse real estate development processes, town planning concepts, and RERA regulations.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT:

Name of Unit	Theory Learning outcomes (TLO's) aligned to CO's	Learning Content mapped with Theory Learning outcomes (TLO's) & CO's	Marks	Hours
Unit-1 Civil Engineering Concepts	**TLO 1.1** Describe civil engineering and its importance. **TLO 1.2** Explain the role of civil engineers. **TLO 1.3** Classify core fields and Explain functions of each. **TLO 1.4** Integration with electrical, mechanical, and environmental disciplines. **TLO1.5** Sustainable development in civil engineering (Concepts of green buildings)	**1.1** Define Civil Engineering Explain Key component (planning, designing, construction, maintenance), Importance of civil engineering. **1.2** Key Role of civil engineer and working area of civil engineer. **1.3** Classification of core field and function with their example. **1.4** Objective of integration with other disciplines, Role of different discipline in project, Benefits of Integration **1.5** Define green buildings. Importance of sustainable design. Green building features and	**8**	**4**

		material required.		
Unit -2 Mode of Measurement and Surveying	**TLO 2.1** Conversation of unit. **TLO 2.2** Explain Principles of survey. **TLO 2.3** Describe Ranging of survey lines. **TLO 2.4** Explain Conventional signs- its importance, types etc.	**2.1** Understand basic units (length, area, volume). **2.2** Identify and use tools (tape, chain, level and advance instruments), Principles of survey, Type of Engineering survey Reconnaissance survey, Enlist and Explain instruments use for chain survey on the field **2.3** Ranging of survey lines, Base line, Tie line, Check line, Types of ranging, Explain ranging a line on field. **2.4** Conventional signs- its importance, types etc. Location sketches, key plan, offset, running measurements, selection of stations. Field book, recording, plotting of details to the scale.	**16**	**8**
UNIT – 3 Building Bye-Laws for Industrial Building/ Sheds	**TLO 3.1** Describe Provisions of bye-laws related to industrial buildings in I.S **TLO 3.2** Explaining the purpose of Each bye-law **TLO 3.3** Explain Layout of industrial shed using relevant bye-laws.	**3.1** Define: Bye-law. Provisions of bye-laws related to industrial buildings in I.S. Application of bye-laws as per IS-1256. **3.2** Explaining the purpose of Each bye-law. **3.3** Layout of industrial shed using relevant bye-laws.	**8**	**4**
Unit-4 Construction material	**TLO 4.1** Explain various types of construction materials commonly used. **TLO 4.2** Describe estimated market cost of above referred construction materials **TLO 4.3** Compare the different Materials and construction work.	**4.1** Various types of construction materials commonly used. Properties of each material & their acceptable standards Where they are most suitably used. **4.2** Estimated market cost of above referred construction materials **4.3** Select the most suitable construction materials for industrial structures with respect to durability, appearance, economy etc. **4.4** Compare the following materials and construction works. Brick work & stone work, on the basis of strength and economy Lime & cement, on the basis of strength and economy. Wood & steel (as structural members)on the grounds.	**10**	**5**
Unit-5 Real Estate: Concepts and Applications	**TLO 5.1** Introduction to real estate in civil projects **TLO 5.2** Building classification as per National Building Code **TLO 5.3** Key term	**5.1** Define real estate and its importance. **5.2** Understand types of building as per NBC. **5.3** Key terms: carpet area, built-up area.	**8**	**4**

	Definitions and differences (carpet area, built-up area, super built-up area) **TLO5.4**Functions and responsibilities in real estate development	**5.4** Role of engineers and developers. Difference between real and personal property.		
Unit-6 Town Planning and RERA	**TLO 6.1** Explain GDCR. **TLO 6.2** Town planning concept. **TLO 6.3** Explain about RERA ACT.	**6.1** Define General Development Control Regulations and its importance, Role in building approval and planning. **6.2** Define town planning, Objective and principle of town planning, Town Planning Authorities and Acts (State-level and National-level), Steps in the Planning and Approval Process. **6.3** Define RERA (Real Estate Regulation Act) and its importance. ERA: purpose, features, benefits. Related town planning and RERA	**10**	**5**

