

M. Arch (Common courses)

Code: MARC

MARC-111: Architecture & Urbanism: Critical Contemporary Theories

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent

It aims to develop a critical understanding of the major intellectual currents shaping contemporary discourse on architecture and the city, moving beyond descriptive history to engage with the socio-political, economic, and ecological forces that produce space.

Learning Outcomes

On successful completion, students will be able to:

- Critically analyze contemporary architectural and urban forms using key theoretical frameworks.
- Evaluate the impact of globalization, neoliberalism, and digital culture on the production of the built environment.
- Formulate a positioned argument on a current architectural debate in written and oral forms.

Contents**Unit 1: Foundations of Critical Theory in Architecture**

- Modernism and postmodern, examining texts of Manfredo Tafuri, Denise Scott Brown, and Robert Venturi.
- Structuralism and post-structuralism, architecture as a system of signs and power.
- Space as a social product, engaging works of Henri Lefebvre and Michel Foucault.
- Phenomenology and critical regionalism.

Unit 2: The Political Economy of Urban Space

- Neoliberalism and the city, gentrification, privatization of public space, and urban entrepreneurialism.
- Postcolonial and subaltern urbanism, critiquing universal urban models and analyzing specificities of cities in the Global South.
- Feminist critique of space, challenging patriarchal built environment and professions.
- Analyzing the impact of global capital flows, real estate markets, and mega-events on urban form and social equity.

Unit 3: Ecology, Materiality, and New Materialisms

- Environmental concerns in architecture, sustainability, resilience and Anthropocene.
- Actor-network theory and object-oriented ontology, and the human in architectural discourse.
- Materialist approaches and non-human actors, supply chains, lifecycles of building materials.
- Greenwashing and techno-utopian solutions, advocating just socio-ecological transitions.

Unit 4: Digital Cultures, Representation, and Alternative Futures

- Impact of digital technologies on design processes, perception, and materiality.
- Theories of representation, simulation, and the virtual in contemporary architectural production and media.
- Participatory, community-led, and insurgent practices as counter-models to top-down urban development.
- Future trajectories for architectural theory in the context of climate crisis, algorithmic governance, and social movements.

Suggested Readings

De Landa, M. (2000). *A thousand years of nonlinear history*. Zone Books.

Harvey, D. (2012). *Rebel cities: From the right to the city to the urban revolution*. Verso.

Lefebvre, H. (1991). *The production of space* (D. Nicholson-Smith, Trans.). Blackwell.

Prakash, G. (2010). *Mumbai fables*. Princeton University Press.

Tafuri, M. (1976). *Architecture and utopia: Design and capitalist development* (B. L. La Penta, Trans.). MIT Press.

Architectural Theory Review, Taylor & Francis (Journal: current issues).

MARC-112: Digital Design Lab I: Energy Modelling

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
1	2	45	-	30	75	-	3

Intent

- This skill-enhancement course introduces computational tools for the environmental analysis of architectural design.
- It focuses on building performance simulation (BPS) to inform energy-efficient and climate-responsive design decisions from early conceptual stages.

Learning Outcomes

On successful completion, students will be able to:

- Apply fundamentals of building physics and climate analysis to a digital design workflow.
- Utilize industry-standard software to run core simulations (solar, daylight, thermal).
- Interpret simulation data to diagnose environmental performance issues in design proposals.
- Iterate design solutions based on quantitative feedback to improve predicted energy efficiency and comfort.

Contents

Unit 1 – Building Energy Fundamentals and Software Introduction

- Building thermodynamics: heat transfer (conduction, convection, radiation), psychrometrics, thermal comfort.
- Climate data and weather files: TMY, EPW formats, Indian climate zones, ECBC classifications.
- Introduction to simulation software: EnergyPlus, DesignBuilder, IES-VE, eQUEST, workflow overview.
- Creating simple geometry and thermal zoning: zones, geometry creation, CAD/BIM import, adjacencies.
- Defining envelope constructions: wall/roof/floor assemblies, U-values, ECBC requirements, glazing properties.
- Internal heat gains: occupancy, lighting, equipment schedules, infiltration, load profiles.
- Basic simulation setup: ideal loads, HVAC templates, setpoints, ventilation, running simulations.
- Energy metrics and benchmarking: EUI, end-use breakdown, ECBC targets, interpreting results.

Unit 2 – Parametric Studies and Design Optimization

- Building orientation and massing: solar gains, optimal orientation, compact vs elongated forms.
- Envelope performance: insulation thickness studies, WWR optimization, glazing selection by facade.
- Shading systems and solar control: exterior vs interior shading, overhang sizing, fixed vs operable.

- Natural ventilation and mixed-mode: cross-ventilation, stack effect, adaptive comfort, control strategies.
- HVAC system comparison: all-air, VRF, central plant, efficiency levels, heat recovery.
- Daylighting analysis: Radiance simulation, daylight autonomy, lighting controls, glare control.
- Renewable energy integration: solar PV sizing, orientation/tilt, solar thermal, net-zero energy.

Unit 3 – Code Compliance, Green Building Certification, and Reporting

- ECBC compliance modeling: prescriptive vs performance paths, baseline building, improvement calculations.
- LEED/IGBC/GRIHA requirements: rating system energy credits, baseline models, documentation.
- Baseline building methodology: Appendix G, baseline HVAC systems, comparison models.
- Life cycle cost analysis: first costs, operating costs, NPV, payback periods, economic optimization.
- Carbon footprint analysis: calculating emissions, grid carbon intensity, operational vs embodied.

Unit 4: Whole-Building Energy Modelling Fundamentals

- Creating simplified energy models by defining thermal zones, construction assemblies, and HVAC system templates.
- Running annual energy simulations to calculate heating, cooling, lighting, and equipment loads.
- Performing parametric studies to test the impact of variables like WWR, insulation levels, and glazing properties on total energy use.
- Critically assessing simulation results, understanding limitations, and effectively visualizing data for design communication.

Suggested Readings

ASHRAE. (2022). *ASHRAE Standard 90.1: Energy standard for buildings except low-rise residential buildings*.

Bureau of Energy Efficiency. (2017). *Energy Conservation Building Code (ECBC) 2017*. Government of India.

Hensen, J. L. M., & Lamberts, R. (Eds.). (2019). *Building performance simulation for design and operation* (2nd ed.). Routledge.

Ladybug Tools. (n.d.). *Ladybug Tools documentation*.

Lechner, N. (2021). *Heating, cooling, lighting: Sustainable design methods for architects* (5th ed.). Wiley.

Reinhart, C. (2014). *Daylighting handbook I: Fundamentals*. Building Technology Press.

Szokolay, S. V. (2014). *Introduction to architectural science: The basis of sustainable design* (3rd ed.). Routledge.

TERI, & Ministry of New and Renewable Energy, Government of India. (2010). *GRIHA Manual, Volume 1: Introduction to the national rating system*. TERI Press.

U.S. Department of Energy. (2023). *EnergyPlus™ documentation*.

MARC-113: Research Methodology

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent

This course provides a rigorous foundation in academic research methods specific to architectural inquiry. It prepares students to design, conduct, and communicate scholarly research, forming the methodological backbone for their dissertation and future academic or design research.

Learning Outcomes

On successful completion, students will be able to:

- Distinguish between various research paradigms (qualitative, quantitative, mixed-methods, practice-based) and select an appropriate approach for a given question.
- Design a coherent research proposal with a clear question, aims, objectives, literature review, and methodology.
- Employ specific data collection and analysis techniques relevant to architectural research.
- Demonstrate academic integrity and ethical considerations in research involving human subjects, sites, and cultural heritage.

Contents

Unit 1: Paradigms of Architectural Knowledge and Research Design

- Mapping the field: historical, theoretical, technical, social, design-based research in architecture.
- Formulating researchable problems: topic selection, research questions and hypotheses.
- Systematic literature reviews: sourcing, critiquing, and synthesizing academic literature.
- Structuring a research proposal: defining research questions, aims, objectives, methodology, scope, limitations, and significance.

Unit 2: Qualitative Methods in Architectural Research

- Employing case study methodology: single, comparative, and longitudinal case studies.
- Techniques for ethnographic observation and spatial analysis of built environments.
- Designing and conducting interviews (structured, semi-structured) and focus group discussions.
- Archival and historical research methods, working with drawings, photographs, and documents.
- Analyzing qualitative data: coding, thematic analysis, and Content analysis.

Unit 3: Quantitative and Mixed Methods

- Basics of survey design: sampling techniques, questionnaire development, and scaling methods.
- Descriptive statistics and visual data presentation for spatial and behavioral data.

- Inferential Statistics: T-tests, Chi-square test, Correlation, Regression, ANOVA, Nonparametric Tests
- Mixed-methods research: triangulation, sequential, and concurrent designs.

Unit 4: Ethics, Data Analysis, and Scholarly Communication

- Understanding research ethics: informed consent, confidentiality, working with vulnerable communities, and cultural sensitivity.
- Structuring academic writing: arguments, citations (APA/Chicago), and avoiding plagiarism.
- Communicating research through diverse formats: thesis, journal paper, conference presentation, and visual essays.

Suggested Readings

Borden, I., & Rüedi, K. (2006). *The dissertation: An architecture student's handbook* (2nd ed.). Routledge.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.

Groat, L., & Wang, D. (2013). *Architectural research methods* (2nd ed.). Wiley.

MARC-116: Dissertation I: Indian Knowledge Systems

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent

- Aligned with the National Education Policy (NEP 2020), this course is designed to enable study of the diverse knowledge systems in Architecture in India.
- It introduces students to independent research inquiry across architecture, urban environments, and ekistics, contemporary concerns, and interdisciplinary perspectives.
- The course aims to develop research aptitude, analytical thinking, contextual understanding, and scholarly communication skills.

Learning Outcomes

- On successful completion of the course, the student shall be able to:
- Identify and formulate a research problem related to architecture, urban environments, ekistics, or associated knowledge systems.
- Critically investigate social, technological, environmental, cultural, spatial, or economic dimensions influencing the built environment.
- Apply appropriate research methods, case study analysis, and documentation techniques in architectural inquiry.
- Produce a structured dissertation report presenting coherent analysis, findings, and research-based conclusions or recommendations.

Contents

The dissertation shall involve an independent research investigation focusing on any aspect of Indian knowledge systems related to architecture, urban environments, settlements, ekistics, spatial cultures, environmental behaviour, sustainability, digital and virtual practices, socio-spatial studies, ecological concerns, or other emerging disciplinary issues. Students shall develop a research synopsis outlining the topic, objectives, scope, methodology, relevance, and expected outcomes for approval by the department and assigned supervisor.

The study shall examine contemporary or historical issues affecting architecture and human settlements through interdisciplinary perspectives and case studies from India and global contexts. Research may address social, technological, environmental, economic, cultural, behavioural, or policy-related concerns and critically analyze their reciprocal relationship with architecture, urban systems, and built environments.

The dissertation process shall include literature review, field studies, documentation, data collection, analytical interpretation, comparative studies, and synthesis of findings using appropriate qualitative and/or quantitative methods.

Regular discussions, seminars, presentations, and progress reviews shall support the development of research methodology, critical thinking, academic writing, and scholarly communication throughout the semester.

The final submission shall comprise a dissertation report including introduction, literature review, methodology, analysis, findings, conclusions, proposals/guidelines, references, and supporting visual documentation as required.

Suggested Readings

Borden, I., & Rüedi, K. (2006). *The dissertation: An architecture student's handbook* (2nd ed.). Routledge.

Groat, L., & Wang, D. (2013). *Architectural research methods* (2nd ed.). Wiley.

MOPE-117: Open Electives

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	-	-	-	-	75	-	3

Intent

- The course aims to provide interdisciplinary exposure and flexible learning opportunities beyond the core domain.
- It enables students to explore emerging knowledge areas, develop specialized competencies, and engage with contemporary academic, technological, professional, and societal concerns.

Learning Outcomes

Upon successful completion of the course, students shall be able to:

- Explore interdisciplinary knowledge or allied domains.
- Communicate and integrate interdisciplinary perspectives within architectural and pedagogical discourse.

