



॥ सा विद्या या विमुक्तये ॥

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड - ४३१ ६०६ (महाराष्ट्र राज्य) भारत

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

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विज्ञान व तंत्रज्ञान विद्याशाखेतील
Bachelor of Architecture या पदवी
स्तरावरील द्वितीय वर्षाचे अभ्यासक्रम
शैक्षणिक वर्ष २०२६-२७ पासून लागू
करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, दिनांक २२ एप्रिल २०२६ रोजी संपन्न झालेल्या मा.विद्यापरिषद बैठकीतील ऐनवेळेचा विषय क्र.१४/६४-२०२६ च्या ठरावानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील Bachelor of Architecture या पदवी स्तरावरील द्वितीय वर्षाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२६-२७ पासून लागू करण्यास मा.विद्यापरिषदेने मान्यता प्रदान केलेली आहे.

सदरील परिपत्रक व अभ्यासक्रम (Syllabus) प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी, ही विनंती.

'ज्ञानतीर्थ' परिसर,

विष्णुपुरी, नांदेड - ४३१ ६०६.

जा.क्र.:शै-१/परिपत्रक/पदवी/अभ्यासक्रम/२०२६-२७/ 112

दिनांक : २१.०७.२०२६




उपकुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

प्रत माहिती व पुढील कार्यवाहीस्तव :-

- १) मा. कुलगुरू महोदयांचे कार्यालय, प्रस्तुत विद्यापीठ.
- २) मा. प्र.कुलगुरू महोदयांचे कार्यालय, प्रस्तुत विद्यापीठ
- ३) मा. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
- ४) मा. संचालक, परिक्षा व मुल्यमापन मंडळ, प्रस्तुत विद्यापीठ.
- ५) मा. प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ६) सिस्टीम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ. यांना देवून कळविण्यात येते की, परिपत्रक अभ्यासक्रम संकेतस्थळावर प्रसिध्द करण्यात यावेत.



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Sr.No	SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME									
							END SEMESTER EXAMINATION					INTERNAL ASSESSMENT				
							PAPER HRS	THEORY		PA		ESE		PA		TOTAL
								Max	Min	Max	Min	Max	Min	Max	Min	
1	Architectural Design Studio-III	231	1		5	8		--	--	50	20	--	--	150	75	75
2	ARCHITECTURE BUILDING CONSTRUCTION AND MATERIALS-3	232	2		4	9		--	--	75	30	--	--	150	75	75
3	STRUCTURAL ANALYSIS	233	3	1		4	3	75	30	--	--	--	--	25	13	13
4	HISTORY OF ARCHITECTURE-II	234	2	1		5	3	100	40	--	--	--	--	25	13	13
5	CLIMATE RESPONSIVE ARCHITECTURE	235	4			4	2	50	20	--	--	--	--	50	25	25
6	SURVEYING AND LEVELING	236	1		1	4		--	--	50	20	--	--	25	13	13
7	BUILDING SERVICES-I	237	3		1	4	2	50	20	--	--	--	--	50	25	25
8	ARCHITECTURAL GRAPHICS-III	238			5	2		--	--	--	--	--	--	50	25	25
9	LANDSCAPE DESIGN	239			3	3		--	--	50	20	--	--	25	13	13
10	ELECTIVE	240			2	1		--	--	--	--	--	--	25	13	13
			16	2	21											

ARCHITECTURAL DESIGN STUDIO- 3

Course objective :

SUBJECT CODE	SUBJECT		TEACHING	CREDI	EXAMINATION SCHEME											
	TEACHING SCHEME		CREDIT		EXAMINATION SCHEME											
					END SEMESTER EXAMINATION						INTERNAL ASSESSMENT					
	L	TU	Practical/Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL
231	1		5	8		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
						--	--	50	20	50	20	--	--	150	75	150

To create a holistic understanding of the socio-cultural, geographic and climate related aspects that shape the built environment as well as to expose the students towards the design of simple. community oriented building

- * Organization of functional activities in relation to user requirements and the site.
- * Relating a system of horizontal and vertical circulation, open spaces, parking etc.
- * Responding to socio economic factors such as income levels, privacy, territoriality, interactions (between the spaces, and the users) etc.
- * Considering materials, structure and services in relation to the design proposal.
- * Integration of plan forms and three dimensional composition (spatial organization). Detailing for the physically differently abled and elderly.

Syllabus

Unit 1

Design of small buildings of more than one activities/ function such as - Guest house, student's hostel, small hotel, holiday resort, row houses, block of flats and residential complexes at a small scale, housing for specific communities in urban and rural areas. Small commercial projects such as Highway Inn, Food Mall etc.

Unit 2

Time Problem with scale as per assignments

Course Outcomes (COs)

At the end of the course, students will be able to Analyze the socio-cultural, geographical, climatic, and site-specific factors that influence the design of community-oriented buildings. Plan and organize functional spaces based on user requirements, site conditions, and principles of efficient horizontal and vertical circulation. Design community buildings by addressing socio-economic aspects such as privacy, territoriality, accessibility, user interaction, and inclusivity for elderly and physically differently abled persons.

Reference Books

1. Time sever standards for building types, Mc Graw Hill Professional 2001
2. Time sever standards for interior design and space planning, Mc Graw Hill Professional •2001
3. Neuferts Architects data, Blackwell 2002
4. Architectural graphic standards, Wiley2000

ARCHITECTURAL BUILDING CONSTRUCTION AND MATERIALS III

CODE	SCHEME			T	END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
	L	T U	Practical/St udio	(L+T+P /S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
						Max	Min	Max	Min	Max	Min	Ma x	Mi n	Ma x	Mi n	Ma x	Mi n
232	2		4	9		--	--	75	30	75	30	- -	--	150	75	150	75

Course objective

To Understand Transportation systems in Buildings ,Design efficient staircases, lifts, escalators. Timber flooring, joist and their finishes

Unit 1: Types of staircases

25 mark

1.1 Introduction to Staircases Definition and importance in architecture Role in vertical circulation Historical evolution of stair design

1.2 Components of Staircase

1.3 Classification of Staircases (Based on Form)

Straight Staircase Quarter Turn Staircase Half Turn Staircase (Dog-legged & Open well)

Spiral Staircase Helical Staircase Bifurcated Staircase

1.4 Based on Material RCC staircases wooden staircases

Unit 2: Types of lifts (elevators)

25 mark

2.1 Introduction to Lifts Need for lifts in multi-storey buildings Evolution of elevator systems

2.2 Components of Lift: Lift car Shaft Machine room Counterweight Control system 2.3 Types of Lifts (Based on Function) Passenger Lift, Goods Lift, Hospital Lift (Stretcher lift) Service Lift

2.4 Types Based on Mechanism Traction Lift Hydraulic Lift Machine Room-Less (MRL) Lift

Unit 3: Types of escalators

25 mark

3.1 Introduction to Escalators Definition and function Difference between escalator and lift

3.2 Components of Escalator Motor and drive system Landing platforms

3.3 Types of Escalators Parallel escalators Criss-cross escalators

3.4 Moving Walkways (Travelators) Flat moving walkways Inclined moving walkways

Unit 4: Timber flooring and joists (wooden floor structure)

25 mark

4.1 Introduction to Timber Flooring

4.2 Types of Timber Joists Ground and First floor Bridging Joist Binding Joist Binders beam and girders Hherring bone strutting Floor Boards Ceiling Joist

Unit5:Laminates and veneers

5.1 Resin bonded plywood, types of laminates, laminated wood, insulating boards,

5.2 veneers : different varieties of timber and their characteristics.

