

Govt. polytechnic Hamirpur

Branch: Civil engineering
Subject: Water Resource Engg.
Teacher: Er. Sujaya Sharma

Semester: 6th sem
Session- July- Dec 2026

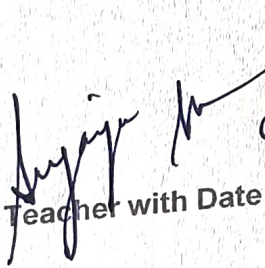
Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	10	Introduction to Hydrology	Hydrology: Definition and Hydrological cycle Rain Gauge: Symons rain gauge, automatic rain gauge, Methods of calculating average rainfall: Arithmetic mean, Iso-hyetal, and Theissen polygon method. Runoff, Factors affecting Runoff, Computation of run-off	R1, R2	
2	10	Crop water requirement and Reservoir Planning	Irrigation and its classification. Crop Water requirement: Cropping seasons, Crop period, base period, Duty, Delta, CCA, GCA, intensity of irrigation, factors affecting duty, Problems on water requirement Methods of application of irrigation water and its assessment. Siltation of reservoir, Rate of silting, factors affecting silting and control measures	R1, R2	
3	10	Dams and Spillways	Dams and its classification: Earthen dams and Gravity dams (masonry and concrete). Earthen Dams– Components with function, typical cross-section, seepage through embankment and foundation and its control. Methods of construction of earthen dam, types of failure of earthen dam and preventive measures. Gravity Dams–Forces acting on dam, Theoretical and practical profile, typical cross-section. (only theoretical concept) Spillways-Definition, function & location	R1, R2	
4	10	Minor and Micro Irrigation	Lift irrigation Scheme-Components and their functions, Layout. Drip and Sprinkler Irrigation-Need, components, and Layout. Well irrigation: types and yield of wells, advantages and disadvantages of well irrigation.	R1, R2	

5	10	Diversion Head Works & Canals	Weirs-components, parts, types of weirs Barrages-components and their functions. Difference between weir and Barrage. Canals- Classification according to alignment and position in the canal network, Cross section of canal in embankment and cutting, partial embankment and cutting. Canal lining-Purpose, material used and its properties, advantages. Cross Drainage Works-Aqueduct, siphon aqueduct, super passage, level crossing. Canal Regulators- Head regulator, Cross regulator, Escape, Falls and Outlets	R1, R2	
6	6	Water logging	Definition, Causes, Preventive & remedial measures, Reclamation of waterlogged areas	R1, R2	

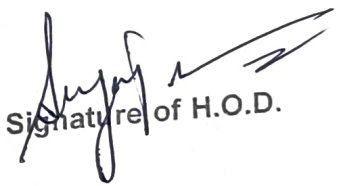
REFERENCE RESOURCES

1. Punmia, B.C., Pande, B.Lal, Irrigation and Water Power Engineering, Laxmi Publications
2. Subramanyam, Engineering Hydrology, McGraw Hill.
3. Mutreja KN, Applied Hydrology, McGraw Hill

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 01/08/26

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Govt. polytechnic Hamirpur

Branch: Civil engineering

Subject: Precast and prestressed concrete

Teacher: Er. Shivani

Semester: 5th sem

Session- August- Dec 2026

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	06	Precast concrete Elements	Advantages and disadvantages of precast concrete members Non-structural Precast elements-Paver blocks, Fencing Poles, Transmission Poles, Manhole Covers, Hollow and Solid Blocks, kerb stones as per relevant BIS specifications Structural Precast elements –tunnel linings, Canal lining, Box culvert, bridge panels, foundation, sheet piles	R1, R2	
2	8	Prefabricated building	Precast Structural Building components such as slab panels, beams, columns, footings, walls, lintels and chajjas, staircase elements, Prefabricated building using precast load bearing and non-load bearing wall panels, floor systems-Material characteristics, Plans & Standard specifications Prefab systems and structural schemes and their classification Joints-requirements of structural joints Manufacturing, storage, curing, transportation and erection of above elements, equipment needed		
3	11	Introduction to Pre-Stressed Concrete	Principles of pre-stressed concrete and basic terminology. Applications, advantages and disadvantages of pre stressed concrete Materials used and their properties, Necessity of high-grade materials Types of Pre-stressing steel-Wire, Cable, tendon, Merits-demerits and applications		

