

Lesson Plan for Design R.C. C Structures

Department of Civil Engineering
(Semester-5th)

Session: (August- November 2025)
Campus at Sundernagar Distt Mandi (H.P) -175018
Laudul & Spiti (H.P)

S.No	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	Aug	Week 2	5,6,7,8	Design Philosophies: Working Stress Theory, Ultimate Design Theory	<p>Diary No. _____ Date _____ Signature _____ Remarks _____</p>
		Week 3	12,13,14	Limit State Theory Concept of Reinforced Cement Concrete (RCC) Reinforcement Materials	
		Week 4	19,20,21,22	Suitability of Steel as reinforcing material Properties of mild steel and HYSD steel Loading on structure as per I.S 875. Study of BIS:456-2000-clause5, clause6, clause9, Clause18, clause19, clause22, Clause 23.0, 23.2, 23.3, Clause25, clause26, clause35, clause36, clause37, clause 38, clause 39, clause 40, clause 41, clause42, clause 43, Annexure-B, C, D, E, G	
		Week 5	26,27,28,29	Nominal Shear stress in R.C. Section, Design shear strength of concrete, maximum shear stress, Design of shear reinforcement, Minimum shear reinforcement.	
		Week 1	2,3,4,5	Forms of shear reinforcement with numerical problems.	
2	Sep	Week 2	9,10,11,12	Bond and types of bonds, Bond Stress, check for bond stress, Development length in tension and compression, anchorage value for hooks 90° bend and 45° bend. Standard Lapping of bars, check for development length.	Class Test-1
		Week 3	16,17,18,19	Determination of development length required for tension reinforcement of cantilevers beam and slab, check for development length	
		Week 4	23,24,25,26	Limit State of collapse (Flexure), Assumption stress. Strain relationship for concrete and steel, neutral axis, Stress block diagram and Strain diagram for singly reinforced section. Concept of under-reinforced, over-reinforced and balanced section, neutral axis, limiting value of moment of resistance and limiting percentage of steel required for balanced singly R.C. Section.	
3	Oct	Week 1	1,3	Simple numerical problems on determining design constants, moment of resistance and area of steel. Design of Singly reinforced simply supported beam and cantilever beam.	Class Test-2
		Week 2	8,9,10	General features, necessity of providing doubly reinforced reinforcement, limitations. Analysis of doubly reinforced section, strain diagram, stress diagram, depth of neutral axis, moment of resistance of the section.	
		Week 3	14,15	Numerical problems on finding moment of resistance	
		Week 4	21,22,23,24	Analysis & Design of simply supported one-way slab. Design of two-way simply supported slab with corners free & no provision for torsion reinforcement.	
		Week 5	28,29,30,31	Assumptions in limit state of collapse-compression Definition and classification of columns, effective length of column.	
4	Nov	Week 2	4,6,7	House test	Revision
		Week 3	11,12,13,14	Specification for minimum reinforcement; cover, maximum reinforcement, number of bars in rectangular, square, and circular sections, diameter and spacing of lateral ties. (No numerical on helical ties).	
		Week 4	18,19,20,21	Analysis and Design of axially loaded: Uniaxial & Biaxial Bending along with axial loading: short, square, rectangular, and circular columns with lateral ties only, check for short column and check for minimum eccentricity may be applied.	
		Week 5	25,26		

Signature of Teacher
(Er. R.S. Chandel)

Signature of H.O.D
(Dr. Lalit Goel)

Lesson Plan for Estimation & Costing

Session: (Aug- Nov 2025)

S.No	MONTH	WEEK	DATE	Name of Chapter	CONTENTS	REMARKS
1	August	Week 2	4,6,7	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	
		Week 3	11,13,14		Types of detailed estimate Detailed estimate for new work Revised estimate Supplementary estimate Repair & Maintenance estimate	
		Week 4	18,20,21		Units of measurement for various items of work as per BIS: 1200 Rules for measurements.	
		Week 5	25,27,28		Different methods of taking out quantities--centre line method and long wall and short wall method.	
		Week 1	1,3,4		One & two room residential building with flat roof Septic tank for 10 users	
2	September	Week 2	8,10,11	Preparation of Detailed Estimates and Abstract of Cost for	One & two room residential building with flat roof	Class Test - I
		Week 3	15,17,18		Septic tank for 10 users	
		Week 4	22,24,25		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.	
		Week 5	29		Cement mortars of different proportion Cement concrete of different proportion	
				Road Estimation		