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL

Sr. No.	Practical/Laboratory Learning Outcome (LLO)	Practical Titles	Relevant COs
1	**LLO1.1**Visit civil engineering labs/site and prepare a report on key civil engineering domains and roles.	Identify different core fields and explain roles of civil engineers	CO1
2	**LLO2.1** Demonstration and hands-on practice of chain, tape, and levelling instruments on field.	Understand basic surveying instruments and their uses.	CO2
3	**LLO3.1**Practice chaining a line, ranging, and recording field data using a field book.	Perform linear measurement and chaining operations.	CO2
4	**LLO4.1** Draw layout of an industrial shed using National building code and IS bye-laws.	Interpret industrial building layouts with respect to building bye-laws.	CO3
5	**LLO5.1** Prepare various types of construction materials rates and units for brick, stone, sand, aggregate, cement, steel, wood etc.	Enlist of different types of construction materials rates and units.	CO4
6	**LLO 5.1**Prepare a report on carpet area, built-up area, and RERA features with example project layout.	Understand real estate terms and regulatory frameworks.	CO5

VII. SUGGESTED MICRO PROJECT / ASSIGNMENTS / ACTIVITIES FOR SELF LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

- Measure any small area near your home and fill a mock field book.
- Draw a small plan of an industrial shed following given rules (NBC).
- Visit any shop or ask a contractor and list prices of 5 materials like brick, cement, steel.
- Make a poster showing how RERA helps buyers and engineers in building projects.

Mini projects

- Measure and Draw a Simple Area Plan.
- Layout Plan of a Small Shed with Bye-laws.
- Area Calculation of a Room.
- Awareness Chart on RERA Rules.

VIII. LIST OF INSTRUMENTS / EQUIPMENT / TRAINER BOARD	
1	Measuring Tape (30m &50m)
2	Chain 20m &30m
3	Ranging Rods
4	Arrows and Pegs

IX. LIST OF REFERENCE BOOKS			
Sr.No.	**Title**	**Author**	**Publication**
1	Text book on Element of Civil Engineering	B H SHUKLA	Atul Prakashan
2	Town Planning and Building Bye-Laws	G.K. Hiraskar	Dhanpat Rai Publications
3	Text book on Surveying & levelling	R. AGOR	Khanna Publication
4	RERA ACT (Latest Edition)	Government of India	Official Govt. Publication
5	Real Estate Management	K.R. Chandratre	Snow White Publications

X. LINK OF LEARNING WEB RESOURCE	
1	https://nptel.ac.in
2	IS-2974-Part I and II
3	National Building Code (NBC 2016)
4	IS 1256

XI. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE							
Unit	**Unit Title**	**Aligned COs**	**Learning Hours**	**R-Level**	**U-Level**	**A-Level**	**Total Marks**
1	Civil Engineering Concepts	CO1	4	3	3	2	8
2	Mode of Measurement and Surveying	CO2	8	4	6	6	16
3	Building Bye-Laws for Industrial Building/Shed	CO3	4	2	3	3	8
4	Construction material	CO4	5	2	3	5	10
5	Real Estate: Concepts and Applications	CO5	4	2	4	2	8
6	Town Planning and RERA	CO5	5	2	6	2	10
		Grand Total	30	15	25	20	60

XII. COs AND POs AND PSOs MAPPING										
Course outcome (Cos)	**Programme Outcomes (POs)**							**Programme Specific Outcomes (PSOs)**		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	1	1	3	2	2	1	1	2
CO2	3	3	2	3	2	2	2	2	3	1
CO3	3	2	3	2	3	2	1	1	2	2
CO4	3	2	2	2	3	2	1	2	2	2
CO5	2	2	2	1	3	2	3	1	2	3
Legends: -3- High 2-Moderate/Medium 1-Slight/Low 0-None										