Contents

- The Open Elective shall provide students the flexibility to pursue interdisciplinary and specialized learning through elective courses offered from approved academic platforms and institutional offerings.
- The electives will be offered from various prior-approved online learning portals such as SWAYAM, NPTEL, MOOCs, and other recognized digital learning platforms, as well as from a pool of departmental and interdepartmental elective courses approved by the Department.
- The Department shall notify and provide a list of approved elective courses at the beginning of the semester. Students shall select an elective based on their academic interests subject to departmental guidelines and approval.
- The course shall involve completion of the selected elective as prescribed by the respective offering platform or department.
- Students shall submit proof of successful completion as specified by the Department for evaluation and academic credit consideration.

MARC-211: Urban Studies I: Design & Planning

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent

- To understand cities as complex systems shaped by design, planning, social dynamics, economics, and politics.
- To examine urban design and planning as interconnected practices.

Learning Outcomes

- Analyze urban forms, spatial structures, and morphology across formal and informal contexts.
- Apply sustainable, human-scale urban design principles within diverse socio-spatial environments.
- Evaluate planning theories, regulatory frameworks, governance, and infrastructure development models.
- Critique urban spatial inequality, socio-political dynamics, and rights-based planning frameworks.

Contents

Unit 1 – Urban Form, Morphology, and Spatial Analysis

- The Definition of ‘Urban’
- Reading urban form: figure-ground analysis, Nolli maps, public/private space
- City: Types & Forms, Determinants of Urban Form
- Component of Urban Structure: Character Districts, Tissue, Grain, and Identity etc.
- Urban patterns: Grid-iron, Radial, Circular and Organic
- Urban Design Elements: Axis, nodes, Streetscapes, Street furniture, Architectural Vocabulary, Building Control, Architectural Control
- Informal urbanism and organic settlements

Unit 2 – Urban Design Principles and Practice

- Human scale and walkability: pedestrian-oriented design, 5/15-minute city, walkability metrics.
- Mixed-use development and vitality: zoning integration, Jane Jacobs' principles, Indian mixed-use streets.
- Public space design: successful public space principles (Gehl, Whyte), Indian ghats/maidans.
- Place-making and urban identity: genius loci, local character, heritage, Indian city identities.
- Transit-oriented development: TOD principles, density around stations, Delhi Metro influence.
- Urban design and social equity: gentrification, inclusive design, designing for informal economy, spatial justice.
- Environmental urban design: green-blue infrastructure, urban forestry, heat island mitigation.

- Urban design process: frameworks, participatory design, implementation tools, Indian challenges.

Unit 3 – Planning Theory, Processes, and Instruments

- Planning theories: Garden Cities through contemporary, Indian planning evolution.
- Master planning and comprehensive planning: land use, development controls, Indian Development Plans.
- Zoning regulations and development control: use-based zoning, FSI/FAR, Indian practice, reforms.
- Infrastructure planning: water, sewerage, electricity, transport, Indian deficits, PPP models.
- Transport and mobility planning: demand forecasting, Comprehensive Mobility Plans, NMT infrastructure.
- Environmental planning and regulations: EIA, CRZ, air quality, green belts, ecological zones.
- Participatory planning: Arnstein's ladder, PLA, 74th Amendment, ward committees, challenges.
- Planning and governance: Town Planning departments, ULBs, metropolitan planning, administrative challenges. Renewal

Unit 4 – Critical Urbanism and Alternative Futures

- Critiques of planning: urban renewal failures, high modernist planning (Scott), Harvey's whose city.
- Spatial justice and right to the city: Lefebvre, Soja, anti-eviction movements in India.
- Participatory planning and co-production: genuine participation, community-led development, Kerala model.
- Tactical urbanism: bottom-up interventions, temporary urbanism, Indian examples.
- Inclusive cities and informal economies: street vendor rights, slum upgrading, affordable housing.
- Sustainable and resilient cities: compact cities, climate adaptation, nature-based solutions.
- Smart cities and digital urbanism: Smart Cities Mission, data-driven planning, surveillance risks.
- Future scenarios: alternative urban futures, degrowth, commons-based, feminist city, post-carbon.

Suggested Readings

Gehl, J. (201). *Cities for people*. Island Press.

Hall, P., & Tewdwr-Jones, M. (2020). *Urban and regional planning* (6th ed.). Routledge.

Jacobs, J. (1961). *The death and life of great American cities*. Random House.

Kostof, S. (1991). *The city shaped: Urban patterns and meanings through history*. Thames & Hudson.

Mehrotra, R. (2021). *The Kinetic City & Other Essays*. ArchiTangle.

Moudon, A. V. (1997). Urban morphology as an emerging interdisciplinary field. *Urban Morphology*, 1(1), 3–10.

Roy, A., & AlSayyad, N. (Eds.). (2004). *Urban informality: Transnational perspectives from the Middle East, Latin America, and South Asia*. Lexington Books.

Sandercock, L. (1998). *Towards cosmopolis: Planning for multicultural cities*. Wiley.

Shaw, A. (2004). *The making of Navi Mumbai*. Orient Longman (Orient Blackswan).

MARC-212: Digital Design Lab-II: Urban Analytics

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
1	2	45	-	30	75	-	3

Intent

- This advanced lab course introduces computational and data-driven methods for analyzing, understanding, and designing at the urban scale.
- It focuses on using spatial data, Geographic Information Systems (GIS), and urban analytics to inform evidence-based decision-making in urban design and planning.

Learning Outcomes

On successful completion, students will be able to:

- Source, manage, and process spatial (geographic) data relevant to urban analysis.
- Apply GIS-based techniques to analyze urban morphology, land use, density, accessibility, and environmental parameters.
- Utilize data visualization and spatial statistics to communicate complex urban patterns and relationships.
- Integrate analytical findings into the early stages of urban design and planning proposals.

Contents**Unit 1: Introduction to Urban Data and GIS Fundamentals**

- Understanding different types of urban data: spatial (vector, raster), demographic, economic, and environmental.
- Sourcing open data from platforms like OpenStreetMap, government portals, and satellite imagery.
- Core GIS operations: working with coordinate systems, georeferencing, data attribution, and basic geoprocessing (clip, merge, buffer).
- Creating thematic maps to visualize urban data distributions (choropleth, dot density, proportional symbol maps).

Unit 2: Urban Morphology and Network Analysis

- Analyzing urban form: calculating metrics for street networks (connectivity, centrality, integration using Space Syntax tools), plot patterns, and building footprints.
- Performing network analysis to evaluate accessibility: calculating service areas for amenities (parks, schools, hospitals) using road networks.
- Modelling pedestrian and vehicular movement potentials.
- Studying the relationship between street network design and land use patterns.

Unit 3: Spatial Metrics for Land Use and Environmental Analysis

- Measuring land use mix, density (FAR, ground coverage), and green space indices (NDVI from satellite data).
- Conducting solar envelope and potential solar energy yield analysis at a neighborhood scale.
- Performing basic viewshed analysis and modeling urban heat island effects using land surface temperature data.
- Assessing flood risk or watershed management using topographic data.

Unit 4: Data Synthesis and Design Application

- Integrating multiple layers of analysis into a composite suitability model for site selection or development potential mapping.
- Using analytical results to generate design guidelines related to density, program distribution, and open space networks.
- Creating clear, compelling data visualizations and dashboards to communicate analytical narratives.
- Critically reflecting on the ethical use of data, privacy concerns, and the limitations of quantitative urban analysis.

Suggested Readings

Batty, M. (2013). *The new science of cities*. MIT Press.

Esri. (n.d.). *ArcGIS Pro documentation*.

Gehl, J., & Svarre, B. (2013). *How to study public life*. Island Press.

Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2015). *Geographic information science and systems* (4th ed.). Wiley.

National Institute of Urban Affairs. (2022). *Handbook of urban statistics*. Ministry of Housing and Urban Affairs, Government of India.

QGIS Development Team. (n.d.). *QGIS documentation*.

MARC-213: Climate, Environment and Sustainability

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent

- To develop a critical understanding of the climate crisis and multidisciplinary systems thinking for regenerative design.
- To emphasize the role of built environment in achieving climate justice, resilience, and Net-Zero goals in the Indian context.

Learning Outcomes

- Explain the scientific principles of climate, ecology, and the built environment's role in the global climate crisis.
- Apply bioclimatic and passive design strategies specifically adapted to Indian climatic zones using traditional and contemporary methods.
- Perform environmental performance evaluations using Life Cycle Analysis (LCA), building simulation tools, and green rating systems like GRIHA and LEED.

Contents**Unit 1: Climate Science, Systems Thinking, and Global Responsibility**

- Climate Science Foundations: Global climate systems, the greenhouse effect, and regional classifications including Köppen and Mahoney.
- The Built Environment's Role: Analyzing the 40% emissions contribution and the genesis of Sustainable Development Goals (SDGs 6, 7, and 11).
- Systems Thinking in Design: Application of the Iceberg Model to architectural problems and viewing the building as a complex integrated system.
- Ecological Literacy: Principles of carrying capacity, ecological footprints, site hydrology, and topography analysis.
- Climate Justice: Introduction to environmental justice, climate equity, and the ethics of a "just transition" in architecture.

Unit 2: Bioclimatic Design and Passive Architectural Systems

- Indian Climatic Diversity: Detailed design strategies for Hot-Dry, Warm-Humid, and Composite zones.
- Thermal Comfort: Human physiology, adaptive comfort models, and the use of bioclimate charts.
- Passive Strategies: Solar orientation, passive solar heating (Trombe walls), and passive cooling techniques (earth-air tunnels, evaporative cooling).
- Natural Systems: Advanced natural ventilation (stack effect, night purge), solar control, and shading coefficient optimization.
- Vernacular Wisdom: Retracing renewable resource exploitation in historic architecture and applying traditional community wisdom (e.g., Courtyards, Jalis) to modern design.

Unit 3: Integrated Resource Efficiency and Life Cycle Thinking

- Sustainable Materials: Embodied carbon calculations, low-carbon material selection, and material culture/craft traditions.
- Water and Waste Cycles: Integrated water management (rainwater harvesting, greywater recycling) and decentralized wastewater treatment.
- The Circular Economy: Circular design flows, designing for disassembly, and construction waste reduction strategies.
- Energy Systems: Integration of renewable energy (Solar PV, BIPV) into architectural forms and building-to-grid simulations.
- Codes and Performance: Application of the Energy Conservation Building Code (ECBC), daylighting autonomy calculations, and high-performance skin parameters.

Unit 4: Sustainable Urbanism, Assessment, and Resilience

- Regenerative Urban Ecology: Principles of "living buildings," habitat creation, urban biodiversity, and food systems/urban agriculture.
- Urban Resilience Planning: Strategies for flood-resilience, heat island mitigation, and vulnerability mapping.
- Green Building Rating Systems: Expert-level application of GRIHA (v2019), LEED, and IGBC frameworks at the neighborhood and township scale.
- Participatory Planning: Use of Participatory Rural Appraisal (PRA) and community consultation in sustainable neighborhood design.
- Climate Action: Professional responsibility, advocacy, and the architect's role in India's National Action Plan on Climate Change (NAPCC).

Suggested Readings

Yeang, K. (2006). *Eco design: A Manual for Ecological Design*. Wiley.

Kwok, A. G., & Grondzik, W. T. (2018). *The Green Studio Handbook*. Routledge.

Roaf, S., et al. (2020). *Adapting Buildings and Cities for Climate Change*. Routledge.

Olgyay, V. (2015). *Design with Climate: Bioclimatic Approach to Architectural Regionalism*.

Krishan, A. (2001). *Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings*.

References

TERI (2020). *GRIHA Rating System Version 2019*.

IPCC. *Assessment Reports (Summaries for Urban Areas)*.

Bureau of Energy Efficiency. *Energy Conservation Building Code (ECBC)*.

National Building Code of India (NBC), Part 11: *Approach to Sustainability*.

Correa, C. (1985). *The New Landscape*. Book Society.

MOPE-217: Open Electives

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	-	-	-	-	75	-	3

Intent

- The course aims to provide interdisciplinary exposure and flexible learning opportunities beyond the core domain.
- It enables students to explore emerging knowledge areas, develop specialized competencies, and engage with contemporary academic, technological, professional, and societal concerns.

Learning Outcomes

Upon successful completion of the course, students shall be able to:

- Explore interdisciplinary knowledge or allied domains.
- Communicate and integrate interdisciplinary perspectives within architectural and pedagogical discourse.