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3	October	Week 1	1	Calculation of Quantities of Materials	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	Class Test - II
		Week 2	6,8,9			
		Week 3	13,15			
		Week 4	22,23			
		Week 5	27,29,30			
4	November	Week 2	3,6	Road Estimation, Analysis of Rates, 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	Revision
		Week 3	10,12,13			
		Week 4	17,19,20			
		Week 5	24,26			

Signature of Teacher
(Er Manoj Kumar Thakur)

Signature of HOD
(Dr. Lalit Goel)

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
	August	Week 2	4,5,8	Hydrology: Definition and Hydrological cycle Rain Gauge: Symons rain gauge, automatic rain gauge,	
		Week 3	11,12	Methods of calculating average rainfall: Arithmetic mean, Iso-hyetal, and Thiessen polygon method.	
		Week 4	18,19,22,23	Runoff, Factors affecting Runoff, Computation of run-off	
		Week 5	25,26,29,30	Irrigation and its classification. Crop Water requirement: Cropping seasons, measures.	
		Week 1	1,2,5,6	Crop period, base period, Duty, Delta, CCA, GCA, intensity of irrigation, factors affecting duty.	
	September	Week 2	8,9,12	Problems on water requirement Methods of application of irrigation water and its assessment. Silt of reservoir, Rate of silting, factors affecting silting and control	Class Test-I
		Week 3	15,16,19,20	Dams and its classification: Earthen dams and Gravity dams (masonry and concrete).	
		Week 4	22,23,26,27	Earthen Dams- Components with function, acting on dam, Theoretical and practical profile, typical cross-section. (only theoretical concept) Spillways-Definition, function & location	
		Week 5	29,30	Typical cross-section,	
		Week 1	3,4	Seepage through embankment and foundation and its control.	
	October	Week 2	6,10	Methods of construction of earthen dam, types of failure of earthen dam and preventive measures. Gravity Dams-Forces	Class Test-II
		Week 3	13,14	Lift irrigation Scheme-Components and their functions, Layout. Drip and Sprinkler Irrigation-Need, components, and Layout.	
		Week 4	21,24,25,	Well Irrigation: types and yield of wells, advantages and disadvantages of well irrigation	
		Week 5	27,28,31	Weirs-components, parts.	
		Week 1	1	Types of weirs Barrages-components and their functions.	
	November	Week 2	3,4,7	House test	
		Week 3	10,11,14,15	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.	
		Week 4	17,18,21,22	Canal lining-Purpose, material used and its properties, advantages. Cross Drainage Works-Aqueduct, siphon aqueduct, super passage, level crossing, Canal Regulators- Head regulator.	
		Week 5	24,25	Cross regulator, Escape, Falls and Outlets Unit-VI Water logging - Definition, Causes, Preventive & remedial measures, Reclamation of water logged areas	

Signature of Teacher
(Er Nawang Negi)

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Department of Civil Engineering
Government Polytechnic Lalhual Split at Udaipur Camp at Sundernagar Distt Mandi (H.P.) -175018
Lesson Plan for ERBD (Semester-5th) Session: (August-November 2025)

S.No	MONTH	WEEK	DATE	CONTENTS	REMARKS
	August	Week 2	6,7,8	Elements of Engineering Seismology, General features of tectonic of seismic regions. Causes of earthquakes, Seismic waves, Earthquake size (magnitude and intensity), Epicentre, Seismograph, Classification of earthquakes, Seismic zoning map of India, Seismic design codes, Importance, Indian seismic codes, Seismic Behaviour of Traditionally-Built Constructions of India.	
		Week 3	13,14		
		Week 4	20,21,22	Earthquake effects, Traditionally built construction in India, Advantages and disadvantages of masonry construction, Behaviour of masonry construction during earth quakes	
		Week 5	27,28,29	Performance of building during earthquakes and Mode of failure (Out-of plane failure, In- plane failure, Diaphragm failure, Connection failure, Non-structural components failure)	
		Week 1	3,4,5	Ductile detailing of reinforced concrete buildings(IS 13920-1993), Introduction, Common modes of failure in reinforced concrete buildings,	
September		Week 2	10,11,12	Irregularities in reinforced concrete buildings, Types of irregularities, Vertical irregularities and Horizontal irregularities	Class Test-I
		Week 3	17,18,19	Identification of seismic damages in R.C.C. buildings, Column, Beams, Slabs, Ductile detailing as per IS13920-1993, Details of reinforcement	
		Week 4	24,25,26	Introduction to IS 1893 (part-I)-2002, Introduction, Assumption, Design Lateral forces, Equivalent lateral force procedure, Introduction to IS 4326-1993, Introduction, Earthquake resistant constructions,	
		Week 1	1,3	General Principal for earthquake resistant buildings (clause 4), Special construction features (clause 5), Categories of buildings, Codal provision of IS 4326-1993, Seismic strengthening arrangements (clause 8.4), Horizontal reinforcement, Vertical reinforcement	
		Week 2	8,9,10	Introduction to IS 13828-1993, Earthquake resistant features of stone masonry, Earthquake resistance features for burnt clay brick in weak mortar,	
3 October		Week 3	15	Introduction to IS 13827-1993, General recommendation for improving earth quake resistance of earthen construction, Seismic strengthening features of earthen buildings	Class Test-II
		Week 4	22,23,24	Retrofitting measure for traditionally built construction, Introduction, Need of retrofitting, Retrofitting materials, Retrofitting measure of traditionally built construction	
		Week 5	29,30,31	Retrofitting of masonry buildings, Retrofitting of concrete structure, Retrofitting of low cost buildings	
		Week 2	6,7	House Test	
		Week 3	12,13,14	Disaster Management and Disaster rescue, Psychology of rescue, rescue workers, rescue plan, rescue by steps, rescue equipment,	
4 November		Week 4	19,20,21	Safeties in rescue operations, Debris clearance, Causality management.	
		Week 5	26	Revision	