Unit 6 :Paints and varnishes

6.1 Protective coating paints, constituents of paints, their functions, water paints, distemper and cement based paints, emulsion paints, selection of paints.

6.2 Varnishes (oil and spirit), characteristics and uses of varnishes, French polish, anticorrosive paint, damp proofing finish.

Submission Required For sessional work

1. Types of staircase (sketches)
2. Timber staircase
3. R.c.c staircase
4. Components of lift (passenger lift)
5. Types of lift (sketches)
6. Types of Escalator (sketches)
7. Details of parallel escalators
8. Travelators (sketches)
9. Timber flooring ground floor details
10. Timber flooring first floor details

Reference books

- 1) Building construction by McKay vol 1
- 2) Building materials by s.c..Rangwala
- 3) Barry: construction of building :vol 1&2
- 4) Francis dk ching: building construction
- 5) Bindra arora: building construction
- 6) Building construction by chudley
- 7) Architectural journals.

STRUCTURAL ANALYSIS

Course Outcomes: Upon successful completion of this course, students will be able to understand

SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
					END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
	L	T U	Practical/Stu dio	(L+T+P/ S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
						Max	Min	Ma x	Min	Max	Min	Max	Min	Max	Min	Max	Min
233	3		1	4	3	75	30	--	--	75	30	--	--	25	13	25	13

the fundamental principles of structural analysis; determine loads, support reactions, shear forces, bending moments, and deflections in statically determinate structures; analyze beams, columns using standard methods; interpret structural behavior under different loading conditions; and apply structural analysis concepts in the design and planning of safe and efficient architectural structures.

Unit-I. Deflections of determinate beams(20M)

Deflections of determinate beams, cantilevered and simply supported with different loading, relation between slope, deflection and curvature, double integration method,

Unit-II. Analysis of Beams(20M)

Analyse simply supported beam, cantilever beam, overhanging beam and draw SFD and BMD. Analyse Continuous beams by the theorem of three moments and draw SFD, BMD.

Unit-III. Analysis of Columns.(20M)

Types of columns, columns and struts, buckling and crushing failure, Euler's theory, equivalent length and slenderness ratio, Rankine's formula. Equivalent length and critical loads of Columns.

Unit-IV. Bearing Capacity of Soils, and Settlements of Foundations(20M)

Introduction, terminology, factors affecting bearing capacity of soils, methods of determining bearing capacity; Types of failures in soil, General, Local and Punching shear failure. Methods of improving bearing capacity of soil, settlement of foundations, Causes and Effect of settlement - Plate load test - Simple problems.

Material testing laboratory-I

1. Shape and size test of brick with all field tests on brick and cement.
2. Compression test on Bricks and Solid Blocks.
3. Water absorption test on Bricks and pressed tiles.
4. Fineness test of cement
5. Standard Consistency of cement
6. Initial and Final setting time of cement
7. Soundness test on cement
8. Compressive strength of cement.

References:

1. Dass, M. M. Structural Analysis. New Delhi : PHI Learning.
2. Structural mechanics by RS khurmi

2. Jindal, R. L. Elementary Theory of Structures.
3. Junnarkar, S. B. (1997). Mechanics of Structures. Vol. II. 22nd Ed. Charotar Publishers.
4. Punmia, B. C., Jain, A. K. and Jain, A. K. (1992). Theory of Structures. 9th Ed. New Delhi : Laxmi Publications.
5. Ramamrutham, S. Theory of Structures. New Delhi : Tata McGraw Hill Education.
6. Reddy, C. S. (1999). Basic Structural Analysis. New Delhi : Tata McGraw-Hill Education.
7. Vazirani and Ratwani. (2008). Analysis of Structures. Vol. I. New Delhi : Khanna Publishers.
8. Wamock, F. V. Strength of Materials.

HISTORY OF ARCHITECTURE 1

COURSE OBJECTIVES

1. To provide a foundational understanding of the development of Indian Architecture.

SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
	END SEMESTER EXAMINATION						INTERNAL ASSESSMENT										
	L	T U	Practical/Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ES E	PA		TOTAL		
						Max	Min	Max	Min	Max	Min	Max	Min	Max	Min		
234	2	1		5	3	100	40	--	--	100	40	-	-	25	13	25	13

2. To analyse diverse Indian architectural styles and types including regional, vernacular and structural.
3. To foster an appreciation for Indian heritage and equip students with necessary visual and verbal vocabulary to discuss and interpret Indian architecture.

DETAILED SYLLABUS

Unit 1: MAURYAN ARCHITECTURE

- Patliputra, Layout & Town planning, Mauryan Pillars
- Kautilyan Arthashastra: Town Planning principles, Megasthenes
- Fort Architecture- Forms and types.

Unit 2: ANCIENT TEMPLE ARCHITECTURE: NAGARA STYLE

- Temple Planning, Elements & Fundamentals
- Kalinga Style (E.g: Lingaraja Temple, Jagannath Temple at Puri, Konark Sun Temple etc.)
- Chandela/ Khajuraho Style (E.g: Kandariya Mahadev Temple)
- Gujrat & Rajasthan: Maru-Gurjara/ Solanki Style (Modhera Sun Temple, Rani ki Vav, Dilwara temples, Ranakpur Jain Temples)

Unit 3: ANCIENT TEMPLE ARCHITECTURE: DRAVIDIAN STYLE

- Temple Panning, Elements & Fundamentals
- About Yadava temples and Chera Temples
- Pallava Period (E.g: Shore Temple at Mahabalipuram, Kailasanathar temple at Kanchipuram, Rathas of Mahabalipuram)
- Cholas Period (E.g: Brihadeshwara Temple, Tanjavur)
- Pandyas & Nayakas: (E.g: Meenakshi Temple at Madurai, extensive use of Yali)
- Vijayanagara Period (E.g: Hampi- Virupaksha Temple at Hampi, Virupaksh Temple, Vittala Temple, Hazara Rama temple, Bhootnatha temple, Mallikarjuna temple; Ranganathaswamy Temple at Srirangam)