Contents

- The Open Elective shall provide students the flexibility to pursue interdisciplinary and specialized learning through elective courses offered from approved academic platforms and institutional offerings.
- The electives will be offered from various prior-approved online learning portals such as SWAYAM, NPTEL, MOOCs, and other recognized digital learning platforms, as well as from a pool of departmental and interdepartmental elective courses approved by the Department.
- The Department shall notify and provide a list of approved elective courses at the beginning of the semester. Students shall select an elective based on their academic interests subject to departmental guidelines and approval.
- The course shall involve completion of the selected elective as prescribed by the respective offering platform or department.
- Students shall submit proof of successful completion as specified by the Department for evaluation and academic credit consideration.

Semester III

MARC-311: Urban Studies- II: Policies & Legislation

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent:

The course introduces students to the legal, institutional, and policy frameworks governing urban development in India. It examines urban governance, planning legislation, development control regulations, and national policies related to housing, infrastructure, and urban development. The course enables students to understand how policies and legislative frameworks influence planning and urban design decisions.

Learning Outcomes:

- To understand the evolution of urban policies and planning legislation in India.
- To familiarize students with planning acts, development control regulations, and institutional frameworks.
- To develop an understanding of urban governance mechanisms at national, state, and local levels.
- To apply policy and legislative knowledge in planning and design proposals.

Methodology:

- Lectures and presentations introducing key policies and legislative frameworks.
- Case study-based assignments for understanding policy implementation.

Content:**Unit 1: Urbanisation and Governance in India**

- Urbanisation trends in India
- Urban governance structure: Central, State, and Local bodies
- Role of Urban Local Bodies, Development Authorities, and Metropolitan Planning Committees
- 74th Constitutional Amendment Act

Unit 2: Urban Planning Legislation

- Town and Country Planning Acts (overview)
- Development Authority Acts
- Development Control Regulations and building bye-laws
- Land Acquisition, Rehabilitation and Resettlement Act (2013)
- Environmental Protection Act
- Heritage and conservation regulations

Unit 3: Urban Planning Instruments and Policies

- Master Plan, Development Plan, Regional Plan
- Local Area Plans and Special Area Plans
- National Urban Housing Policy
- National Urban Transport Policy
- Smart Cities Mission, AMRUT, PMAY, Swachh Bharat Mission
- Transit Oriented Development (TOD) policy
- UN-Habitat and international urban policy frameworks

Unit 4: Housing, Land and Infrastructure Framework

- Affordable housing policies
- Slum redevelopment and rehabilitation
- Land pooling and land readjustment
- Infrastructure provision and PPP models
- Urban finance and municipal budgeting

Suggested Readings:

Urban and Regional Planning-Peter Hall

Urbanisation in India: Sociological Contributions-Ramachandra Guha (relevant essays on urbanisation and development)

Cities for People-Jan Gehl

People Places: Design Guidelines for Urban Open Space-Clare Cooper Marcus & Carolyn Francis

URDPFI Guidelines-Ministry of Housing and Urban Affairs, Government of India

National Urban Policy Framework-Government of India

Town and Country Planning Acts (respective state governments)

National Urban Transport Policy-Government of India

Reports and Guidelines of UN-Habitat

MARC-312: Digital Design Lab III: Computation & Fabrication

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
1	2	45	-	30	75	-	3

Intent

It introduces visual programming and parametric design, emphasizing rule-based form, data-driven parameters, and documentation.

Learning Outcome

After completing the course, students will be able to:

- Navigate Rhino's interface and construct basic 2D/3D geometry.
- Build parametric models in Grasshopper to generate rule-based architectural form.
- Apply procedural generation techniques to produce complex architectural geometries from simple rules.
- Prepare and execute a digital fabrication workflow from a parametric model to a physical prototype.

Unit 1: Fundamentals of Parametric and Rule-Based Design

- Parametric vs static modelling; relationships, constraints, control parameters.
- Visual programming concepts: nodes, wires, data flow, data lists/trees
- Rhino/Grasshopper interface fundamentals: component types, canvas organisation, wiring conventions, and data-matching logic
- Basic geometry in a parametric environment: points, curves, surfaces, meshes.
- Patterns and tilings; repetition and variation with control.
- Historical precedents of rule-based and modular design.

Unit 2: Data Structures, Attractors, and Modular Systems

- Data structures in Grasshopper: lists, trees, and branches-grafting, flattening, path mapping, data structure, and geometry outcome
- Number sliders, value remapping, and domain manipulation
- Attractor points and curves: modulating façade opening sizes, panel densities, structural member depths, and surface curvature from a field of influence
- Modular systems: panels, blocks, furniture components, prefabricated assemblies

Unit 3: Procedural Modelling

- Procedural vs parametric- understanding the distinction
- Non-linear data pipelines, feedback loops, and recursive growth geometry using Anemone.
- Surface Tessellation: Automating complex structural framing, diagrids, and multi-pattern surface panelling via Lunchbox.
- Integrated Workflows: Multi-plugin computational pipelines to build unified, automated pipelines.

- Parametric Optimization: Design responsive architectural skins that instantly rebuild and adapt to changing input parameters.

Unit 5: Fabrication and Documentation

- Machine familiarization: Supervised laser cutting session, kerf measurement, tolerance and joint fit tests across MDF, plywood, and acrylic
- Fabrication technology families: Subtractive, additive, and formative processes introduced through physical samples
- File to factory workflow: parametric model→ DXF/STL export→ toolpath→ machine→ assembled component
- Scale conventions: 1:500 to 1:20, each implying different materials, joint resolution, and fabrication process; fabricating a simple element at two scales to understand scale demands.
- Waffle fabrication exercise: Creating a physical waffle model from a Grasshopper-generated form
- Reflective documentation of the design process for portfolio and jury.

Suggested Readings

Woodbury, R. (2010). *Elements of parametric design*. Routledge.

Kolarevic, B. (2003). *Architecture in the digital age: Design and manufacturing*. Spon Press.

Tedeschi, A. (2014). *AAD, algorithms-aided design: Parametric strategies using Grasshopper*. Le Penseur.

Burphy, M. (2011). *Scripting cultures: Architectural design and programming*. Wiley.

Issa, R. (n.d.). *Essential mathematics for computational design* (4th ed.). Robert McNeel & Associates.

Issa, R. (n.d.). *Essential algorithms and data structures for Grasshopper*. Robert McNeel & Associates.

Jabi, W. (2023). *Parametric design for architecture* (2nd ed.). Laurence King Publishing.

Schumacher, P. (2011). *The autopoiesis of architecture: Vol. 1. A new framework for architecture*. Wiley.

MARC-317: Summer Internship

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	-	45	-	30	75	-	3

Intent

- To provide experiential exposure to professional, academic, research, community, institutional, or industry-based environments relevant to architecture and allied disciplines.
- To strengthen practical understanding, interdisciplinary engagement, professional ethics, research orientation, and application of academic learning in real-world contexts.

Learning Outcomes

On successful completion of the course, the student shall be able to:

- Apply academic knowledge and disciplinary skills within professional, institutional, research, or community-based environments.
- Analyze organizational processes, workflows, decision-making systems, and professional practices relevant to architecture and allied fields.
- Demonstrate professional communication, teamwork, ethical conduct, and reflective learning through documented engagement.
- Produce a structured internship report critically evaluating learning outcomes and challenges.

Contents

- The Summer Internship shall be undertaken in approved organizations such as architectural firms, planning and design consultancies, research organizations, educational institutions, NGOs, governmental agencies, community initiatives, industry collaborations, digital/design technology environments, or other allied professional settings relevant to the programme specialization.
- The internship shall expose students to real-world processes including design development, research activities, project coordination, documentation systems, participatory engagement, academic or institutional practices, technical workflows, policy environments, digital platforms, or innovation-oriented practices depending upon the nature of the host organization.
- Students shall maintain regular documentation of activities, observations, assigned responsibilities, professional interactions, and reflective learning during the internship period.
- The internship shall culminate in the submission of a comprehensive report comprising nature of work undertaken, critical reflections, and documentation of outputs.
- The final evaluation may include report submission, portfolio/documentation, presentation, and certification from the host organization.

M. Arch (Architecture Pedagogy)

Code: MARP

MARP-114: Architecture Pedagogy II: History & Criticism

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent

- To critically examine the historical evolution of architectural education across India and the world as a reflection of socio-cultural, political, technological, and philosophical transformations.
- The course develops critical understanding of pedagogical systems, institutional models, radical educational experiments, and contemporary debates shaping architectural knowledge and practice.

Learning Outcomes

Students will be able to:

- Trace the evolution of architectural pedagogy from ancient to contemporary knowledge systems.
- Critically analyze major pedagogical models, institutions, and philosophical positions influencing architectural education.
- Compare Indian and global trajectories of architectural education across historical periods.
- Evaluate contemporary debates relating to decolonization, radical pedagogies, sustainability, technology, and social responsibility.

Unit 1: Ancient and Medieval Architectural Knowledge Systems

- Ancient architectural education: Indian and global perspectives
- Indian knowledge traditions: guru-shishya parampara, sthapati traditions, shilpa shastras, vastu shastra, temple guilds, craft-based learning, oral transmission systems.
- Medieval guild systems, apprenticeship models, cathedral schools, Islamic madrasas, and knowledge transmission through workshops and craft communities.
- Role of religion, monarchy, culture, anthropology, and political power in shaping architectural learning.
- Contributions of philosophers and thinkers including Vitruvius, Aristotle, Plato, Confucius, Al-Biruni, Ibn Khaldun, and traditional Indian philosophical systems.

Unit 2: Modern Architectural Education and Institutionalization (18th Century to WWII)

- Renaissance humanism, Enlightenment rationality, Industrial Revolution, and emergence of formal architectural academies.
- Académie Royale d'Architecture, École des Beaux-Arts, Bauhaus, VKhUTEMAS, Taliesin Fellowship, and polytechnic institutional models.
- Modernist pedagogical movements and rejection of historicism by Le Corbusier, Walter Gropius, Frank Lloyd Wright, and Mies van der Rohe.
- Colonial establishment of architectural education in India: Bombay School of Art, Sir J.J. School, British curriculum transplantation, European epistemological dominance.

- Tagore's Shantiniketan model, holistic education, arts integration, nature-based learning, and relevance to contemporary studio pedagogy.
- Impact of industrialization, urbanization, nationalism, and professionalization on architectural education.
- Contributions of John Ruskin, William Morris, Patrick Geddes, Rabindranath Tagore, on education, craft, and society.
- Contributions of Indian philosophers and educationists.

Unit 3: Post-WWII Architectural Pedagogy- India and the World (1945–1990s)

- Integration of architecture into universities, rise of research culture, theory studies, and professional regulation systems worldwide.
- Influence of modernism, critical regionalism, postmodernism, phenomenology, structuralism, and critical theory on pedagogy.
- Radical pedagogies and experimental schools
- Ashraf Salama's models of pioneering typologies
- Experiential learning, community engagement, and socially responsive education.
- Contributions of Paulo Freire, Ivan Illich, Christopher Alexander, Aldo Rossi, Kenneth Frampton, Hassan Fathy
- Expansion of architectural education in post-independence India
- Indian perspectives on Architecture Education.
- LPG during the 1990s and its influence on architectural institutions

Unit 4: Contemporary Architectural Pedagogy, Criticism, and Future Directions

- Digital transformations in pedagogy: CAD, BIM, parametricism, AI, VR/AR, computational design, online learning, and global knowledge networks.
- Contemporary debates on sustainability, climate crisis, decolonization, social justice, inclusivity, gender, caste, accessibility, and ethics in architectural education.
- Blogs, wikis, digital criticism, social media, MOOCs, collaborative platforms, and changing modes of knowledge dissemination.
- Critiques of neoliberal education, commercialization, homogenization, excessive formalism, and disconnect from societal realities.
- Emerging pedagogical models, contemporary thinkers and educators
- Future directions in architectural pedagogy

Suggested Readings

- Anthony, K. H. (2001). *Designing for diversity: Gender, race, and ethnicity in the architectural profession*. University of Illinois Press.
- Council of Architecture. (2020). *Minimum Standards of Architectural Education Regulations, 2020*.
- Doshi, B. V. (1986). Training architects: India. In A. Evin (Ed.), *Architecture education in the Islamic world: Proceedings of Seminar Ten in the series Architectural Transformations in the Islamic World* (pp. 106–109). Concept Media/Aga Khan Award for Architecture.
- Dutton, T. A. (Ed.). (1991). *Voices in architectural education: Cultural politics and pedagogy*. Bergin & Garvey.