4	9	Methods and systems of pre-stressing	Methods of pre-stressing-Internal and External pre-stressing, Pre and Post tensioning applications Systems for pre tensioning- process, applications, merits and demerits-Hoyer system Systems for post-tensioning - process, applications, merits and demerits - Freyssinet system, Magnel Blaton system, Gifford Udall system. Loss of pre-stress occurring subsequently: losses due to shrinkage of concrete, creep of concrete, elastic shortening, and creep in steel, (Simple Numerical problems to determine loss of pre-stress). BIS recommendations for percentage loss in case of Pre and Post tensioning.		
5	8	Analysis and design of pre-stressed rectangular beam section	Basic assumptions in analysis of pre-stressed concrete beams. Cable Profile in simply supported rectangular beam section-concentric, eccentric straight and parabolic Effect of cable profile on maximum stresses at mid span and at support. Numerical problems on determination of maximum stresses at mid spans with linear (con-centric and eccentric) cable profiles only. Simple steps involved in Design of simply supported rectangular beam section (No numerical problems)		

REFERENCE RESOURCES

1. Krishna Raju, N., Pre-stressed Concrete, Tata McGraw Hill, New Delhi.
2. Shrikant B. Vanakudre, Pre-stressed Concrete, Khanna Publishing House, New Delhi.

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Govt. polytechnic Hamirpur

Branch: Civil engineering
Subject: Estimation and Costing
Teacher: Er. Shivani

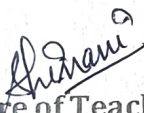
Semester: 5th sem
Session- August- Dec 2026

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	8	Introduction	Meaning of the terms estimating & costing. Purpose of estimating and costing Types of Estimates Approximate and Detailed Approximate estimate Types Plinth area rate method Cubic Content method Approximate Quantity method Types of detailed estimate Detailed estimate for new work Revised estimate Supplementary estimate Repair & Maintenance estimate	R1, R2	
2	12	Measurement	Units of measurement for various items of work as per BIS: 1200 Rules for measurements. Different methods of taking out quantities—centre line method and long wall and short Wall method.		
3	10	Preparation of Detailed Estimates and Abstract of Cost	One & two room residential building with flat roof Septic tank for 10 users		
4	10	Road Estimation	Preparation of Detailed Estimates and Abstract of Cost for • Plain road with-mid section area method, mean sectional area method, prismoidal		

			formula. • Earth work in hill road		
5	10	Analysis of Rates	Calculation of Quantities of Materials Cement mortars of different proportion Cement concrete of different proportion RCC work in different proportions Brick/stone masonry in cement mortar Plastering and pointing Whitewashing, painting Preparation of Detailed Analysis of Rates for finished items with given labour and rate of material Earthwork Cement concrete of different proportion RCC work in different proportions Brick/stone masonry in cement mortar Plastering and pointing Whitewashing, painting		
6	6	Contracts And Tendering	Meaning of contract Qualities of a good contractor and their qualifications. Essentials of a contract Types of contracts, their advantages, disadvantages and suitability, system of payment. Single and two cover-bids Tender, tender forms and documents, tender notice, submission of tender and deposit of earnest money, security deposit, retention money, maintenance period Administrative approval, Technical sanction, Budget provision, Expenditure sanction. Methods for carrying out works- contract method. Preparation of Tender Document based on Common Schedule Rates (CSR) Introduction to CSR and calculation of cost based on premium on CSR		

REFERENCE RESOURCES

1. Dutta, B.N., Estimating and Costing in Civil engineering, UBS Publishers Distributors Pvt. Ltd. New Delhi.
2. Peurifoy, Robert L. Oberlender, Garold, Estimating construction cost (fifth edition), McGraw Hill Education, New Delhi.
3. Rangwala, S.C., Estimating and Costing, Charotar Publishing House PVT. LTD., Anand


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Govt. Polytechnic Hamirpur (H.P.)