Unit 4: VESARA (MIXED/DECCAN) ARCHITECTURE- CHALUKYAS AND HOYSALAS

- Temple Panning, Elements & Fundamentals
- Chalukyas: (E.g: Chalukyan Badami temples, Durga Temple at Aihole, Pattadakal Group of Temples), Later Chalukyan Temples in hortal pangaon and dharamapuri
- Hoysalas: (E.g: Hoysaleswara Temple at Halebidu, Chennakesava Temple, Belur)

Unit 5: TEMPLE OUTSIDE INDIA (Tutorial)

- Study of temples outside india Angor Wat, Cambodia Prambham Temple, Indonesia Pashupatinath Temple, Nepal ,My Son Sanctuary, Vietnam

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Unit 6: JAIN ARCHITECTURAL TRADITIONS

- Jain temple towns of palitan and girnar, Dilwara Temple, Mt. Abu
- Ranakpur Jain Temple, Rajasthan Shikharji Temple, Jharkhand, Gomteshwara Temple
-
- BOOKS:
- Percy Brown – Indian Architecture (Buddhist and Hindu Period)
- Sir Banister Fletcher – A History of Architecture on the Comparative Method
- History of Indian and Eastern Architecture – James Fergusson
- Indian Architecture: The Indian Period – Percy Brown
- The History of Architecture – Spiro Kostof

CLIMATE RESPONSIVE ARCHITECTURE

SUBJECT CODE	TEACHING SCHEME	CREDIT	EXAMINATION SCHEME												
			END SEMESTER EXAMINATION								INTERNAL ASSESSMENT				

	L	TU	Practical/Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
						Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
235	4			4	2	50	20	--	--	50	20	--	--	50	25	50	25

COURSE OBJECTIVES

After successful completion of this course, student should be able to:

Fundamental knowledge about Building physics. Climate analysis tools and its relevance in Architecture. Climate responsive strategies and their application in Architectural design

Syllabus:

- Climate analysis - Temperature, humidity, wind speed and direction, Sunpath diagram, radiation square, wind wheel, sky conditions, bioclimatic chart, psychrometric chart, daylight availability, etc. Use of equipments such as Surface temperature gun, whirling psychrometer, anemometer, luxmeter, etc.
- Introduction to building physics- Heat transfer mechanism- Conduction, convection, radiation, Building envelope, relation to human comfort.
- Introduction to Vernacular Climate responsive practices Design considering thermal and day lighting requirements - Form, orientation, window location and sizing, design of shading devices, use of materials, etc.
- Climate responsive strategies and their application for Ventilation, Cooling, Heating and Daylighting

REFERENCE BOOKS

- Manual Of Tropical Housing And Building by O.H. Koenigsberger
- Sun, Wind and Light by G. Z. Brown
- Climatically Responsible Energy Efficient Architecture by Arvind krishnan
- An Introduction To Building Physics by Narashimhan
- Climatologically & Solar data for India - T. N. Seshadry.

SURVEYING AND LEVELING

Course Outcomes: Upon successful completion of this course, students will be able to understand

SUBJECT CODE	TEACHING SCHEME			CREDIT (L+T+P/S)	EXAMINATION SCHEME												
	L	TU	Practical/Studio		END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
					PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
236	1		1	4		--	--	50	20	50	20	--	--	25	13	25	13

the principles and methods of surveying and levelling; operate basic surveying instruments to conduct field surveys; prepare and interpret survey maps, contour plans, and topographical data; apply surveying techniques for site analysis, setting out, and construction works; and integrate accurate survey information into architectural planning, design, and execution.

Unit I Introduction to surveying

Plan, Map, Scale, Applications of surveying, Primary division of surveying, Classification of surveying, Principles of surveying, methods of locating a point in plain survey with respect to two reference points, phases of works in surveying.

Unit II Levelling

Definitions of basic terms in levelling, methods of levelling, levelling instruments, fundamental axes of level, temporary adjustments of level, principles of direct levelling, terms used in levelling, types of levelling, simple levelling, differential levelling, Fly levelling, Profile levelling, Cross section levelling.

Unit III Contouring

Contour Intervals, Characteristics of Contours, Methods of Contouring, Direct and indirect Contouring, interpolation of Contours, Drawing Contours, Contour Gradient, uses of Contour maps, and computation of volume from contours

List of Experiments:-

1. Ranging a line (Direct ranging)
2. Measuring distance with chain and tape
3. Measuring angle with compass
4. Differential levelling, fly levelling by using level
5. Plane table survey- method of intersection
6. Use of theodolite for measuring horizontal angle by repetition method

List of Projects:-

1. Block contouring project
2. Plane table project
3. Road project Profile levelling, Cross section levelling
4. Gradient calculation

References:

1. Surveying Vol. I (and II) by B.C. Punmia

2. Surveying & Levelling by N.N. Basak.
3. Elementary Surveying: An Introduction to Geomatics by Ghilani and Wolf
4. Surveying and Levelling by R. Subramanian
5. Surveying And Levelling (Vol. I & II) by T.P. Kanetkar & S.V. Kulkarni.
6. Surveying and levelling by Bhavikatti

BUILDING SERVICES AND SYSTEM 1

SUBJECT CODE	TEACHING SCHEME			CRED IT	EXAMINATION SCHEME												
					END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
	L	T U	Practical/ Studio	(L+T +P/S)	PAPER HRS	THEOR Y		PA		TOTAL		ESE		PA		TOTAL	
						Max	M i n	M a x	M i n	Ma x	Mi n	M a x	M i n	Max	Mi n	M a x	Min
237	3		1	4	2	50	20	-	--	50	20	-	--	50	25	50	25

COURSE OBJECTIVES

1. To impart knowledge of water supply and plumbing systems in buildings.
2. To understand drainage, sanitation, and sewerage principles.
3. To study storm water management techniques.
4. To introduce sustainable water practices including greywater reuse.

COURSE OUTCOMES (COs)

At the end of the course, students will be able to:

- CO1: Understand plumbing systems and components in buildings.
- CO2: Design basic water supply and distribution systems.
- CO3: Explain drainage and sanitation systems.
- CO4: Analyze storm water management methods.
- CO5: Apply greywater reuse and sustainable water strategies.