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Lesson Plan for Elective IV (Semester-5th) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
		Week 2	6,8	Unit I: Introduction to Green Building and Design Features Definition of Green Building, Benefits of Green building.	
		Week 3	13	Components/features of Green Building.	
		Week 4	20,22,23	Site selection, Energy Efficiency, Water efficiency, Material Efficiency, Indoor Air Quality.	
		Week 5	27,29,30	Site selection strategies, Landscaping, building form, orientation, advanced passive heating and cooling techniques, waste reduction during construction.	
		Week 1	3,5,6	. Unit-II Energy Audit and Environmental Impact Assessment (EIA) Energy Audit: Meaning, Necessity, Procedures, Types, Energy Management Programs	
2	September	Week 2	10,12	Environmental Impact Assessment (EIA): Introduction, EIA regulations	CLASS TEST-I
		Week 3	17,19,20	Steps in environmental impact assessment process, Benefits of EIA, Limitations of EIA, Environmental clearance for the civil engineering projects.	
		Week 4	24,26,27	Unit-III Energy and Energy conservation Renewable Energy Resources: Solar Energy, Wind Energy, Ocean Energy.	
		Week 1	1,3,4	Energy conservation: Introduction, Specific objectives, present scenario, Need of energy conservation, LEED India Rating System and Energy Efficiency	
3	October	Week 2	8,10	Hydro Energy, Biomass Energy, Non-renewable Energy Resources: Coal, Petroleum, Natural Gas, Nuclear Energy, Chemical Sources of Energy, Fuel Cells, Hydrogen, Bio fuels.	
		Week 3	15	CLASS TEST-II	
		Week 4	22,24,25	Unit- IV Green Building Principles: Principles and planning of Green building, Features: Salient features of Green Building, Environmental design (ED) strategies for building construction. Process: Improvement in environmental quality in civil structure	
3	October	Week 5	29,31	Materials: Green building materials and products- Bamboo, Rice husk ash concrete, plastic bricks, Bagasse (Sugar cane) particle board, Insulated concrete forms.	



4	November	Week 1	1	Reuse of waste materials –Plastic, rubber, Newspaper wood, Nontoxic paint, Green roofing.	
		Week 2		House Test	
		Week 3	12, 14, 15	Unit V Rating System: Introduction to (LEED) criteria, Indian Green Building council (IGBC) Green rating, Green Rating for Integrated Habitat Assessment. (GRIHA) criteria Heating Ventilation Air Conditioning (HVAC) unit in green Building	
		Week 4	19, 21, 22	Functions of Government organization working for Energy conservation and Audit(ECA)- National Productivity council(NPC), Ministry of New and Renewable Energy (MNRE), Bureau of Energy efficiency (BEE)	
		Week 5	26	Revision	


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(Dr Lalit Goel)


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GOVT. POLYTECHNIC I. & S AT UDAIPUR CAMP AT SUNDERNAGAR
LESSON PLAN (Life Skills for Professional and Personal Life,ASOE301)

Name of the Teacher - Manisha Pathania (Sr.Lecturer ,AS&II)
 Class: 5th Sem. Civil. Engg. (04th Aug. -26th Nov. 2025)