- Frampton, K. (2020). *Modern architecture: A critical history* (5th ed.). Thames & Hudson.
- Kostof, S. (Ed.). (2000). *The architect: Chapters in the history of the profession*. Oxford University Press.
- Lang, J., Desai, M., & Desai, M. (1997). *Architecture and independence: The search for identity-India 1880 to 1980*. Oxford University Press.
- Ockman, J., & Williamson, R. (Eds.). (2012). *Architecture school: Three centuries of educating architects in North America*. MIT Press.
- Salama, A. M. (2015). *Spatial design education: New directions for pedagogy in architecture and beyond*. Routledge.

Further Readings

- Alexander, C. (1979). *The timeless way of building*. Oxford University Press.
- Bourdieu, P., & Passeron, J.-C. (1990). *Reproduction in education, society and culture* (2nd ed.). SAGE.
- Chafee, R. (1977). The teaching of architecture at the École des Beaux-Arts. In A. Drexler (Ed.), *The architecture of the École des Beaux-Arts* (pp. 61–110). MIT Press.
- Freire, P. (1970). *Pedagogy of the oppressed* (M. B. Ramos, Trans.). Bloomsbury (Continuum).
- Hooks, B. (2014). *Teaching to transgress: Education as the practice of freedom*. Routledge.
- Wick, R. (2000). *Teaching at the Bauhaus*. Hatje Cantz.
- Scriver, P., & Prakash, V. (Eds.). (2007). *Colonial modernities: Building, dwelling and architecture in British India and Ceylon*. Routledge.
- Smith, L. T. (2021). *Decolonizing methodologies: Research and Indigenous peoples* (3rd ed.). Zed Books.

MARP-115: Project Studio-I: Communication & Journalism

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Intent

- To introduce communication, journalism, and media practices as pedagogical tools in architecture
- To develop competencies in academic writing, visual storytelling, verbal articulation, and public outreach for diverse audiences.

Learning Outcomes

Students shall be able to:

- Produce structured academic and journalistic architectural writing.
- Develop visual and multimedia narratives using diagrams, photography, and digital media.
- Demonstrate effective verbal communication for presentations, critiques, and public engagement.
- Critically analyze architectural media, representation, and communication practices.

Unit 1: Academic and Professional Writing (*Weeks 1–4*)

- Communication in architecture: verbal, written, visual, and digital modes.
- Academic writing: abstracts, essays, reports, reviews, project statements.
- Structuring arguments, editing, formatting, proofreading, and referencing.
- Plagiarism, copyright, and ethical scholarly practices.
- Architectural criticism and analysis of journals, blogs, and publications.
- Studio Exercise: Critical review/article writing and peer-editing workshop.

Unit 2: Visual Communication and Representation (*Weeks 5–8*)

- Principles of visual communication, composition, hierarchy, and narrative.
- Sketches, diagrams, mind maps, infographics, and data visualization.
- Architectural drawings, visualisation and mapping
- Digital and web-based communication strategies.
- Architectural photography: framing, lighting, perspective, sequencing, and documentation.
- Post-processing and ethics of visual representation.
- Studio Exercise: Visual essay and infographic-based documentation project.

Unit 3: Verbal Communication and Public Speaking (*Weeks 9–11*)

- Principles of effective speaking, articulation, tone, and clarity.
- Public speaking for studios, juries, seminars, and outreach.
- Body language, listening skills, and response to critique.
- Presentation strategies, narrative development, and the 10–20–30 rule.

- Communication with academic, professional, and public audiences.
- Studio Exercise: Mock jury presentation and recorded verbal presentation.

Unit 4: Architectural Journalism and Media Studio (Weeks 12–16)

- Scope and trends in architectural journalism, blogs, and digital platforms.
- Feature writing, interviews, reviews, and reporting on built environment issues.
- Basics of photo/video documentation, storyboarding, and simple editing workflows.
- Public outreach through blogs, social media, and multimedia platforms.
- Ethics, representation, and responsible documentation of communities and spaces.
- Final Studio Project: Integrated portfolio comprising article/review, photo essay, and short audio-visual documentation.

Suggested Readings

Architectural Review, LOG, Indian Architect & Builder (current issues). <https://www.architectural-review.com>

Attoe, W. (1979). *Architecture and critical imagination*. Wiley.

Berger, J. (2008). *Ways of seeing*. Penguin.

Bhatia, G. (1994). *Punjabi baroque and other memories of architecture*. Penguin Books.

Booth, W. C., Colomb, G. G., & Williams, J. M. (2016). *The craft of research* (4th ed.). University of Chicago Press.

Corner, J. (1999). The agency of mapping. In D. Cosgrove (Ed.), *Mappings* (pp. 213–252). Reaktion Books.

Goldhagen, S. W. (2017). *Welcome to your world: How the built environment shapes our lives*. Harper Collins.

Lupton, E. (2015). *Graphic design: The new basics* (Rev. ed.). Princeton Architectural Press.

Sontag, S. (1977). *On photography*. Farrar, Straus and Giroux.

Tufte, E. R. (2001). *The visual display of quantitative information* (2nd ed.). Graphics Press.

MARP-214: Architecture Pedagogy II: Concepts & Practices

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent:

- To understand the underlying concepts of teaching in Architecture
- To study the academic practices in various institutions
- To bridge educational theory and architectural practice for future teachers in Architecture.

Learning Outcomes:

Students will study various academic practices, design lesson plans and apply formative assessment methods to make informed decisions in their academic profession.

Contents:

Unit 1: Understanding Pedagogy and Education

- Fundamentals of Pedagogy and Education
- Types of Education: Formal, informal, and non-formal education
- Teaching and Learning Methods: Teacher-Centred, Student-Centred, Collaborative, and Technology-Enhanced approaches
- Assessment & Evaluation; rubrics, portfolio assessment, and peer evaluation.
- Pedagogical Analysis and Lesson Planning

Unit 2 – Foundations of Pedagogical Theory

- Epistemological foundations: objectivist, constructivist, social constructivist paradigms
- Learning theories: behaviourism, cognitivism, constructivism,
- Social constructivism and collaborative learning
- Experiential learning and Reflective practice
- Situated learning: communities of practice
- Learning taxonomies: Bloom's, Fink's and SOLO taxonomies applied to architecture.
- Paulo Freire's critical pedagogy

Unit 3 – The Architectural Studio as Learning Environment

- Shulman's concept of studio as signature pedagogy, Schön's reflective practitioner
- Desk critique as dialogic learning, Design jury, pin-up/ final review
- Learning by doing and making: Public Interest Design, live projects pedagogy
- Precedent study and case-based learning in design education.
- Digital transformation: virtual studios, online, blended studio environments
- Indian perspectives in Architecture Education

- Informal pedagogies: competition projects, summer and winter schools, workshops

Unit 4: Contemporary Indian Perspective

- Contemporary landscape of architecture education in India:
- Nature of Architecture Schools, demographic study of Architects in India
- Policies & Regulations: CoA guidelines & NEP
- Theory vs Praxis debate in Architecture Education
- Vernacular traditions, and indigenous knowledge systems.
- Comparing global perspectives: NAAB (USA), RIBA (UK), and UIA frameworks.
- Challenges: Student well-being and mental health: stress, anxiety, and burnout among students
- Futures of architectural education in India: impact of AI, climate crisis, demographic shifts, economic transformation
- Preparing students for uncertain futures: adaptive expertise, lifelong learning, and ethical responsibility.

Suggested Readings

American Institute of Architecture Students. (2016). *The redesign of studio culture: A report on the design studio*. AIAS.

Anthony, K. H. (1991). *Design juries on trial: The renaissance of the design studio*. Van Nostrand Reinhold.

Boyer, E. L., & Mitgang, L. D. (1996). *Building Community: A New Future for Architecture Education and Practice. A Special Report*. California Princeton Fulfillment Services; 1445 Lower Ferry Road, Ewing, NJ 08618.

Council of Architecture. (2020). *Minimum Standards of Architectural Education Regulations, 2020*.

Cross, N. (2023). *Designerly ways of knowing*. Bloomsbury Visual Arts.

Freire, P. (1970). *Pedagogy of the oppressed* (M. B. Ramos, Trans.). Bloomsbury (Continuum).

Government of India, Ministry of Education. (2020). *National Education Policy 2020*.

Lawson, B. (2005). *How designers think: The design process demystified* (4th ed.). Architectural Press.

Salama, A. M. (2016). *Spatial design education: New directions for pedagogy in architecture and beyond*. Routledge.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus*, 134(3), 52–59.

Kumar, K. (1991). *Political agenda of education: A study of colonialist and nationalist ideas*. SAGE.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

MARP-215: Project Studio-II: Architectural Environment

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Intent

The studio aims to develop research-oriented and context-responsive approaches to architectural design by examining built environments through social, economic, cultural, and environmental perspectives. It encourages evidence-based inquiry, community engagement, and the translation of real-world observations into meaningful architectural and environmental design interventions.

Learning Outcomes

Upon successful completion of the course, students shall be able to:

- Analyze built environments through research-based methods including site studies, documentation, mapping, and stakeholder interaction.
- Interpret social, economic, environmental, and cultural factors influencing architecture.
- Develop evidence-based and contextually responsive design interventions addressing contemporary built environment issues.
- Communicate research findings and design proposals effectively through drawings, models, reports, and presentations.

CONTENTS:

- The studio shall investigate contemporary issues of the built environment through research-oriented and context-responsive design approaches, including evidence-based design, community-oriented design, and environmental analysis.
- Studio projects shall identify existing challenges and opportunities within real-world contexts through primary research methods such as site documentation, mapping, observation, interviews, surveys, and case studies.
- The studio shall examine social, economic, environmental, cultural, and spatial dimensions influencing architectural environments and translate research findings into design-based interventions.
- The studio may include outstation field studies, community engagement exercises, and live or simulated projects to understand real-time conditions and design implications.
- The studio work would culminate in a project report having research documentation, analytical studies, conceptual exploration, and integrated design proposals.

Suggested Readings

Gehl, J., & Svarre, B. (2013). *How to study public life*. Island Press.

Harriss, H., & Widder, L. (Eds.). (2014). *Architecture live projects: Pedagogy into practice*. Routledge.

MARP-216: Dissertation II (ARP)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent

- The course aims to develop independent and critically informed research inquiry within the domain of Architectural Pedagogy through the investigation of contemporary issues and professional concerns in national and international contexts.
- It emphasizes systematic research development, analytical interpretation, and the formulation of academically rigorous conclusions and recommendations relevant to architecture education.

Learning Outcomes

Upon successful completion of the course, students shall be able to:

- Formulate a research problem through critical review of contemporary educational and disciplinary concerns.
- Analyze architectural education and pedagogical practices within national and international contexts.
- Develop structured research investigations affecting architecture education.

Contents

- The dissertation shall involve independent research focusing on issues related to Architectural Pedagogy within national and international contexts. The course shall introduce students to advanced research orientation, topic identification, problem formulation, literature review, research methodology, case-study analysis, and academic writing practices relevant to architecture education and pedagogical inquiry.
- Students shall identify a research topic addressing contemporary concerns influencing architecture education, including social, cultural, technological, environmental, institutional, professional, economic, and policy-related dimensions. The research may investigate themes such as curriculum development, studio pedagogy, educational innovation, digital transformation, sustainability, inclusivity, professional practice, assessment methods, learning environments, community engagement, or emerging paradigms in architectural education.
- The dissertation process shall involve primary and secondary research methods including literature review, documentation, interviews, surveys, observational studies, comparative analysis, field visits, and case studies where relevant. Students shall critically examine national and international educational models, institutional practices, pedagogical approaches, and contemporary debates to establish analytical and theoretical grounding for the study.
- The course shall include regular discussions, tutorials, presentations, and reviews with supervisors to monitor research progress, refine methodology, and strengthen analytical depth.

Students shall prepare a research synopsis for approval and progressively develop the dissertation through structured chapters including introduction, research framework, analysis, findings, and conclusions.

- The final submission shall comprise a comprehensive dissertation report demonstrating critical inquiry, systematic analysis, evidence-based interpretation, and well-articulated conclusions, recommendations, proposals, or guidelines emerging from the research undertaken.

Suggested Readings

Borden, I., & Rüedi, K. (2006). *The dissertation: An architecture student's handbook* (2nd ed.). Routledge.