DETAILED SYLLABUS

UNIT 1: Introduction to Plumbing Systems (08 Hours)

- Definition and scope of plumbing Sources of water supply Components of plumbing systems Types of plumbing systems (Direct & Indirect) Plumbing fixtures and fittings
- Estimation of water demand

UNIT 2: Water Supply & Distribution System (10 Hours)

- Methods of water supply in buildings Layout of distribution systems Storage: Overhead & Underground tanks Pipe materials and selection criteria Valves and fittings Hot water supply systems

UNIT 3: Drainage System (10 Hours)

- Principles of drainage design.Types of drainage systems.Traps and their functions.Inspection chambers and manholes.Soil, waste and vent pipes.Ventilation of drainage systems

UNIT 4: Sanitation & Sewerage (08 Hours)

- Sewage: characteristics and types.Sewerage systems.Septic tank design and functioning
- Soak pits and dispersion systems.Introduction to Sewage Treatment Plants (STP).Overview of building codes and standards

UNIT 5: Storm Water Management (07 Hours)

- Rainfall and runoff concepts.Storm water drainage systems.Surface and underground drainage.Rainwater harvesting methods.Recharge pits and wells.Flood control measures

UNIT 6: Grey Water & Sustainable Systems (07 Hours)

- Greywater: definition and sources.Treatment methods (basic filtration, reed beds).Greywater reuse applications.Water conservation techniques.Sustainable plumbing practices.Green building concepts

PRACTICAL / STUDIO WORK

- Plumbing layout drawings for residential buildings.Drainage and sanitation layout design
- Rainwater harvesting system design.Greywater reuse system conceptual design.Site visit
- report (STP / plumbing system)

REFERENCE BOOKS

1. B.C. Punmia – Water Supply and Sanitary Engineering
2. S.K. Garg – Environmental Engineering
3. National Building Code of India
4. Relevant IS Codes for plumbing and drainage.
5. Bhatt, N. D. (2014). Engineering Drawing: Plane and Solid Geometry. Anand: Charotar Publishing House Pvt.
6. Ching, F. D. (2015). Architectural graphics. Hoboken: John Wiley & Sons.
7. Ching, F. D., & Juroszek, S. P. (2018). Design drawing. Hoboken, NJ: John Wiley & Sons.

ACHITECTURE GRAPHICS III :

COURSE OBJECTIVES :

To introduce students to various techniques of architectural drawing representation and enable them to

SUBJ ECT COD E	TEACHING SCHEME			CRE DIT (L+T +P/S)	EXAMINATION SCHEME												
	L	T U	Practical/ Studio		END SEMESTER EXAMINATION								INTERNAL ASSESSMENT				
					PAPER HRS	THEOR Y		PA		TOTAL		ESE		PA		TOTAL	
							M ax	M in	Max	Min	Max	Min	M a x	M i n	Max	Min	Max
239			3	3		--	--	50	20	50	20	- -	- -	25	13	25	13

communicate design ideas effectively using standard drafting conventions and presentation methods.

Unit I : Scale and Proportion of architecture drawings and interior furniture.

Unit II: Different style of presentation of architecture drawings.

Unit III : Models of solid forms cut by an auxiliary cutting plane .

Reference books :

- 1.Bhatt, N. D. (2014). Engineering Drawing: Plane and Solid Geometry. Anand: Charotar Publishing House Pvt.
- 2.Ching,F. D. (2015). Architectural graphics. Hoboken: John Wiley & Sons.
- 3.Ching,F. D., & Juroszek, S. P. (2018). Design drawing. Hoboken, NJ: John Wiley & Sons.

LANDSCAPE DESIGN

COURSE OBJECTIVES To familiarize students with the various elements of landscape architecture and the principal of landscape design.Learn historical landscape styles & principles Gain knowledge of softscape & hardscapeDevelop site analysis and design skillsPromote sustainable and eco-friendly designImprove aesthetic and planning abilitiesUnderstand basic landscape design process

Unit 1: Introduction to Landscape Architecture (credit - 01)

SUBJ ECT CODE	TEACHING SCHEME			CRED IT (L+T+ P/S)	EXAMINATION SCHEME												
	L	T U	Practical/ Studio		END SEMESTER EXAMINATION								INTERNAL ASSESSMENT				
					PAPER HRS	THEOR Y		PA		TOTAL		ESE		PA		TOTAL	
						Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
238			5	2		--	--	--	--	--	--	--	50	25	50	25	

Definition, scope and importance of Landscape Architecture and Role of landscape architect

Various terminology used in landscape architecture

Presentation techniques of softscape and hardscape elements

Softscape elements – basic idea about plants, plant selection, planting design, care of plants and importance of native vegetation.

Hardscape – land, water and architectural elements

Unit 2: Historical landscape (credit- 0.5)

SUBJECT	SUBJECT CODE	TEACHING SCHEME	CREDIT	EXAMINATION SCHEME												
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Introductory World History of landscape architecture respective design principals with chronologically like ancient civilization - Mesopotamian/ Persian garden, Greek landscape, Roman gardens Medieval – Islamic garden, European medieval garden Renaissance – Italian & French garden English garden Asian – Chinese & Japanese garden Modern landscape & Contemporary landscape

Unit 3: Introduction to landscape services (credit - 0.5)

Introductory level of Irrigation, drainage, illumination, landform pathway and roads

Unit 4: Project (credit - 01)

One Residential project for understanding of drawings and the process.

Reference Books

1. Design with nature by ian mcharg
2. Landscape graphics by grant reid
3. The landscape of man by geoffrey jellicoe and susan jellicoe
4. Landscape architecture in india mohammad shaheer
5. Landscape architecture: history, ecology and patterns p singh, minakshi jain
- 6 indian society of landscape architects publications
- 7 jungle trees of central india: a field guide for tree spotters by pradip krishen
- 8 trees of delhi: a field guide by pradip krishen

Websites

- 1 www.flowersofindia.net
- 2 <https://www.cseindia.org/>
- 3 <https://indiabiodiversity.org/>
- 4 <http://www.indiaenvironmentportal.org.in/>

ELECTIVE

					(L+T+P/S)	END SEMESTER EXAMINATION								INTERNAL ASSESSMENT					
		L	T U	Practical/S tudio		PAPER HRS	THEOR Y		PA		TOTAL		ESE		PA		TOTAL		
							M ax	M in	M ax	M in	M ax	M in	M ax	M in	M ax	M in	M ax	M in	
ELECTIVE	240			2	1		--	--	--	--	--	--	--	--	25	13	25	13	

Course Objectives

To enhance students' creative and visual expression skills. develop observation, Sketching, photography, and artistic presentation abilities. To understand the relationship between art, culture, and architecture. To encourage documentation and appreciation of architectural heritage and traditional practices. To improve design sensitivity through practical and creative exercises.

Electives subjects enable students to explore their chosen areas of interest.

1.Urban Sketching

Drawing cities, streets, buildings, public spaces, and everyday life through freehand sketches done on location. It helps improve observation, perspective, and architectural visualization skills.

Tutorials:One-point perspective street sketch ,Quick 10-minute live sketches ,Building elevations and campus sketches ,Adding shading and watercolor

2.Architecture Photography

The art of capturing buildings, interiors, landscapes, and architectural details using photography techniques such as composition, lighting, framing, and perspective.

Tutorials:Facade photography ,Interior photography ,Black & white architectural shots ,Texture and detail photography

3.Art & Architecture

Study of the relationship between artistic expression and built form, including aesthetics, sculpture, murals, spatial design, and the influence of art movements on architecture.