Practical Planning & Coverage

Branch : Civil Engineering

Semester : 5th

Subject : Design of RCC Structures Lab

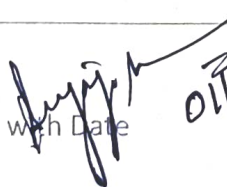
Session : Aug-Dec 2026

Teacher: Er. Sujaya Sharma

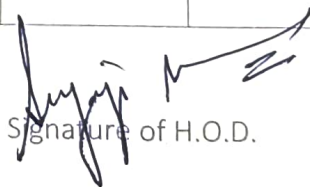
Laboratory: Design of RCC Structures Lab

Experiment No.	Description of Practical	Reference for Procedure/ Write up	Likely Dates	Actual Dates	Signature
1	• Rectangular beams – Singly reinforced		G11 / G12. 10/8/26		
2	• Rectangular beams- Doubly reinforced		22/8/26		
3	• One-way slabs		7/9/26		
4	• Two-way slabs (Corner not held down).		21/9/26		
5	• Square columns with isolated footing of uniform depth and varying depth (sloped footings)		5/10/26.		
6	• Circular column with isolated footing of uniform depth and varying depth (sloped footings).		12/10/26		
7	• Interpret the actual RCC Structural Drawings used on site with reference to reinforcement details of various structural elements.		24/10/26		
8	• Prepare a detailed report of site visit for reinforcement detailing of structural elements like beams, columns, staircase & footing.		16/11/26		
9	• Prepare a checklist for reinforcement provided from actual drawings used on site for various structural elements		21/11/26		

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Govt. Polytechnic Hamirpur (H.P.)
Practical Planning & Coverage

Branch : Civil Engineering

Semester: 5th

Subject : Major Project,

Session : September, - Dec, 2026

Teacher: Er. Sujaya Sharma

Laboratory: Field Work

Pract. No.	Description of Practical	Reference for Procedure/ Write up	Likely Dates	Actual Dates	Signature
1	Introduction & discussion	Refer previous semester books, Schedule of rates, Market list & brochures of the vendors and various brands for specifications	7/8/26		
2	Discussion & Market Survey of various types of wood used in construction and are available in the market.		11/8/26, 12/18/26.		
3	Discussion & Market Survey of various types of water closets & bath fittings used in houses and are available in the market.		18/8/26 19/8/26		
4	Discussion & Market Survey of various types of sanitary fittings used in construction and are available in the market.		28/8/26 26/8/26		
5	Discussion & Market Survey of various types of flooring material used in construction and are available in the market.		2/8/26 3/8/26		
6	Discussion & Market Survey of various types of construction material used in construction and are available in the market.		9/9/26 10/9/26		
7	Discussion & Market Survey of various types of aluminum being used in construction, what construction elements are being made/ used in the market.		16/9/26 17/9/26		
8	Discussion & Market Survey of various types of paints used in construction and are available in the local market.		23/9/26 24/9/26		
9	Discussion & Market Survey of various types of electrical fittings used in construction and are available in the local market.		30/9/26. 1/10/26 7/10/26.		
10	Prepare complete estimate of a 1 bedroom set		14/10/26 15/10/26		
11	Prepare complete estimate of a 1 bedroom set		22-12/11/26 23-13/11/26		
12	Visit nearby construction sites		18/11/26		
13	Visit nearby construction sites		19/11/26		
14	Visit nearby construction sites		23/11/26		

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Practical Planning & Coverage

Branch: Civil Engineering

Semester : 5th sem

Subject: CACE Lab

Session: august-dec2026

Teacher: Er. Shivani

Laboratory: Auto CAD Lab(G1and G2)