Groat, L., & Wang, D. (2013). *Architectural research methods* (2nd ed.). Wiley.

MARP-313: Design & Cognition

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent

- This course examines cognitive, psychological, cultural, and behavioral dimensions of architectural design thinking and learning.
- It develops critical understanding of creativity, reasoning, expertise, learning differences, collaborative cognition, and human-AI symbiosis within contemporary architectural pedagogy and studio practice.

Learning Outcomes

Students will be able to:

- Analyze cognitive and psychological theories relevant to design thinking and learning.
- Evaluate design problem-solving, creativity, expertise, and collaborative cognition using cognitive frameworks.
- Critique studio pedagogies through concepts of cognition, learning styles, motivation, scaffolding, and cognitive load.
- Interpret implications of AI-assisted cognition in architectural practice and education.

Unit I: Foundations of Cognition and Design Thinking

- Cognitive approaches in design:
Behaviorist, Humanistic, Cognitive, and Constructivist theories
Perception, attention, memory, and spatial cognition
- Concept formation and architectural thinking:
Gestalt principles and mental representation
Sketches, diagrams, and models as cognitive tools
- Individual and cultural differences in learning:
Cognitive abilities and learning preferences
Visual, verbal, spatial, and multimodal learning
Cross-cultural cognition, multilingual learning, and contextual understanding
- Designerly ways of knowing:
Reflective practice, tacit knowledge, and embodied experience in architecture

Unit II: Problem Solving, Reasoning, and Design Learning

- Design as ill-structured problem-solving:
Heuristics, algorithms, framing, and reflective iteration
Analogical thinking and co-evolution of problem-solution
- Cognitive barriers in studio learning:
Design fixation, mental blocks, biases, and decision-making limitations

- Logic, reasoning impediments, and cognitive load in studio environments
- Learning frameworks in architecture pedagogy:
 - Scaffolding, cognitive apprenticeship, and metacognition
 - Expert versus novice design behaviour
- Research approaches in design cognition:
 - Protocol analysis, think-aloud studies, and observational methods

Unit III: Intelligence, Personality, and Collaborative Cognition

- Theories of intelligence and creativity:
 - Multiple intelligences and emotional intelligence
 - Divergent and convergent thinking
- Personality and motivation in design:
 - Trait and type theories
 - Maslow's hierarchy and studio culture
- Social, distributed, and embodied cognition:
 - Collaborative design thinking and shared mental models
 - Material interaction and embodied experience in design processes

Unit IV: Creativity, Innovation, and Human–AI Symbiosis

- Creativity and innovation in architecture:
 - Creative thinking strategies and design experimentation
 - Reflexivity and distributed authorship
- Human–AI relationships in design:
 - Support, augmentation, collaboration, and symbiosis
 - Computational creativity and generative systems
- Contemporary implications:
 - AI-assisted pedagogy and digital cognition
 - Ethics, originality, authorship, and creative agency
 - Future cognitive design environments

Suggested Readings

- Cross, N. (2023). *Design thinking: Understanding how designers think and work* (2nd ed.). Bloomsbury Visual Arts.
- Goldschmidt, G. (2014). *Linkography: Unfolding the design process*. MIT Press.
- Lawson, B. (2005). *How designers think: The design process demystified* (4th ed.). Architectural Press.
- Mallgrave, H. F. (2013). *Architecture and embodiment: The implications of the new sciences and humanities for design*. Routledge.
- Pallasmaa, J. (2024). *The eyes of the skin: Architecture and the senses* (3rd ed.). Wiley.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- Simon, H. A. (2019). *The sciences of the artificial* (3rd ed.). MIT Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

MARP-314: Architecture Pedagogy III: Policy, Practice and Curriculum

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent

- The course examines curriculum development, accreditation systems, educational governance, and institutional management within architectural education.
- It develops the capacity to critically evaluate regulatory frameworks, formulate curriculum strategies, and manage academic systems aligned with contemporary professional, institutional, and societal requirements.

Learning Outcomes

By the end of the course, students shall be able to:

- Analyze curriculum theories, development processes, and regulatory structures governing architectural education.
- Evaluate accreditation systems, educational policies, and institutional frameworks.
- Develop curriculum and institutional proposals.
- Formulate administrative and strategic approaches for academic leadership, quality assurance, and institutional innovation.

Contents:

Unit 1: Foundations of Curriculum Theory and Design

- Meaning, need, importance, and interrelationship of syllabus and curriculum.
- Curriculum design: subject-centred, student-centred, competency-based, problem-based models
- Elements, principles, approaches, models, and theories of curriculum design.
- Curriculum design frameworks: Tyler's rationale, Backward Design, Constructive Alignment
- Learning outcomes, outcome-based education, curriculum mapping, scope-sequence integration.
- Historical evolution of curriculum in architecture schools within Indian and global contexts.
- Hidden curriculum in studio culture, assessment systems, and professional formation.

Unit 2: Curriculum Development, Assessment, and Reform

- Processes of curriculum development: stakeholder engagement, content organization, implementation, review, and revision cycles
- Integration of architecture disciplines, studio, technology, sustainability, and research components within curricula.
- CoA Minimum Standards, UGC, AICTE guidelines, NEP 2020, curriculum compliance mechanisms.
- Technology and curriculum design: digital pedagogy, computational tools, AI integration, and interdisciplinary education
- Curriculum assessment and evaluation: approaches, models, benchmarking, feedback systems.

- Assessment systems in architectural education: juries, rubrics, portfolios, formative and summative evaluation
- Case studies of curriculum reform, innovation, and institutional change management.

Unit 3: Accreditation, Educational Policy, and Governance

- Accreditation and quality assurance systems: CoA, NAAB, RIBA, UNESCO-UIA, NAAC, NIRF.
- Accreditation procedures: self-assessment, peer review, compliance, accountability, and quality enhancement
- Educational policy frameworks: NEP 2020, educational legislation, institutional autonomy, minority institution frameworks, and reservation policies
- Administrative structures in architectural education: governance models, organizational structures, leadership, delegation, communication, and decision-making
- Faculty governance, academic management, strategic planning, and institutional accountability.
- Professional regulation: Architects Act 1972, Council of Architecture, code of professional conduct, and professional standards.

Unit 4: Educational Management, Innovation, and Institutional Futures

- Principles of educational management and administration in architecture schools.
- Strategic and operational planning, resource allocation, financial planning in institutions.
- Organizational models, institutional culture, and leadership approaches in higher education.
- Problem-solving approaches: theory of constraints, creative decision-making, implementation, and evaluation strategies
- Organizational change and futures thinking: diffusion of innovation, change management, sustainability transitions, internationalization, and AI-driven educational transformation
- Development of a curriculum innovation and institutional strategy proposal.

Suggested Readings

- Anthony, K. H. (1991). *Design juries on trial: The renaissance of the design studio*. Van Nostrand Reinhold.
- Biggs, J., & Tang, C. (2022). *Teaching for quality learning at university* (5th ed.). Open University Press/McGraw-Hill.
- Boyer, E. L., & Mitgang, L. D. (1996). *Building community: A new future for architecture education and practice*. Carnegie Foundation for the Advancement of Teaching.
- Council of Architecture. (2020). *Minimum Standards of Architectural Education Regulations, 2020*.
- Government of India, Ministry of Education. (2020). *National Education Policy 2020*.
- Government of India. (1972). *The Architects Act, 1972*. Council of Architecture.
- Harriss, H., & Widder, L. (Eds.). (2014). *Architecture live projects: Pedagogy into practice*. Routledge.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Till, J. (2009). *Architecture depends*. MIT Press.
- Tyler, R. W. (1949). *Basic principles of curriculum and instruction*. University of Chicago Press.
- Wiggins, G., & McTighe, J. (2005). *Understanding by design* (2nd ed.). ASCD.

MARP-315: Project Studio-III: Urban Environments

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	4	90	-	60	150	-	6

Intent

- The studio aims to develop research-driven and participatory approaches to architectural and urban design by engaging with contemporary complexities of the urban built environment.
- It emphasizes synthesis of social, economic, environmental, infrastructural, and cultural factors into responsive and implementable design interventions.

Learning Outcomes

Upon successful completion of the course, students shall be able to:

- Analyze contemporary urban issues through primary and secondary research.
- Evaluate social, economic, environmental, cultural, and infrastructural factors influencing architectural and urban environments.
- Develop evidence-based and participatory design interventions through stakeholder engagement and research synthesis.
- Communicate integrated urban design proposals through analytical mapping, documentation, drawings, models, reports, and presentations.

Contents:

- The studio shall examine contemporary issues related to architecture and urban built environment through research-based and context-responsive design approaches, including evidence-based design, participatory design, and community-oriented urban inquiry.
- Studio projects shall focus on identifying and critically analyzing current urban challenges through primary and secondary research methods such as site documentation, spatial mapping, environmental assessment, surveys, interviews, case studies, and stakeholder engagement.
- The studio shall investigate the social, economic, environmental, infrastructural, cultural, and spatial dimensions influencing urban environments and translate research findings into meaningful architectural and urban design interventions.
- The studio may include outstation field studies, community engagement exercises, and live or simulated projects to understand real-time conditions and design implications.
- The studio work would culminate in a project report having research documentation, analytical studies, conceptual exploration, and integrated architectural or urban design proposals.

Suggested Readings

Gehl, J., & Svarre, B. (2013). *How to study public life*. Island Press.

Harriss, H., & Widder, L. (Eds.). (2014). *Architecture live projects: Pedagogy into practice*. Routledge.

MARP-316: Research Project (ARP)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent

- The course aims to facilitate advanced independent research within Architectural Pedagogy through analytical, experimental, and evidence-based investigations focusing on specific educational and curricular concerns.
- The primary intent of the course is to guide students toward the development of a publishable-quality research paper supported by rigorous methodology, critical inquiry, pedagogical analysis, and scholarly dissemination.

Learning Outcomes

Upon successful completion of the course, students shall be able to:

- Formulate and structure an independent research investigation addressing focused issues within Architectural Pedagogy and curriculum studies.
- Apply appropriate qualitative, quantitative, experimental, or survey-based research methods in educational and studio-based contexts.
- Analyze and synthesize empirical findings into coherent theoretical, pedagogical, and scholarly arguments.
- Produce a research paper and associated academic outputs demonstrating critical inquiry, structured writing, and effective dissemination of knowledge.

Contents

- The research project shall involve intensive investigation into a specific component of Architectural Pedagogy, curriculum studies, studio teaching, educational innovation, or learning processes within architecture and allied disciplines. The course shall emphasize independent inquiry, research rigor, and scholarly contribution through systematic exploration of contemporary educational concerns.
- Students shall identify and finalize a focused research topic related to one or more areas of the architectural curriculum or pedagogical practice. The process shall include identification of research gaps, formulation of objectives and research questions, framing of scope, and preparation of a detailed research synopsis.
- The study may address social, technological, environmental, cultural, institutional, professional, or economic dimensions affecting architecture education and vice versa. Emphasis shall be placed on critical examination of emerging pedagogical practices, curriculum transformation, digital learning environments, sustainability education, studio culture, assessment systems, or interdisciplinary educational approaches.

- The research process shall involve primary and secondary methods including literature review, surveys, interviews, classroom or studio-based experimentation, observational studies, comparative analysis, participatory methods, case studies, field documentation, and pedagogical interventions where appropriate. Students may also develop educational resources, instructional frameworks, learning tools, or prototype pedagogical models as part of the investigation.
- Students shall collect, interpret, and synthesize qualitative and quantitative data through systematic analytical frameworks. The course shall emphasize critical reasoning, evidence-based interpretation, theoretical grounding, and refinement of arguments through regular discussions, seminars, presentations, and review sessions with supervisors and peer groups.
- The research outcomes shall culminate in the preparation of a structured academic research paper suitable for scholarly presentation, publication, or conference dissemination. Students shall additionally prepare a comprehensive research report including methodology, analysis, findings, conclusions, recommendations, pedagogical guidelines, and future research directions.
- The final submission shall include hard-bound and digital documentation supported by visual, graphical, and audio-visual presentation formats comprising diagrams, charts, illustrations, drawings, and presentation media communicating the complete research process and scholarly outcomes effectively.