Tutorials

Abstract architectural compositions ,Mural and wall art design ,Sculpture and 3D installations, Color theory exercises

4.Indian Art & Culture

Exploration of India's traditional and contemporary art forms, cultural heritage, temples, crafts, festivals, paintings, sculpture, architecture, and regional traditions across different periods of history.

Tutorials

Temple sketching and analysis, Traditional pattern design ,Vernacular architecture documentation ,Craft-inspired interior concepts

B.Arch Sem-4 Syllabus

Sr.No.	SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT (L+T+P /S)	EXAMINATION SCHEME												
			L	TU	Practical/Studio		END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
							PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
								Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	Architectural Deesign Studio-IV	241	1	-	8	10		--	--	100	40	100	40	--	--	150	75	150	75
2	ARCHITECTURE BUILDING CONSTRUCTION AND MATERIALS-IV	242	2	-	6	10		--	--	100	40	100	40	--	--	150	75	150	75
3	DESIGN OF RCC STRUCTURES	243	3	-	-	4		75	30	--	--	75	30	--	--	25	13	25	13
4	HISTORY OF ARCHITECTURE-IV	244	2	1	-	5	3	100	40	--	--	100	40	--	--	25	13	25	13
5	COMPUTOR APPLICATION	245	1	-	3	3	--	--	--	50	20	50	20	--	--	25	13	25	13
6	GREEN BUILDING SYSTEMS	246	3	-	-	4		--	--	50	20	50	20	--	--	50	25	50	25
7	BUILDING SERVICES-II	247	3	-	1	4		50	20	--	--	50	20	--	--	50	25	50	25
8	ELECTIVE	248	-	-	3	1		--	--	--	--	--	--	--	--	25	13	25	13
9	INDIAN KNOWLEDGE SYSTEM	249	-	2	-	1		--	--	--	--	--	--	--	--	25	13	25	13
			15	3	21														

SEMESTER 4

ARCHITECTURAL DESIGN IV

Sr.No.	SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT (L+T+P/S)	EXAMINATION SCHEME													
			L	TU	Practical/Studio		END SEMESTER EXAMINATION								INTERNAL ASSESSMENT					
							PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL		
								Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	Architectural Deesign Studio-IV	241	1	-	8	10		--	--	100	40	100	40	--	--	150	75	150	75	

Course objective

* To enable the students to understand the importance of special planning within the constraints of development regulations in force for urban areas.

* To enable the students to design for large groups of people in a socially & culturally sensitive manner, taking into account aspects such as user perceptions ,crowd behavior, large scale movement of people and identity of buildings.

* To emphasize on the importance of understanding the relationship between open space & built form and site planning principles including landscaping, circulation network and parking. contents:

scale & complexity of buildings and small complexes that address the social & cultural needs of contemporary urban life.

* Behavioral aspects

* Socio-cultural aspects

Designing for the differently abled

Building bye-laws & rules

Appropriate materials & construction techniques

* Climate design

Syllabus:

Ex- servicemen's housing. Orphanages, Working women hospital, Home for physically and mentally challenged, Museum/Art centre, Educational campus ,Shopping complexes/mall, etc.

Books for reference:

1) Time saver standards for building types

2) Time saver standards for Interior design & space planning.

3) Neuferts Architect Data

4) Kevin Lynch- site planning

5) Sam 1 - Miller- Design process- A primer for architectural and interior design

ARCHITECTURAL BUILDING CONSTRUCTION AND MATERIALS IV

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
		L	TU	Practical/Studio		(L+T+P/S)	END SEMESTER EXAMINATION						INTERNAL ASSESSMENT					
							PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
ABCM-IV	242	2	-	6	10		--	--	100	40	100	40	--	--	150	75	150	75

Course objective

To Understand R.C.C. construction systems in substructure , Identify and apply appropriate foundation types, Design basic water storage systems ,Detail expansion joints and retaining walls and materials like Asphalt , Bitumen , Electrical insulators and Fly ash

UNIT 1: R.C.C. SUBSTRUCTURE

1.1 Introduction to R.C.C.

Definition of Reinforced Cement Concrete Materials: cement, sand, aggregates, steel
Properties: strength, durability, fire resistance

1.2 Substructure Overview

Definition: portion below ground level Importance in load transfer and stability
Difference between substructure and superstructure

1.3 Components of Substructure

Excavation Plain Cement Concrete (PCC) bed Footing Foundation wall/column
Plinth beamDamp Proof Course (DPC)

UNIT 2: TYPES OF FOOTINGS

2.1 Introduction to Footings Definition and function Load transfer mechanism

2.2 Types of Footings

Isolated FootingCombined FootingStrap (Cantilever) FootingStrip/Continuous
FootingRaft (Mat) Foundation Pile Foundation with Pile Cap

2.3 Waterproofing and Protection Anti-termite treatment Moisture protection methods

UNIT 3: TYPES OF WATER TANKS

3.1 Introduction

Importance of water storage in buildings Functional requirements

3.2 Classification of Tanks

Based on location:Underground tanksOverhead tanks

UNIT 4: EXPANSION JOINT & RETAINING WALL

4.1 Expansion Joints Definition and purposeCauses: temperature changes, shrinkage, seismic movement

4.2 Types of JointsExpansion jointsConstruction jointsControl joints

4.3 Materials UsedBitumen fillersRubber jointsSealants

4.4 Retaining WallsDefinition and purposeEarth pressure concept (basic)

4.5 Types of Retaining Walls Gravity retaining wall Cantilever retaining wall Counterfort retaining wall

UNIT 5 MATERIALS

5.1 Asphalt:- Classification, forms of asphalts, properties of asphalt

5.2 Bitumen:- forms and uses

5.3 Electrical insulators: conductors, nonconductors, properties

5.4 Fly ash:-Dry system, wet system, properties of fly ash

Submission Required For sessional work

1. Component of substructure
2. Types of footing
3. Details of pile foundation
4. Types of tanks
5. Details of underwater tank
6. Types of joint
7. Types of retaining wall
8. Details of gravity retaining wall

Books for reference

- 1) Dr. B.C. Punima- A Text Book of Building Construction.
- 2) T.D. Ahuja & G.S. Birde- Fundamentals of Building Construction.
- 3) J.K. McKay-Building Construction vol.1&2
- 4) R.M. Davis- Plastics in Building Construction.
- 5) S.C. Rangwala - Engineering Materials
- 6) N. Krishna Raju- Structural Design & Drawing Reinforced Cement Concrete & Steel

DESIGN OF RCC STRUCTURES

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
						END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
		L	TU	Practical/Studio	(L+T+P/ S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
DRS	243	3	-		4		75	30	--	--	75	30	--	--	25	13	25	13

Course Outcomes: Upon successful completion of this course, students will be able to understand the behavior and design principles of reinforced cement concrete (RCC) structural elements; analyze and design RCC beams, slabs, columns, and footings in accordance with relevant Indian Standards; prepare structural drawings with reinforcement detailing; evaluate the safety, serviceability, and economy of RCC structures; and integrate structural design principles into architectural planning and professional practice.