Experiment. No.	Description of Practical	Referenc e for Procedur e/ Write up	Likely Dates	Actual Dates	Signature
<u>1</u>	Starting up of Auto CAD, Auto CAD Window, Toolbar, drop down menu, Command window, saving the drawing.	R1	G1 / G2 6/8/26 7/8/26 10/8/26 11/8/26		
<u>2</u>	Introduction of Graphic screen.	R1	13/8/26 14/8/26		
<u>3</u>	Co-ordinates, drawing limits, grid, snap, orthographic features	R1	17/8, 18/8 20/8, 21/8 24/8, 25/8, 29/8		
<u>4</u>	Drawing commands, line, circle, poly-line, multiline, ellipse, polygon etc.	R1	1/9, 3/9 7/9, 8/9 10/9, 11/9		
<u>5</u>	Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc	R1	14/9, 15/9 17/9, 18/9 21/9, 22/9 24/9, 28/9		
<u>6</u>	Working with hatches, fills, dimensioning, text etc	R1	28/9, 29/9		
<u>7</u>	Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system	R1	1/10, 5/10 6/10, 8/10		
<u>8</u>	Preparation of line plan of a residential building	R1	12/10, 13/10 15/10, 16/10		
<u>9</u>	Preparation of detailed plan of a two-room residential building, Elevation, Section, Site Plan (using different type of layers	R1	19/10, 22/10 23/10 27/10, 29/10 30/10		
<u>10</u>	Introduction to STAAD Pro, (Expert may be invited to demonstrate)	R1	2/11, 3/11 5/11, 6/11		
<u>11</u>	Introduction to MS Project/Primavera	R3	9/11, 10/11 12/11, 13/11		

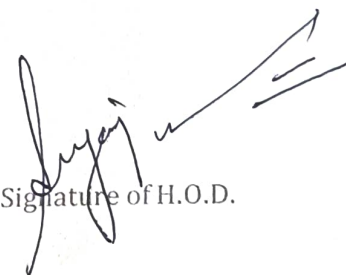
12	Unit IV: Use of artificial Intelligence in Building Design (Expert may be invited to demonstrate)		16/11, 17/11		
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Reference Books:

1. Reference Manual of AutoCAD by Auto Desk
2. AutoCAD 2013 by IPH publication.
3. MS Project – Microsoft USA or Primavera or Bentley Company



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GOVT. POLYTECHNIC, HAMIRPUR
(H.P.) Lesson Planning and Coverage

Branch: Civil Engg.

Semester: 5th

Subject: Life Skills for Professional and Personal Life, ASOE 301 Session: August- Dec. 2026

Teacher: Anjna Kumari (Lecturer, English)

Laboratory: No

Sr. No.	No of Lectures	Chapter/Unit Description	Detailed contents	Reference Resources	Remarks
1	13	1) Life Skills, Soft Skills & Interpersonal Skills:	Definition of Life Skills and Soft Skills Significance of Life Skills and Soft Skills in Personal and Professional life Types of Soft skills and Life skills, Ways to develop Soft Skills and Life Skills. Concept of Interpersonal Skills and tips to improve Interpersonal Skills Meaning of Team dynamics and Tips for improving Team dynamics	R1- R19	
2	9	Unit 2. Communication Skills	Meaning of Communication Skills Significance and Characteristics of Assertive Communication Techniques of Assertive Communication Tips to develop Assertive Communication	R20-R26	
3	26	Unit 3. Life Skills	Importance of counselling and coaching Meaning of Stress Factors causing positive and negative types of stress Effects of Stress on mind and body. Stress Management techniques Meaning and Significance of EI Strategies to develop and enhance Emotional Intelligence Concept, Meaning and Significance of Self-Esteem Types of Self-Esteem Characteristics of people with High and Low Self -Esteem Steps and Tips for improving Self-Esteem Meaning and Techniques of social awareness and social skills Meaning and types of Empathy Benefits of Empathy , Steps for developing Empathy Meaning and Benefits of Compassion, Steps to practice Compassion. Elements of Body Language , Develop	R1-R26	