Month	Week	Date	Name of the Unit	Contents to be taught	Remarks
August	1st	04th Aug	1) Life Skills, Soft Skills & Interpersonal Skills:	Definition of Life Skills and Soft Skills	
		07th Aug		Significance of Life Skills and Soft Skills in Personal and Professional life	
		08th Aug		Types of Soft skills and Life skills, Ways to develop Soft Skills and Life Skills.	
	2nd	11th Aug		Concept of Interpersonal Skills and tips to improve Interpersonal Skills	
		14th Aug		Meaning of Team dynamics and Tips for improving Team dynamics	
	3rd	18th Aug	Unit 2. Communication Skills	Meaning of Communication Skills	
		21st Aug		Significance and Characteristics of Assertive Communication	
		22nd Aug		Techniques of Assertive Communication	
		23rd Aug		Tips to develop Assertive Communication	
	4th	25th Aug	Unit 3. Life Skills	Meaning of Self awareness :Introspection, Self Reflection and Insight	
		28th Aug		Strategies to improve self awareness	
		29th Aug		Importance of counseling and coaching	
		30th Aug		Meaning of Stress	
September	5th	1st Sept.		Factors causing positive and negative types of stress	
		4th Sept.		Effects of Stress on mind and body.	
		5th Sept.		Stress Management techniques	
		6th Sept.			
	6th	8th Sept.		Revision	
		11th Sept.		CT-1	
		12th Sept.		Meaning and Significance of EI	
	7th	15th Sept.		Strategies to develop and enhance Emotional Intelligence	
		18th Sept.		Concept, Meaning and Significance of Self-Esteem	
		19th Sept.		Types of Self-Esteem	
		20th Sept.		Characteristics of people with High and Low Self -Esteem	
	8th	22nd Sept.		Steps and Tips for improving Self-Esteem	
		25th Sept.		Meaning and Techniques of social awareness and social skills	
		26th Sept.		Meaning and types of Empathy	
		27th Sept.		Benefits of Empathy , Steps for developing Empathy	
	9th	29th Sept.		Meaning and Benefits of Compassion , Steps to practice Compassion.	
		03rd Oct.		Elements of Body Language , Develop Positive Body language that helps in building positive relationships ,	
				Avoiding Negative Body Language, Meaning and Benefits of Positive Thinking	

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October		04th Oct.		Tips to develop positive attitude and practice Positive Thinking	
	10th	06th Oct.		Concept, Significance and Process of Listening Skills ,Kinds of Listening	
		09th Oct.		Revision	
	11th	13th Oct.		CT-2	
		16th Oct.		Diwali Break	
		17th Oct.			
		18th Oct.			
	12th	24th Oct.		Factors hindering effective Listening , Tips for Active and Empathetic Listening	
		25th Oct.		Meaning and Types of Resilience , Case studies of Resilience	
	November	13th		27th Oct.	
30th Oct.			Tools and techniques of Time Management ,		
31st Oct.			How to overcome procrastination and avoid time-wasters		
14th		1st Nov.	Unit 5. Human Values and Ethics	Meaning of Human values, Morals and Ethics ,	
		3rd Nov.		What is Value and types of values	
		6th Nov.		Human Dignity and Humility: Meaning of Human Dignity	
		7th Nov.		Revision	
15th		10th Nov.		HOUSE TEST	
		13th Nov.			
		14th Nov.			
	15th Nov.				
16th	17th Nov.	Fundamental rights of a person,			
	20th Nov.	Meaning of Humility, Significance of humility,			
	21st Nov.	Developing and cultivating humility			
	22nd Nov.	Revision			

Subject Teacher:- Manisha Pathanla
Sr.Lecturer (AS&H)

HOD
(Civil Engg.)

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	Aug	Week 2	4,5	Rectangular beams – Singly reinforced	
		Week 3	11,12	Drawing sheet Preparation	
		Week 4	18,19	Drawing sheet Preparation	
		Week 5	25,26	Rectangular beams- Doubly reinforced	
		Week 1	1,2	Drawing sheet Preparation	
2	Sep	Week 2	8,9	One-way slabs	Class Test-1
		Week 3	15,16	Drawing sheet Preparation	
		Week 4	22,23	Two-way slabs (Corner not held down)	
		Week 5	29,30	Drawing sheet Preparation	
		Week 2	6	Square columns with isolated footing of uniform depth and varying depth (sloped footings)	
3	Oct	Week 3	13	Drawing sheet Preparation	Class Test-2
		Week 4	14	Circular column with isolated footing of uniform depth and varying depth (sloped footings).	
		Week 5	21	Interpret the actual RCC Structural Drawings used on site with reference to reinforcement details of various structural elements.	
		Week 2	3,4	House test	
		Week 3	10,11	Prepare a detailed report of site visit for reinforcement detailing of structural elements like beams, columns, staircase & footing.	
Nov		Week 4	17,18	Prepare a checklist for reinforcement provided from actual drawings used on site for various structural elements	
		Week 5	24,25	Drawing sheet Preparation	