Unit-I. Introduction to RCC and Design of Reinforcement in Beams (20M)

Introduction to RCC design, characteristics of RCC, assumptions, nominal mix, Design mix. Neutral axis; balanced, under & over reinforced sections. Design of singly reinforced beams for flexure, shear & bond. Concept of doubly reinforced beams and design.

Unit-II. Basic Concepts and design of different types of slab(20M)

Concepts and design of different types of slabs spanning in one direction, two directions, continuous slab, cantilevered slab, circular slab and flat slab. Introduction to retaining walls.

Unit-III. Design of RCC Columns and Staircases(20M)

Design of RCC columns, axially and eccentrically loaded Columns. Concepts and Design of different types of staircases.

Unit-IV. Foundations(20M)

Types of foundations: raft, pile etc. Design of isolated foundation for R.C .C structure introduction to Foundation at different levels- Piles, Pile Cap and pile load test. Bearing Pressures Concept of Bearing Pressures.

Material testing laboratory-II

1. Determination of bulking characteristics of the given sand sample.
2. Flakiness and elongation index of aggregate
3. Aggregate impact test
4. Aggregate Crushing Value Test
5. Los Angeles Abrasion Test
6. Specific Gravity and Water Absorption Test on Aggregate
7. Preparation of the drawings for reinforcement detailing of a) Beams b) slabs.
8. Preparation of the drawings for reinforcement detailing of isolated footing

References:

1. Dass, M. M. Structural Analysis. New Delhi : PHI Learning.
 2. Jindal, R. L. Elementary Theory of Structures.
 3. Devdas Menon, Structural Analysis
 4. N Subramanian, Design of reinforced concrete structures
 5. H. J. Shah, Reinforced concrete Vol I and Vol II
 6. K. R. Arora, Soil Mechanics and foundation Engineering
 7. B. C. Punmia, Ashok K Jain, Arun K. Jain, Soil Mechanics and foundations
 8. Punmia, B. C., Jain, A. K. and Jain, A. K. (1992). Theory of Structures. 9th Ed. New Delhi : Laxmi Publications.
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HISTORY OF ARCHITECTURE II

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
						END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
		L	TU	Practical/Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
HOA	244	2	1		5	3	100	40	--	--	100	40	--	--	25	13	25	13

COURSE OBJECTIVES

Course Outcomes: Upon successful completion of this course, students will be able to understand the evolution and principles of Islamic architecture in India within its historical, cultural, religious, and political context; identify the planning, structural systems, construction techniques, and decorative elements of Islamic buildings; analyze the architectural characteristics of the Delhi Sultanate, Provincial Sultanates, and Mughal periods through significant monuments; compare regional styles and their influences; and appreciate the contribution of Islamic architecture to India's built heritage and its relevance to contemporary architectural practice.

DETAILED SYLLABUS

Unit 1: Introduction to Islamic Architecture

History of Islam: Birth, Spread and principles, Islamic Architecture: Social and political phenomenon. Evolution of building types in terms of form and function: Mosque tomb, minaret, palace, character of Islamic architecture. Principles, structure, material and methods of construction, elements of decoration, color and light

Unit 2: Islamic Architecture in India & Imperial style- Delhi

- Advent of Islam into the Indian sub-continent and its impact including the change of architectural scene: Overview of development based on political history and the corresponding classification of architecture. Islamic Architecture in India and Influences
- Establishment of Delhi Sultanate- Evolution of architecture under the slaves: Khilji, Tughlaq, Sayyid and Lodhi dynasties. Important examples of each period.

Unit 3: Islamic Architecture in the provinces

Shift of power to the provinces and evolution of regional architecture with their own influences; Geographic, cultural, political etc. Gujrat, Malwa, Gulbarga, Bidar, Golkonda, Bijapur- Important examples of each.

Unit 4: Mughal Architecture

Mughals in India: Political and cultural history. Synthesis of Hindu-Muslim culture. Evolution of Architecture of Mughal cities and gardens under the Mughal rulers: Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb with Important examples. Decline of Mughal Empire

Unit 4: EARLY AND CLASSICAL ISLAMIC ARCHITECTURE (TUTORIAL)

Early and Classical Islamic Architecture Outside India: Jerusalem (Palestine), Syria, Spain, and Türkiye (Turkey).

. Dome of the Rock – Jerusalem (Earliest surviving Islamic monument). Great Mosque of Damascus – Syria (Early Umayyad architecture). Great Mosque of Córdoba – Spain (Moorish Islamic architecture). Alhambra – Granada, Spain (Peak of Islamic palace architecture). Blue Mosque (Sultan Ahmed Mosque) – Istanbul, Türkiye (Classical Ottoman architecture)

Books

1. History of Architecture – Percy Brown.
2. History of Architecture – Sir Banister Fletcher.
3. Islamic Architecture in India – Satish Grover.
4. History of Mughal Architecture in India (Vols. I–III) – R. Nath. Abhinav Publications, New Delhi.
5. History of Architecture in India – Christopher Tadgell.
6. The Great Ages of World Architecture – G. K. Hiraskar.

COMPUTER APPLICATION

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
						END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
		L	TU	Practical/Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
CAA	245	1	-	3	3	--	--	--	50	20	50	20	--	--	25	13	25	13

COURSE OBJECTIVES

To enable the students to make the audio visual presentation, processing and other basic computer skills- knowledge transferred

Knowledge of basic software required for Architectural application, M.S. Office, Photo Editing techniques, use of World Wide Web.

Syllabus:-

- 1) Introduction to types of computers software and hard ware. Concept of bits, Bytes. Information of Architecture related software and its uses
- 2) Introduction to M.S. Office, World, Excel, Power point presentation, introduction to M.S.O.S. Printing setting for different soft ware
- 3) Study about 2d drafting, presentation and advance rendering software

BOOKS:-

- 1) Sagman -Micre soft office for windows

GREEN BUILDING SYSTEMS

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
		END SEMESTER EXAMINATION								INTERNAL ASSESSMENT								
		L	TU	Practical /Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
GBS	246	3	-		4		--	--	50	20	50	20	--	--	50	25	50	25

Course Objectives: To develop an advanced understanding of sustainability through exposure to resource conservation strategies as well as and their integration and management at the building and large development level.

UNIT I: Introduction to Sustainability in Built Environment

Concept and principles of sustainability. Triple Bottom Line: Social, Economic, Environmental sustainability. Sustainable development goals (SDGs) and relevance to architecture. Climate-responsive design approach. Role of architects in sustainable development

UNIT II: Energy Systems and Energy Audits

Building energy consumption patterns. Passive and active energy-efficient design strategies. Renewable energy systems in buildings (solar PV, solar thermal). Energy audit: definition, objectives, types, and methodology. Energy performance indicators and basic calculations.