			Positive Body language that helps in building positive relationships Avoiding Negative Body Language, Meaning and Benefits of Positive Thinking Tips to develop positive attitude and practice Positive Thinking Tips to develop positive attitude and practice Positive Thinking Factors hindering effective Listening , Tips for Active and Empathetic Listening Meaning and Types of Resilience , Case studies of Resilience		
4	8	Unit 4. Time Management Skills	Concept and Significance of Time Management. , Benefits of Time Management, Tools and techniques of Time Management , How to overcome procrastination and avoid time-wasters	R1-R26	
5	8	Unit 5. Human Values and Ethics	Fundamental rights of a person, Meaning of Humility, Significance of humility, Developing and cultivating humility	R1-R26	

References:

Course outcomes:

At the end of the course the student will be able to:

CO1 Build and reflect self-confidence and high self-esteem in their behavior and conduct.

CO2 Demonstrate life skills in their professional and personal lives.

CO3 Communicate assertively and make effective presentations.

CO3 Manage time effectively

CO4 Display positive attitude and resilience in their behavior and conduct

CO5 Demonstrate positive interpersonal skills and work effectively in a Team, as a leader and a member.

CO6 Listen actively and empathetically

CO7 Manage adverse circumstances with resilience

CO8 Display emotionally intelligent behavior and create stress free environment

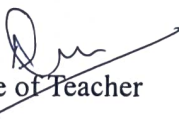
CO9 Demonstrate harmony in their physical, cognitive, personal, social behavior and conduct

CO10 Exhibit and apply social and emotional abilities to climb the ladder of success in

personal and professional lives.

Reference Books and online sources:

1. <https://esoftskills.com/soft-skills-vs-life-skills/#:~:text=Soft%20skills%20primarily%20focus%20on,day%2Dto%2Dday%20living>
2. Soft Skills & Employability Skills. Sabina Pillai & Agna Fernandez. Cambridge University Press.
3. Soft Skills. K. Alex. S. Chand
4. Positivity-Away of life by Manika Ghosh, Published by Orient Blackswan Pvt. Ltd.
5. Clear, J. (2018). Atomic habits: An easy & proven way to build good habits & break bad ones. Penguin.
6. Klaus, Peggy, Jane Rohman & Molly Hamaker. "The Hard Truth about Soft Skills", London: HarperCollins E-books, 2007
7. <https://www.coursera.org/articles/interpersonal-skills>
8. <https://www.indeed.com/career-advice/resumes-cover-letters/interpersonal-skills>
9. <https://www.understood.org/en/articles/4-types-of-social-cues>
10. <https://www.bhf.org.uk/informationsupport/heart-matters-magazine/wellbeing/how-to-talk-about-health-problems/active-listening>
11. <https://www.scienceofpeople.com/mirroring/>
12. <https://www.apa.org/monitor/2021/11/feature-cultivating-empathy>
13. <https://www.helpguide.org/articles/relationships-communication/empathy.htm>
14. <https://www.verywellmind.com/what-is-compassion-5207366>
15. <https://library.xtensio.com/noise-analysis>
16. <https://hbr.org/2016/06/the-secrets-of-great-teamwork>
17. <https://blog.vantagecircle.com/team-dynamics/>
18. <https://www.indeed.com/career-advice/career-development/how-to-improve-interpersonal-skills>
19. <https://positivepsychology.com/self-awareness-matters-how-you-can-be-more-self-aware/>
20. Peale, Norman Vincent. The Power of Positive Thinking. RHUK, 2016.
21. <https://www.rajeevelt.com/life-skills-teaching-learning-beneficial-holistic-development-child-education/rajeev-ranjan/>
22. https://www.mirecc.va.gov/cihvisn2/Documents/Patient_Education_Handouts/Assertive_Communication_Version_3.pdf
23. <https://positivepsychology.com/assertive-communication/#benefits>
24. <https://www.berkeleywellbeing.com/assertive-communication.html>
25. <https://www.choosingtherapy.com/assertive-communication/>
26. <https://www.executive-impressions.com/blog/why-assertive-communication-important-new-leaders>


Signature of Teacher


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