Signature of Teacher

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Government Polytechnic Lahaul Spiti at Udaipur Camp at Sundernagar Distt Mandi (H.P) -175018

Department of Civil Engineering

Lesson Plan for Computer Applications in Civil Engineering

Session: (August-November 2025) G-I (Semester-5th)

(11)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 2	7	Introduction, Syllabus Overview, Evaluation scheme	
		Week 3	14	Starting up of Auto CAD, Auto CAD Window, Toolbar	
		Week 4	21,23	drop down menu, Commandwindow, saving the drawing.	
		Week 5	28,30	Introduction of Graphic screen.	
		Week 1	4,6	Co-ordinates, drawing limits, grid, snap, orthographic features.	
2	September	Week 2	11	Drawing commands, line, circle, poly-line, multiline, ellipse, polygon etc.	
		Week 3	18,20	Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc.	
		Week 4	25,27	Working with hatches, fills, dimensioning, text etc	
		Week 1	4	Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system	
		Week 2	9	Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system	
3	October	Week 4	23,25	Preparation of line plan of a residential building	
		Week 5	30	Preparation of detailed plan of a two-room residential building, Elevation, Section, Site Plan (using different type of layers)	
		Week 1	1	Preparation of detailed plan of a two-room residential building, Elevation, Section, Site Plan (using different type of layers)	
		Week 2	6	Introduction to STAAD Pro	
		Week 3	13,15	Introduction to MS Project/Primavera	
4	November	Week 4	20,22	Use of artificial Intelligence in Building Design	

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(Er Sameer Sharma)

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(Dr. Lalit Goel)

Department of Civil Engineering
Lesson Plan for Computer Applications in Civil Engineering G-2 (Semester-5th)
Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 2	5,6	Introduction, Syllabus Overview, Evaluation scheme	
		Week 3	12,13	Starting up of Auto CAD, Auto CAD Window, Toolbar	
		Week 4	19,20	drop down menu, Command window, saving the drawing.	
		Week 5	26,27	Introduction of Graphic screen.	
		Week 1	2,3	Co-ordinates, drawing limits, grid, snap, orthographic features.	
2	September	Week 2	9,10	Drawing commands, line, circle, poly-line, multiline, ellipse, polygon etc.	
		Week 3	16,17	Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc.	
		Week 4	23,24	Working with hatches, fills, dimensioning, text etc	
		Week 5	30	Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system	
		Week 1	1	Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system	
3	October	Week 2	8	Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system	
		Week 3	14,15	Preparation of line plan of a residential building	
		Week 4	21,22	Preparation of detailed plan of a two-room residential building, Elevation, Section, Site Plan (using different type of layers)	
		Week 5	28,29	Preparation of detailed plan of a two-room residential building, Elevation, Section, Site Plan (using different type of layers)	
		Week 2	4	Introduction to STAAD Pro	
4	November	Week 3	11,12	Introduction to MS Project/Primavera	
		Week 4	18,19	Use of artificial Intelligence in Building Design	
		Week 5	25,26	Use of artificial Intelligence in Building Design	

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GOVT. POLYTECHNIC LAHAUL & SPITI AT UDAIPUR, CAMP AT SUNDERNAGAR, MANDI (H.P.)

LESSON PLAN 5 TH SEMESTER (CIVIL ENGG.)					
DATE	WEEK	ACTIVITIES	NAME OF TEACHER	REMARKS	
August, 25	6	Paper <i>Packaging Contm-</i>			
1	1 st Week	Paper <i>Packaging Contm-</i>			
2	2 nd Week	Paper <i>Packaging Contm-</i>			
3	3 rd Week	Declamation Competition			
4	4 th Week	Cleanliness surrounding the campus			
September, 25					
1	3 & 6	G.K Competition			
2	10	Kabaddi & Volleyball			
3	17 & 20	volleyball & Basket Ball			
4	24 & 27	Essay Writing			
October, 25					
1	1 & 4	1 st Week			
2	8	2 nd Week	Painting Competition		
3	15 & 18	3 rd Week	Quiz Competition		
4	22 & 25	4 th Week	Basket Ball & Kabaddi		
5	29	5 th Week	Badminton & Athletic		
November, 25					
1	1	1 st Week	Slogan Writing		
2	19 & 22	3 rd Week	Table Tanis & Badminton		

Signature of Teacher

Signature of H.O.D