Suggested Readings

- Borden, I., & Rüedi, K. (2006). *The dissertation: An architecture student's handbook* (2nd ed.). Routledge.
- Groat, L., & Wang, D. (2013). *Architectural research methods* (2nd ed.). Wiley.

MARP-411: Thesis (ARP)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	12	200	-	150	350	-	14

Intent

- To culminate the Architecture Pedagogy programme through an independent and rigorous research investigation demonstrating advanced understanding of architectural education, pedagogy, curriculum, policy, studio practices, or related disciplinary concerns.
- The course aims to develop scholarly, analytical, and research communication skills through systematic inquiry and critical synthesis.

Learning Outcomes

On successful completion of the course, the student shall be able to:

- Formulate and perform independent research within the domain of architecture pedagogy.
- Critically analyze educational, social, technological, environmental, or institutional issues influencing architectural education and practice.
- Communicate research outcomes effectively through academic writing, visual documentation, and formal presentation.

Contents

- The Thesis shall involve an independent and research-oriented investigation related to architecture pedagogy, curriculum studies, educational innovation, studio culture, learning environments, policy, technology integration, sustainability, inclusivity, assessment systems, or other allied areas relevant to architectural education and practice.
- Students shall initially develop and submit at least three research proposals outlining the topic, objectives, scope, methodology, relevance, and expected outcomes. One proposal shall be finalized in consultation with the department and assigned supervisor.
- The study shall critically examine contemporary pedagogical, institutional, social, technological, environmental, cultural, or professional concerns and develop evidence-based interpretations, frameworks, strategies, or recommendations.
- Regular reviews, seminars, discussions, and internal juries shall monitor the progress of research, analytical development, methodological rigor, and scholarly communication throughout the semester.
- The final submission shall comprise a comprehensive thesis report. Students shall also present the thesis through audio-visual presentation and viva-voce examination supported by hard-bound reports, drawings, diagrams, and/or digital documentation as required.

Suggested Readings

Groat, L., & Wang, D. (2013). *Architectural research methods* (2nd ed.). Wiley.

MARP-412: Practical Course: Internship (ARP)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	4	90	-	60	150	-	6

Intent

- To provide structured teaching and academic engagement experience within architecture and allied educational environments.
- The course aims to develop pedagogical competence and professional understanding of architectural education processes.

Learning Outcomes

On successful completion of the course, the student shall be able to:

- Plan and conduct teaching sessions using appropriate pedagogical methods, instructional tools, and academic communication strategies.
- Apply teaching methodologies, assessment techniques, and classroom management practices within architectural education contexts.
- Critically evaluate teaching-learning processes through reflective documentation and supervised academic engagement.
- Produce comprehensive teaching documentation demonstrating pedagogical development, innovation, and professional readiness.

Contents

- The internship shall involve supervised teaching engagement, academic assistance, studio interaction and other educational responsibilities within academic environments.
- Students shall gain exposure to teaching methodologies, lesson planning, curriculum delivery, communication techniques, presentation strategies, assessment methods, academic coordination, and classroom/studio management practices.
- The internship shall encourage the application of innovative pedagogical approaches, visual communication methods, participatory learning techniques, digital teaching tools, and reflective teaching practices relevant to contemporary architectural education.
- Students shall prepare teaching schedules, lesson plans, lecture content, studio exercises, presentations, assessment material, and supporting academic documentation under the guidance of assigned supervisors.
- Continuous monitoring and evaluation shall be carried out based on teaching preparation, instructional clarity, communication effectiveness, engagement strategies, innovation in teaching methods, professional conduct, and overall academic performance.
- Students shall maintain a detailed internship logbook documenting teaching activities, observations, reflections, feedback, and academic responsibilities undertaken throughout the semester.
- The final submission shall comprise a comprehensive internship report including teaching schedules, lesson plans, presentations, internship documentation, reflective analysis, and relevant supporting material. Students shall also present their internship experience through audio-visual presentation and viva-voce examination.

M. Arch (Ekistics)

Code: MEKD

MEKD-114: Population Dynamics and Urban Land Economics

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent:

This course introduces the interrelationship between population dynamics, urban land economics, and spatial development. It equips students with an understanding of demographic processes, land markets, land policies, and economic principles that influence urban growth and human settlements. The course enables evidence-based analysis of population-land interactions for sustainable planning.

Course Objectives

- To understand demographic concepts and their implications for urban and regional planning.
- To examine the relationship between population dynamics, land demand, and housing development.
- To introduce principles of urban land economics, land markets, and land valuation.
- To develop an understanding of land governance, policy frameworks, and sustainable land management.

Learning Outcomes

Upon successful completion of the course, students will be able to:

- Explain demographic concepts and analyse population characteristics influencing urban development.
- Evaluate the relationship between demographic change, housing demand, and land use patterns.
- Apply principles of urban land economics in understanding land values, land markets, and spatial development.
- Analyse land tenure systems, land policies, and regulatory mechanisms affecting urban growth.
- Critically assess demographic and land-related issues to support sustainable planning and policy decisions.

Teaching Methodology

- Interactive lectures supported by maps, census data, and spatial analysis.
- Case studies of Indian and international cities.
- Census and demographic data interpretation exercises.
- Group discussions on land policy and urban development.
- GIS and planning-based analytical assignments.
- Student presentations and policy review exercises.

Unit 1: Fundamentals of Demography

- Population structure, growth, density, migration, Census and analysis of Census data

- Urbanization theories and demographic transition
- Informality, gender, age, Household types, Income and workforce dynamics
- Density, overcrowding, sprawl, and compact city debates.

Unit 2: Demography–Land Relationship

- Population pressure and land demand
- Housing needs, affordability, and demographic mismatch
- Informal settlements as economic and demographic responses
- Poverty, exclusion, and land access
- Climate risk and vulnerable populations

Unit 3: Principles of Urban Land Economics

- Land as an economic good: rent, value, price
- Bid-rent theory, location theory, land-use models
- Formal vs informal land markets
- Role of state, market, and communities
- Zoning, FAR/FSI, taxation, and regulatory tools
- Indicators for sustainable human settlements

Unit 4: Land Markets, Institutions, and Policy

- Land tenure systems and property rights
- Land Information System: Land Records, Transparency in land transaction, methods of publicizing land prices and land price monitoring;
- Land Policy and Land Markets, Development of Land and Real Property; valuation of real property – principles and practices; private ownership and social control of land;
- Land price behaviour in Metropolitan cities in India;
- Synthesizing demography, land economics, and Ekistics
- Case study/Application: Evidence-based planning and decision-making

Essential Readings

Arthur O'Sullivan. Urban Economics. McGraw-Hill Education.

Edwin S. Mills. Urban Economics. Scott, Foresman & Company.

Paul N. Balchin, Gregory H. Bull & Jeffrey L. Kieve. Urban Land Economics and Public Policy. Palgrave Macmillan.

Matthew Carmona, Tim Heath, Taner Oc & Steve Tiesdell. Public Places, Urban Spaces: The Dimensions of Urban Design. Routledge.

Geoffrey K. Ingram & Yu-Hung Hong (Eds.). Municipal Revenues and Land Policies. Lincoln Institute of Land Policy.

United Nations Population Fund (UNFPA). State of World Population Reports.

United Nations Human Settlements Programme (UN-Habitat). World Cities Report.

Census of India Reports (Latest Available).

Indian Policy Documents

National Urban Housing and Habitat Policy.

National Land Records Modernization Programme (Digital India Land Records Modernization Programme).

National Urban Livelihoods Mission Guidelines.

Ministry of Housing and Urban Affairs (MoHUA) Reports.

Supplementary References

Richard Arnott. Urban Economics.

William Alonso. Location and Land Use.

David Harvey. Social Justice and the City.

Richard Peet. Modern Geographical Thought.

OECD. Cities in the World.

World Bank. Cities and Productivity Reports.

MEKD-115: Project Studio -I: Area Appreciation Through Ekistics

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Course Rationale:

This studio introduces the principles of Ekistics developed by Constantinos A. Doxiadis, viewing human settlements as dynamic systems shaped by the interaction of Nature, Man, Society, Shells, and Networks. The studio emphasizes analytical and design-based approaches to understanding settlement growth, hierarchy, movement, and adaptability. Students explore Doxiadis' theoretical concepts and built projects to develop contemporary settlement planning skills.

Course Objectives

The course aims to enable students to:

- Apply Ekistics principles in settlement analysis.
- Understand growth through hierarchy, grids, and networks.
- Analyze Doxiadis' planning projects and regional proposals.
- Develop human-centered settlement designs.
- Integrate theory, analysis, and design in planning practice.

Learning Outcomes

On completion of the studio, students shall be able to:

- Conduct multi-scalar settlement analysis.
- Prepare Ekistics diagrams and growth models.
- Design settlement systems responsive to social, environmental, and infrastructural factors.
- Synthesize analytical and design approaches into coherent studio proposals.

Teaching Methodology

- Studio exercises and critiques
- Case studies and seminars
- Diagramming and mapping workshops
- Site studies and field analysis
- Discussions on Doxiadis' writings and projects.

Studio Content**Unit I: Foundations of Ekistics (Weeks 1–3)**

Introduction to the five Ekistics elements, human scale, movement systems, time as a planning parameter, and settlement hierarchy. Exercises include mapping existing settlements, studying activity patterns, and analyzing relationships between social and physical systems.

Unit II: Doxiadis' Built Works (Weeks 4–6)

Analytical study of selected Doxiadis projects such as Islamabad, Tema, Riyadh, and Greek new towns. Students undertake comparative analysis of planning structure, hierarchy, growth patterns, and movement systems through drawings and analytical diagrams.

Unit III: Settlement Growth and Dynapolis (Weeks 7–9)

Study of settlement growth, linear development, transportation corridors, and dynamic urban expansion. Exercises include growth simulations, phased development models, and network-based planning approaches.

Unit IV: Ekistic Design Studio (Weeks 10–14)

Preparation of a settlement design proposal based on Ekistics principles. Projects may include new towns, urban extensions, climate-responsive settlements, or rehabilitation schemes. Emphasis is placed on hierarchy, movement systems, growth patterns, and human-scale environments.

Unit V: Contemporary Relevance of Ekistics (Weeks 15–16)

Critical examination of the applicability of Ekistics in present-day contexts including climate change, informal settlements, smart cities, and mega-regions. Students develop critical reflections and reinterpretations of Doxiadis' ideas.

Recommended Readings

Doxiadis, C.A. *Ekistics: An Introduction to the Science of Human Settlements*.

Doxiadis, C.A. *Islamabad: The Creation of a New Capital*.

Tyrwhitt, J. et al. *Ekistics Journal* (selected issues).

Mumford, L. *The City in History*.

Contemporary literature on settlement systems, urban growth, and regional planning.

MEKD–214: Transportation Planning

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent

The course provides an understanding of transportation planning principles, travel demand analysis, and sustainable mobility systems. It emphasises the integration of transport planning with land use planning and introduces students to planning tools, policies, and contemporary transport challenges in India.

Course Objectives

- To introduce concepts and processes of transportation planning.
- To understand travel behaviour, demand forecasting, and transport network analysis.
- To examine the relationship between transportation systems and land use planning.
- To familiarize students with sustainable mobility practices and Indian transport policies.

Learning Outcomes

Upon completion of the course, students will be able to:

- Explain transportation planning principles and their role in urban and regional development.
- Analyse travel demand using basic transportation planning techniques.
- Evaluate different transport systems and planning strategies for sustainable mobility.
- Assess transport policies and planning interventions in the Indian context.
- Apply planning concepts for integrated transport and land-use development.

Teaching Methodology

- Classroom lectures supported by planning examples.
- Case studies on metro systems, BRT, TOD, and NMT.
- Map-based and network analysis exercises.
- Policy review and discussion sessions.
- Group assignments and student presentations.