UNIT III: Water Management and Waste Audits

Grey water and wastewater recycling. Water audit: methods and benefits. Waste audit: types of waste, segregation, recycling, and disposal

UNIT IV: Operations, Maintenance, and Building Performance: Building life cycle and operational phase. Operations and Maintenance (O&M) of building services. Preventive vs corrective maintenance. Indoor environmental quality (IEQ). Post-Occupancy Evaluation (POE): tools, surveys, and reviews

UNIT V: Building Benchmarking and Rating Systems:

Concept of building performance benchmarking. Energy, water, and waste performance indicators. National and international rating systems. GRIHA, LEED, BEE Star Rating. Case studies of green buildings

UNIT VI: Sustainable Systems Integration and Smart Cities:

Sustainable building systems and utilities. Integrated design approach at building and site levels. Building Management Systems (BMS). Introduction to Smart Cities. Smart infrastructure: energy, water, transport, waste. Role of smart buildings in smart cities

References:

GRIHA Volume-1 Introduction to National Rating System,
Adarsh GRIHA Manual Volumes 2-4,
Adarsh GRIHA for Large Developments,
Adarsh Chapter 11, National Building Code by BIS

BUILDING SERVICES AND SYSTEM 2

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
						END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
		L	TU	Practical/Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
BS	247	3	-	1	4		50	20	--	--	50	20	--	--	50	25	50	25

Course Objectives

This course aims to introduce the principles and applications of electrical services in building design, including power supply, distribution systems, load estimation, and safety requirements. It develops an understanding of lighting, daylighting, and energy-efficient illumination while familiarizing students with electrical infrastructure, backup power systems, security, communication, and ELV services. The course also explores smart building technologies and Building Management Systems (BMS), enabling students to prepare and coordinate basic electrical, lighting, and security service layouts for architectural projects.

UNIT I: Electrical Supply, Transmission & Infrastructure Planning

Fundamentals of Electricity

- Voltage, Current, Resistance, Power, and Energy AC and DC systems Single-phase and Three-phase supply Electrical symbols and terminology
- Power Supply & Distribution: Generation, transmission, and distribution of electrical power National power grid system High Tension (HT) and Low Tension (LT) supply Service connections and utility requirements
- Infrastructure Planning: Distribution transformers and substations Ring Main Units (RMU) HT and LT panel rooms Meter rooms and electrical service entries Electrical shafts and service corridors
- Captive Power Systems: Diesel Generator (DG) rooms UPS and battery rooms Ventilation, acoustic treatment, and fire safety requirements
- Codes & Safety: National Building Code provisions Electrical safety regulations Fire safety requirements for electrical installations

UNIT II: Internal Electrical Distribution & Safety Systems:

Distribution Systems: Main Distribution Boards (MDB) Sub Distribution Boards (SDB) Panel boards Rising mains Bus ducts and bus-bar systems

Wiring & Conduits: Surface wiring Concealed wiring PVC and GI conduits Cable trays and trunking systems Color coding and cable identification

Protection Systems: Fuse systems MCB MCCB RCCB/ELCB Air Circuit Breakers (ACB) Surge protection devices Earthing & Lightning Protection Plate earthing Pipe earthing Chemical earthing Lightning arresters Earthing standards for residential and commercial buildings

Emergency Power Systems: Emergency lighting circuits Backup power integration

UNIT III: Illumination & Daylighting Design

Fundamentals of Lighting: Human visual perception Luminous flux Lumen Lux Candela Color temperature Color Rendering Index (CRI)

Lighting Design Principles: Space-to-height ratio Uniformity ratio Glare control Visual comfort standards

Daylighting Design: Daylight factor Sky conditions Building orientation Window design Shading devices Light shelves and reflective surfaces

Artificial Lighting Systems: LED lighting Fluorescent lighting Flood lighting Accent lighting

Landscape lighting Lighting Calculations Lumen Method Lux calculations Energy-efficient lighting design

Emergency Lighting: Exit lighting Escape route lighting

UNIT IV: Low Voltage (ELV) Systems & Building Security

Security Planning: Security zoning Risk assessment Perimeter security systems Access Control Systems RFID systems Smart card systems Biometric systems Turnstiles Panic bars Emergency exits

CCTV Systems: Types of surveillance cameras Camera placement and coverage DVR and NVR systems Video analytics Security control room planning

Intrusion Detection Systems: Burglar alarms Motion detectors Glass break sensors Perimeter detection systems

Communication Systems: Structured cabling Telephone systems Intercom systems Data networking Server room planning

Public Address Systems: Emergency announcement systems Voice evacuation systems Speaker zoning Sound amplification systems

UNIT V: Smart Automation & Integrated Building Management Systems (IBMS)

Smart Buildings: Concepts and applications Smart infrastructure

Building Automation Systems (BAS) Sensors and controllers Occupancy sensors Temperature sensors Humidity sensors CO₂ sensors

Integrated Building Management Systems (IBMS): Architecture and components Monitoring and control systems Centralized operation platforms Automation Systems Automated lighting controls Dimming systems Motion sensing controls Smart metering Motorized blinds and curtains

UNIT VI: Studio Project & Technical Documentation

Drafting Project: Preparation of complete service drawings for: Multi-storey residential building Commercial office Clinic Educational building Retail facility

Drawing Requirements Electrical layout plans Lighting layout plans CCTV layout plans Access control layouts Communication network layouts Earthing layouts Technical

Documentation Single Line Diagram (SLD) Load calculation sheets Panel schedules Cable schedules Lighting schedules Equipment specifications Standards & Codes BIS electrical symbols

- IS codes
- NBC requirements
- Service coordination procedures

Final Submission

1. Electrical Layout Plan
2. Lighting Layout Plan
3. CCTV & Security Layout

4. Communication Network Layout
5. Single Line Diagram (SLD)

Reference Books

1. Building Services Handbook
2. Mechanical and Electrical Equipment for Buildings
3. Electrical Wiring, Estimating and Costing
4. Lighting Design Basics
5. National Building Code of India
6. Bureau of Indian Standards

ELECTIVE

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME													
						END SEMESTER EXAMINATION						INTERNAL ASSESSMENT							
		L	TU	Practical /Studio		(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
								Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
ELE	248		-	3	1		--	--	--	--	--	--	--	--	25	13	25	13	

1. Cinema & Architecture

- Introduction to cinema and space, Architectural visualization in films, Set design and spatial storytelling, Study of famous architectural films

Tutorials: Analyze spaces from a movie scene, Create storyboard sketches, Photograph cinematic views of buildings, EXPERIMENT WITH CAMERA AND MAKE SHORT DOCUMENTRY OR FILM

2. Foreign Language

- Basic vocabulary and greetings, Architectural terminology, Communication for presentations and travel, Reading simple design-related content,
- **Tutorials:** Daily conversation practice, Learn 10 architectural terms weekly, Introduce a building in foreign language,