Unit 1: Fundamentals of Transportation Planning

- Evolution of transportation systems
- Role of transportation in urban and regional development
- Transportation planning process: stages and stakeholders
- Transport–land use interaction
- Classification of transport systems: road, rail, public, non-motorized, freight
- Basic transport terminology and performance indicators

Unit 2: Travel Demand and Network Analysis

- Concepts of travel behaviour and trip characteristics
- Data collection techniques: O-D surveys, traffic counts, household surveys
- Travel demand modeling framework (Four-Step Model):
- Trip generation/Trip distribution/Mode choice
- Introduction to network analysis and level of service (LOS)

Unit 3: Urban Transport Systems and Planning Tools

- Public transport planning: bus systems, metro, suburban rail, BRT
- Non-motorized transport (NMT): walking and cycling infrastructure
- Traffic management and demand management strategies
- Parking planning and regulation
- Introduction to transport planning tools: GIS applications, basic simulation concepts

Unit 4: Sustainable and Indian Context of Transport Planning

- Sustainable urban mobility concepts
- Transit-oriented development (TOD)
- Environmental and social impacts of transport
- Urban transport issues in Indian cities
- National Urban Transport Policy (NUTP)
- Case studies of Indian cities (metro, BRT, NMT initiatives)

Essential Readings

S. K. Khanna & C. E. G. Justo. *Highway Engineering*.
C. S. Papacostas & P. D. Prevedouros. *Transportation Engineering and Planning*.
Juan de Dios Ortúzar & Luis G. Willumsen. *Modelling Transport*.
Vukan R. Vuchic. *Urban Transit Systems and Technology*.
Vukan R. Vuchic. *Urban Public Transportation Systems and Technology*.
Roger P. Roess, Elena S. Prassas & William R. McShane. *Traffic Engineering*.

Indian Policy Documents

National Urban Transport Policy (Government of India).
Transit-Oriented Development Policy Framework (MoHUA).
Indian Roads Congress (IRC) Guidelines.
Metro Rail Policy (Government of India).
Street Design Guidelines by MoHUA.

Supplementary References

Peter White. *Public Transport: Its Planning, Management and Operation*.
Rodney Tolley. *Sustainable Transport*.
Institute of Transportation Engineers (ITE). *Transportation Planning Handbook*.
UN-Habitat. *Planning and Design for Sustainable Urban Mobility*.
World Bank. *Urban Transport Strategy Review*.

MEKD-215: Project Studio-II: Structure & Dynamics of City

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
L	ST	IA	WR	VV	TOTAL		
-	4	60	-	40	100	-	4

Course Rationale

This studio extends the Ekistics framework introduced in Semester I from the settlement scale to the scale of the whole city. Building on Doxiadis' five elements-Nature, Man, Society, Shells, and Networks-the studio examines the city as an integrated, evolving organism whose form is shaped by land, people, institutions, built fabric, and infrastructure networks acting together. Students undertake a rigorous empirical analysis of a chosen city or a defined city sector, and translate that analysis into a city-level spatial proposal, addressing structure, hierarchy, movement, land use, and human-scale liveability within the larger urban system.

Course Objectives

- Apply the Ekistics Grid and the five elements to read and analyze an existing city.
- Understand city structure through land use, density, hierarchy of centres, and community units.
- Analyze Doxiadis' city-scale works and comparable planned/unplanned cities.
- Study urban movement systems, infrastructure networks, and the concept of Dynapolis at the city scale.
- Integrate analysis, diagramming, and design into a coherent city-level studio proposal.

Learning Outcomes

- Conduct a multi-layered analysis of a city or city sector (physical, social, economic, environmental, infrastructural).
- Prepare city structure diagrams, land use plans, and hierarchy/network maps using Ekistics tools.
- Formulate a city-level spatial strategy responsive to growth, mobility, and human scale.
- Produce a complete set of analytical drawings, a design proposal, and supporting documentation as final studio output.

Teaching Methodology

- Studio exercises, desk critiques, and jury presentations on selected City for study
- City-scale case studies and comparative seminars
- GIS/mapping and diagramming workshops
- City-level field surveys and stakeholder/expert interactions
- Discussions on Doxiadis' city projects and contemporary urban theory

Studio Content

Unit I: The City as an Ekistics System (Weeks 1–3)

Reading the city through the five Ekistics elements; city-region relationship; hierarchy of human settlement units from dwelling to metropolis, land use, density, and community structure. Exercises include base-mapping of the chosen city/sector, land-use and density surveys, and preparation of a city profile establishing the analytical baseline for the studio.

Unit II: Comparative Study of Planned and Evolved Cities-Global Comparators (Weeks 4–6)

Analytical study of Doxiadis' city-level works (Islamabad's sector planning, Riyadh) alongside a global cross-section of planned and organically evolved cities. Each student/group selects one planned and one organically evolved city for comparative analysis of urban structure, hierarchy of centres, movement systems, and growth logic through drawings, figure-ground plans, and analytical diagrams.

Suggested comparators (planned cities):

- Islamabad, Pakistan — Doxiadis, Dynapolis and sector-based growth
- Brasília, Brazil — Lúcio Costa and Oscar Niemeyer, Plano Piloto
- Canberra, Australia — Walter Burley Griffin, geometric city plan
- Chandigarh, India — Le Corbusier, sector-based Modernist plan
- Putrajaya, Malaysia — planned administrative capital
- Songdo, South Korea — contemporary smart/new-town city
- Milton Keynes, United Kingdom — post-war British new town, grid structure

Suggested comparators (organically evolved cities):

- Paris, France — Haussmann's 19th-century restructuring
- Barcelona, Spain — Cerdà's Example grid extension
- Tokyo, Japan — polycentric growth around rail nodes
- Cairo, Egypt — historic core with organic and planned overlays
- An Indian historic city of the student's choice (e.g., Jaipur, Ahmedabad, or the Delhi Walled City)

Unit III: Urban Growth, Infrastructure and Movement Networks (Weeks 7–9)

Study of urban growth patterns, transportation and mobility networks, physical and social infrastructure, and the idea of Dynapolis applied at city scale. Exercises include growth-trend mapping, network and accessibility analysis, and identification of infrastructural gaps and opportunities within the chosen city or sector.

Unit IV: City-Level Design Studio (Weeks 10–14)

Preparation of a city-level spatial proposal grounded in the preceding analysis. Projects may include a city sector plan, an urban extension, a redevelopment or regeneration scheme, or a mobility- and infrastructure-led restructuring proposal. Emphasis is placed on hierarchy of centres, movement and network integration, land use rationalization, and human-scale urban design. Final submission comprises analytical drawings (base maps, land use, density, movement, and infrastructure diagrams) together with the design proposal (structure plan, sector/precinct plans, sections, and illustrative views).

Unit V: Contemporary Urban Issues (Weeks 15–16)

Critical examination of contemporary urban challenges — climate resilience, informal settlements within the city, transit-oriented development, heritage integration, and smart-city interventions — and their bearing on the studio proposal. Students prepare critical reflections situating their design within current urban planning discourse.

Recommended Readings

Doxiadis, C.A. Ekistics: An Introduction to the Science of Human Settlements

Doxiadis, C.A. Islamabad: The Creation of a New Capital (city sector and hierarchy chapters).

Lynch, K. The Image of the City.

Jacobs, J. The Death and Life of Great American Cities.

Kalia, R. Chandigarh: A Study of the City and its Monuments (or equivalent Chandigarh planning literature).

Holston, J. Brasília: A Novel (or equivalent literature on the Plano Piloto), and Griffin's Canberra plan reports.

Abercrombie, P. The County of London Plan / Greater London Plan 1944 (relevant chapters).

Tyrwhitt, J. et al. Ekistics Journal (selected issues on city planning).

Contemporary literature on urban design, city structure, and mobility planning across global case cities.

MEKD-216: Dissertation II (EKD)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Course Rationale

Doxiadis' Ekistics framework places Man and Society, alongside Anthropos, at the centre of the settlement system, alongside Nature, Shells, and Networks. This dissertation course asks students to move beyond the physical and spatial reading of settlements undertaken in the studios and engage directly with the social life of the city — its people, communities, institutions, and everyday practices. Running alongside the City-Level Studio, it builds a complementary, socially grounded research capability: students select a theme from the social dimensions of urban life, undertake empirical fieldwork, and produce a scholarly dissertation that examines how society and the human subject shape, inhabit, and contest the city.

Course Objectives

- Situate the Anthropos and Society elements of Ekistics within contemporary urban social theory.
- Develop competence in qualitative and quantitative social-science research methods applicable to the built environment.
- Undertake empirical fieldwork examining the lived, social dimensions of a chosen urban context or community.
- Critically synthesize theory and field findings into a coherent, evidence-based dissertation.
- Cultivate independent research, critical thinking, and academic writing ability.

Learning Outcomes

- Formulate a focused, feasible research problem within the social dimensions of the city.
- Design and conduct an appropriate primary study — survey, interview, ethnographic observation, oral history, or a combination.
- Analyze qualitative and/or quantitative social data using appropriate methods.
- Situate empirical findings within relevant sociological, anthropological, and Ekistics literature.
- Produce a complete dissertation report and defend it before a review panel.

Teaching Methodology

- Research methods seminars and literature-review workshops
- Individual guide-supervised mentoring
- Periodic proposal, mid-term, and draft reviews
- Fieldwork and primary data collection, with attention to research ethics
- Peer review and dissertation writing workshops

Dissertation Structure and Stages of Work

Stage I: Theme Selection and Literature Review (Weeks 1–3)

Identification of a research theme within the social dimensions of the city; preliminary literature review; framing of research questions and objectives; identification of a suitable study area, community, or social group. Submission of a dissertation proposal outlining theme, questions, objectives, and study area.

Stage II: Research Design and Methodology (Weeks 4–6)

Development of a detailed methodology — selection of qualitative and/or quantitative methods (household or individual surveys, semi-structured interviews, participant observation, oral histories, social mapping); sampling strategy; preparation of research instruments; pilot testing and refinement.

Stage III: Fieldwork and Primary Data Collection (Weeks 7–10)

Conduct of primary fieldwork within the chosen community or settlement; surveys, interviews, and structured observation; documentation of social practices, spatial use, and community narratives; attention to informed consent and other ethical considerations in research involving human subjects.

Stage IV: Data Analysis and Synthesis (Weeks 11–13)

Analysis of qualitative and/or quantitative field data — thematic coding, cross-tabulation, or narrative analysis as appropriate; cross-referencing of findings with literature and theoretical frameworks; synthesis in relation to the Ekistics framework of Man, Society, and Shells.

Stage V: Dissertation Writing, Submission and Viva (Weeks 14–16)

Structuring and writing of the dissertation report; internal review and revision; final submission and viva-voce defence before a review panel.

Suggested Thematic Areas

- Urban Poverty and Livelihoods
- Urban Sociology: Community, Neighbourhood and Social Structure
- Urban Ecology and the Human–Nature Interface
- Gender, Everyday Life and Access to Public Space
- Informality: Informal Settlements, Economies and Labour
- Migration, Displacement and the City
- Housing, Segregation and Social Exclusion
- Urban Anthropology: Ritual, Memory and Everyday Practice
- Children, Youth, the Elderly and the Inclusive City
- Urban Health, Wellbeing and the Social Determinants of the City
- Caste, Class and Spatial Segregation
- Urban Governance, Citizen Participation and the Political Life of the City
- Heritage Communities and Living Traditions

Recommended Readings

Doxiadis, C.A. Ekistics: An Introduction to the Science of Human Settlements (Anthropos and Society chapters).

Wirth, L. Urbanism as a Way of Life (essay).

Simmel, G. The Metropolis and Mental Life (essay).

Perlman, J. The Myth of Marginality: Urban Poverty and Politics in Rio de Janeiro.

Simone, A. For the City Yet to Come: Changing African Life in Four Cities.

Roy, A. & AlSayyad, N. Urban Informality: Transnational Perspectives from the Middle East, Latin America, and South Asia (eds.).

Bhan, G. In the Public's Interest: Evictions, Citizenship, and Inequality in Contemporary Delhi.

Baviskar, A. Uncivil City: Ecology, Equity and the Commons in Delhi.

Contemporary literature on urban sociology, anthropology, and social-research methods relevant to the chosen dissertation theme.

M. Arch (Energy and Sustainability)

Code: MEAS

MEAS-114: Sustainability and Energy Systems in Architecture

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent

- Developing a comprehensive understanding of sustainable energy systems and its impact on creating more environmentally responsible architecture.
- Introducing the students to different sustainability methods and approaches and enabling them in applying these strategies for more holistic solutions.
- Familiarising them with emergent technologies to generate a more energy efficient and sustainable architecture.

Methodology

- Classroom teaching would include lectures and presentations.
- Conducting case studies, researching the literature (journals, books, etc).

Contents

The dissertation shall involve an independent research investigation focusing on any aspect of Indian

Architecture:

Principles of architectural design and planning for sustainable and energy-efficient built environments: Overview of passive design strategies, thermal comfort and building envelope, role of daylighting.