3. Drama & Music

Unit 1: Introduction to Drama & Music Basics of theatre and music Types of drama and musical forms Indian folk and classical traditions

Unit 2: Acting & Expression, Voice modulation Facial expressions and body language Dialogue delivery, Music Appreciation Rhythm, melody, and instruments Folk, classical, and

contemporary music Listening and performance sessions .Stage PerformanceTeam coordination
Script reading and improvisation Small performance activities Cultural Arts

Tutorials :Short skit or role-play performance ,Group singing or rhythm exercises ,Storytelling and narration sessions, Folk music and folk dance appreciation ,Script reading workshop, Music listening and instrument identification, Street play or cultural performance, group performance and presentation

4. Fort Architecture

- Introduction to Indian fortsDefense planning and fortification systemsMaterials and construction techniquesHeritage conservation basics,

Tutorials:Sketch fort plans and gatewaysCase study of a famous fortDocumentation of walls, bastions, and courtyards **STUDY TOUR OR VISIT ON ANY HISTORICAL FORT NEARBY**

INDIAN KNOWLEDGE SYSTEM

SUBJECT	SUBJECT CODE	TEACHING SCHEME			CREDIT	EXAMINATION SCHEME												
						END SEMESTER EXAMINATION						INTERNAL ASSESSMENT						
		L	TU	Practical /Studio	(L+T+P/S)	PAPER HRS	THEORY		PA		TOTAL		ESE		PA		TOTAL	
							Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
IKS	249		2		1		--	--	--	--	--	--	--	--	25	13	25	13

Course Objectives

1. **Decode structural and zoning codes** of canonical text treatises (Vastu & Sthapatya Shastras).
2. **Apply historic mathematical parameters** to derive layout orientation, dimensions, and structural flow.
3. **Bridge literal Sanskrit verses** with easy, observable on-site physical simulations.

Unit 1: Canonical Treatises, Metrology, and Site Selection

Mayamata (Chapters 1–5), Manasara (Chapters 1–7).

Topics:Definition and scope of Vastu Shastra (Science of Habitat) and Sthapatya Veda (Science of Mechanics).System of linear measurements: The geometric hierarchy of Paramanu, Angula, Hasta, and Danda.Textual directives for Bhu-Pariksha (Soil Testing): Assessing ground quality via traditional soil color, odor, and compaction pit porosity tests.

Unit 2: Solar Orientation and Ayadi Formulae

Mayamata (Chapter 6), Samarangana Sutradhara (Chapters 9 & 11).

Topics:Setting true North using the Shanku (gnomon sundial device) shadow intersection method.Introduction to Ayadi Sadhana: Simplified mathematical perimeter equations to determine Aya (Gain) and Yoni (Orientation alignment).

Unit 3: The Mandala Grid and Residential Typologies

Brihat Samhita (Chapter 53), Manasara (Chapters 35 & 36).

Topics:Philosophy and graphic drawing of the Paramasayika Mandala (9x9 grid).

Pada Vinyasa: Spatial zoning of elements (Pancha Bhoota) across concentric rings: Paisacha, Manusha, Daivika, and Brahma.Residential typologies: Spatial layout guidelines for multi-courtyard dwellings (Chatussala planning).

Unit 4: Historic Settlement and Eco-Hydrology

Mayamata (Chapters 10 & 11), Samarangana Sutradhara (Chapter 31).

Topics:Town planning patterns: Geometrical layout guidelines for traditional settlements like the Dandaka (linear grid) and Padmaka (lotus radial pattern).Engineering principles of ancient subterranean water harvesting: Baolis (stepwells), Kunds, and catchment step embankments

Reference Books

1. **Acharya, Prasanna Kumar. (1934).** Architecture of Manasara (Translated from Original Sanskrit). New Delhi: Munshiram Manoharlal Publishers.
 - o Module Focus: Prescribed for Unit 1 (Metrology Scales) and Unit 3 (Residential Typologies).
2. **Dagens, Bruno. (1994).** Mayamata: An Indian Treatise on Housing, Architecture, and Iconography. New Delhi: Sitaram Bhartia Institute.
 - o Module Focus: Prescribed for Unit 1 (Soil Pit Tests) and Unit 2 (Shanku Shadow Axes).
3. **Shukla, D. N. (1960).** Vastu-Sastra: Volume I (Hindu Science of Architecture with special reference to Bhoja's Samarangana Sutradhara). New Delhi: Munshiram Manoharlal.
 - o Module Focus: Prescribed for Unit 2 (Ayadi Parameters) and Unit 4 (Town Layout Planning).

Secondary Academic Commentaries

4. **Chakrabarti, Vibhuti. (1998).** Indian Architectural Theory: Contemporary Uses of Vastu Vidya. London: Routledge.
 - o Module Focus: Translating ancient building directives into modern architectural spatial layouts.

Tutorial

1. The Modern Mandala Layout (Design Sketch) **Task:** Fit a standard modern 1-BHK apartment layout into a traditional 9x9 **Paramasayika Mandala** grid.

Steps: Draw a 9x9 grid on an A4 sheet. Place the Kitchen in the South-East (Fire zone), the Master Bedroom in the South-West (Earth zone), and leave the central 3x3 grid square completely empty as an open Courtyard (Brahmasthan).

Deliverable: A color-coded A4 floor plan sketch with neat handwriting labels.

2: Ayadi Perimeter Dimensioning

Task: Calculate perimeter suitability using a given spatial room dimension framework.

Steps: Take a tentative building layout footprint. Apply the basic Yoni remainder equation $(\text{Width} \times 3 \div 8)$ to verify if the orientation lines up directly with an auspicious cardinal vector.

Deliverable: One page of clean arithmetic calculations showing step-by-step room footprint adaptations.

3: DIY Shanku Device (Photo Document)

Task: Recreate the ancient Indian shadow tool (Shanku) used to track cardinal orientations.

Steps: Fix a straight 15cm stick vertically onto flat cardboard. Place it under sunlight at **10:00 AM** and mark the shadow tip. Return at **2:00 PM** and mark the second shadow tip. Connect both marks to establish an exact **East-to-West axis**.

Deliverable: A 1-page digital layout sheet containing two clear photos of your setup and a brief descriptive caption.

4. Backyard Pit Test (Soil Analysis)

Task: Perform the physical Bhu-Pariksha soil test detailed in the Mayamata to evaluate earth compaction.

Steps: Dig a neat 1x1 foot pit in a garden. Try to pack all the loose excavated earth back into the exact same hole. Observe the outcome: left-over soil indicates dense/excellent foundation grade; if it fits exactly, it is average; an unfilled pit signifies loose, poor-grade soil.

Deliverable: A 3-step photo sequence (Digging, Refilling, Final Result) with a clear conclusion statement regarding your soil quality.