Sustainable materials and construction techniques: Contemporary and emergent materials with higher sustainability factors.

Innovative Architectural solutions: Concepts like green buildings, net-zero energy buildings and carbon-negative architecture, Building integrated photovoltaic systems, energy generating facades, kinetic facades and adaptive facades.

Sustainability:

Sustainability concepts: basic principles of sustainability based on environmental, social and economic dimensions. Application of concepts like cradle to cradle to approach, for resource optimization and waste reduction.

Life cycle cost assessment: environmental impact assessment of material selection and construction technique, the role of circular economy in sustainability.

Sustainability standards and certifications: green building standards and certifications such as LEED, BREEAM, and well. Understanding of rating systems of GRIHA and IGBC.

Energy systems:

Energy crisis and management: overview of building energy use and energy demand management concepts, energy system and the global challenges for the energy crisis; comparative analysis of conventional and renewable energy sources, strategies for energy efficiency in building design.

Renewable Energy Technologies: Overview of solar energy systems (role of building-integrated photovoltaics and photovoltaic thermal systems), wind energy, geothermal energy, and biomass energy.

Understanding the building integration of renewable energy systems (RES): Identification of the latest advancements in renewable energy systems (RES), role of smart buildings in RES Integrated building systems, study of economic incentives and their impact on the adoption of RES in the built environment.

Suggested Reading:

Labriet, M., Espegren, K., Giannakidis, G., & Gallachóir, B. Ó. (2024). *Aligning the Energy Transition with the Sustainable Development Goals*. Springer Nature Switzerland. <https://doi.org/10.1007/978-3-031-58897-6>

"Renewable Energy: Power for a Sustainable Future" by Godfrey Boyle

"Integrating Renewable Energy in Buildings: A Guide for Architects" by Umberto Desideri

"Green Architecture: Advanced Technologies and Materials" by Osman Attmann

MEAS-115: Project Studio-I: Sustainable Energy system

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Intent:

- To enable the student in identifying the critical sustainability and energy efficient parameters of design.
- Help them in understanding the design aspects of integrating these identified parameters.
- To give hands-on experience in applying and assessing energy efficiency and sustainability parameters and implementing these strategies in professional practice.

Content:

The focus of the studio is to enable the student in comprehending the concepts of energy efficiency, sustainability and architectural practices in a holistic manner.

The students are assigned an internal space for developing based on the concept of efficient, sustainable architectural design.

The aim of the studio is to emphasize the importance of researching and identifying the approaches, and strategies of energy efficiency and sustainability with respect to the design of interior spaces.

It would cover different aspects of indoor environment such as lighting system optimization, thermal comfort through ventilation and material selection, use of passive design strategies focussing on the building envelope etc. Groups of students would select different aspects of the indoor environment performance (based on energy efficiency, sustainability) and would develop design strategy that would address the challenges encountered and propose an architectural solution.

The designed model would be validated with the help of energy modelling software. The key aspects to be worked upon are daylight utilization, thermal comfort, HVAC load reduction, and material selection.

The students would be required to submit a proposal report demonstrating their integrated sustainable, energy efficient design for the indoor space, supported by simulation reports and findings. The report should also reflect on the critical evaluation of applied strategies and their role in contributing to a broader sustainability goal.

MEAS-214: Sustainability and Energy Systems in Architecture-II

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent

- Understanding and critically analysing advanced concepts of innovative architectural design, and construction to achieve energy efficiency and sustainability.
- Identifying and applying the concepts of energy efficiency and sustainability.
- Evaluating the feasibility of sustainable materials, construction techniques and practices.

Methodology

Classroom teaching would include lectures and presentations.

Conducting case studies, researching the literature (journals, books, etc).

Contents***Architecture:***

Innovative architectural sustainability theories: Overview of emergent sustainable and energy efficient materials and techniques. Concepts of digital design and fabrication technologies and their role in achieving sustainability.

Advanced sustainable architectural strategies: Bioclimatic design, role of site planning and micro climatic regulating techniques and their role in achieving sustainability.

Carbon Negative and Net Zero Architecture: Case studies of buildings with concepts of carbon negative and net zero energy. Understanding of principles of design and strategies of achieving these concepts. Role of building information and modelling in designing a carbon negative or net zero architecture.

Sustainability:

Advanced building materials and sustainability analysis: Study of materials like recycled composites, bio-concrete, self-healing systems, and FSC-certified wood for reduced ecological footprint. Concepts like cradle-to-cradle approach, life cycle cost assessment.

Regulatory framework for architectural sustainability: Study of building sustainability rating systems such as Griha, LEED, BREAM. Role of green building councils in creating sustainable architecture.

Advanced Sustainability concepts: Crisis of climate change, role of IPCC in combating climate change, role of international energy agency in creating climate responsive built environment. The concepts of waste- water management, green roofs, and indoor air quality via non-toxic finishes and daylight optimization.

Thermal Performance of Building Envelope Material: The Study of the thermal properties of building materials; Study of the properties of the different envelope components with respect to thermal performance; Design strategies for improving the thermal performance of the envelope; Emerging materials and techniques of insulation for better thermal performance.

Energy Systems:

Passive design solution of energy efficiency: Principles of daylight utilization, utilization of thermal lag, heat transfer and the role of architectural layout and planning.

Active design strategy for energy efficiency: Solar PV integration, smart HVAC, smart grids, and renewable sources like wind turbines.

Energy efficiency and the role of HVAC systems: Relationship between HVAC system, thermal comfort, and energy efficiency; impact of building envelope on HVAC loads with emphasis on the role of doors, windows, and shading devices; Study of HVAC technologies for enhanced thermal performance: Heat Recovery Ventilators, energy recovery ventilators, VRV and VRF systems, radiant heating and cooling system.

Software: Overview of commonly used architectural simulation tools, such as Energy Plus, Design Builder, RetScreen Expert.

Suggested Reading:

"Thermal Performance of the Exterior Envelopes of Whole Buildings IX" (Proceedings of Conferences by the ASHRAE and the Thermal Performance of Building Envelopes conferences)

Bauer, M., Möslle, P., & Schwarz, M. (2010). *Green Building: Guidebook for Sustainable Architecture*. Springer. ISBN 978-3-642-00634-0.

Maclay, W. (2014). *The New Net Zero: Leading-Edge Design and Construction of Homes and Buildings for a Renewable Energy Future*. Chelsea Green Publishing.

Szokolay, S. V. (2008). *Introduction to Architectural Science: The Basis of Sustainable Design* (2nd ed.). Routledge. <https://doi.org/10.4324/9780080878942>

Building Science for Building Enclosures" by John Straube and Eric Burnett

MEAS-215: Project Studio-II: Sustainable Energy System

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Intent:

- To develop an understanding of passive and active strategies to enhance thermal comfort in the built environment.
- It aims to build on indoor space design by expanding the sustainability scope to a holistic site scale, fostering skills in environmental responsiveness, sustainable site planning, and energy-conscious architectural solutions.
- Integrate the architectural design parameters with suitable technologies in creating efficient and optimised thermal comfort for the occupant.
- Evaluating and validating the design through simulation tools.

Content

The studio will focus on designing a mid-sized energy efficient and sustainable building demonstrating strategic approach to site analysis and optimization, emphasizing integration with the natural environment.

The aim of the studio would be to integrate principles of site-specific solar orientation, prevailing wind harnessing for natural ventilation, water conservation through landscaping and rainwater harvesting, and use of renewable energy systems.

Students will develop designs that minimize energy consumption through passive heating and cooling strategies while maximizing occupant comfort. The studio should encourage innovative use of green building materials and sustainable construction practices that connect interior and exterior environments seamlessly.

The applied technologies would be simulated and verified with a non-complex simulation tool. The assessment criteria should highlight the emphasis on thermal comfort with compromising the energy efficiency of the system.

Students will document their design process, highlighting how site conditions influenced building orientation, massing, fenestration, and landscaping decisions. Energy modelling simulations must validate the project's efficiency.

MEAS-216: Dissertation II (EAS)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent

- To critically examine the existing architectural design and planning strategies for enhancing thermal comfort.
- Identifying, evaluating and analysing the literature as well as case studies to understand the integrational aspect.

Content

The aim of this dissertation would be to understand the fundamental aspects of planning and design in creating an enhanced thermal performance of the building achieved through literature review of techniques.

Identifying the enhanced thermal performance and at the same time achieving energy efficient solutions.

The dissertation would aim to understand the role of HVAC systems, application of standards from regulatory bodies and certification agencies in achieving enhanced thermal comfort.

The student would submit three synopses, out of which one topic would be selected.

A guide would be allotted to each student for conducting the research as well as guiding him/her through the process.

There will be submissions in stages in the form of presentations.

MEAS-315: Project Studio-III: Renewable Energy Systems

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	4	90	-	60	150	-	6

Intent

- To identify the renewable energy systems with highest feasibility of integration within the selected building typology.
- To familiarise students with laws, regulations and policies related to energy, sustainability and the regulatory framework of integrating the renewable energy systems within the building envelope.
- To cultivate the innovative ability of designing a more environmentally responsive and adaptive building.

Content

The studio aims to identify design solutions of developing a detailed architectural design that prioritize sustainability in terms of energy use, microclimate responsiveness, material choices, community interactions and resource efficiency.

The aim of this studio would be to design a sustainable neighbourhoods based on the concepts of mixed-use zoning to reduce transportation energy; integration of renewable energy systems; and sustainable construction techniques and materials.

The key components to be included orientation and massing of buildings to harness passive solar and natural ventilation; landscaping and green infrastructure for stormwater and heat island mitigation.

The students should incorporate site analysis emphasizing local climate, topography, and existing infrastructure, applying site optimization strategies learned previously but at a larger scale.

The integration would be based on holistic approach at the same time customised according to the building typology, compliance to energy laws and governmental policies.

The design should be in accordance with the laws, standards of the energy policies of the regulatory bodies.

Deliverables could include a comprehensive neighbourhood plan, architectural drawings of key building typologies, sustainability strategy documentation, energy modelling or simulation results, and a design rationale report explaining how their intervention meets energy efficiency and sustainability goals at the neighbourhood level. The technical documentation would also be supported by a report identifying the rationale for selecting the renewable energy system and outlining the process of designing the system.

MEAS-313: Energy Policy: Regulation and Governance

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
L	ST	IA	WR	VV	TOTAL		
2	-	20	30	-	50	3	2

Intent

- Critically analyse national and international energy laws, regulations and policies for transforming sustainable architecture.
- Evaluating the roles and functions of major international institutions involved.
- Identify and discuss current challenges and emerging trends in energy laws, including policy innovations and legal responses to energy transition and climate change.

Methodology

- Classroom teaching would include lectures and presentations.
- Conducting case studies, researching the literature (journals, books, etc).

Content

Energy Laws and Policies: Understanding the major global laws and policies governing oil, gas, and renewable energy; comparative study of energy laws and policies of different regions (for example EU Green Deal, US Clean Energy Act)

International Institutions for Energy Governance: Overview of the International Energy Agency (IEA) with reference to sustainable and energy-efficient building design; exploring the role of organizations such as IRENA, and UNFCCC; Understanding the important energy- and climate-related treaties signed and MOU's established in forums like COP.

Policies and Framework for adoption of Renewable Energy: Understanding the laws and framework governing the adoption of renewable energy; overview of drivers, enablers and incentives for reducing carbon footprint; Role of Kyoto protocol and Convention of Paris in furthering the cause of renewable energy adoption and reduction of carbon emissions.

Environmental and Social Governance in Energy: Overview of ESG (Environmental, Social Governance) standards in energy investments; Analysis of laws and policies related to Energy projects impact on the environment, Society and governance; Corelation of energy security and governance.

Challenges and Emerging Trends in Energy Laws: Barriers in policy and laws related to the adoption of emerging technologies; Understanding the role of global cooperation to address the energy and climate challenges; Analysis of landmark energy law cases and governance models.

Suggested Reading

Glachant, Jean-Michel, and Catherine Locatelli, editors. Energy Policy and Regulation in the European Union. Elsevier, 2019. ISBN: 978-0128164834.

Bahar, Mohammad. International and EU Energy Law and Policy. Routledge, 2020. ISBN: 978-0367414064.

Harris, PaulG. Renewable Energy Law and Policy: Countries and Regions Worlwide, Routledge, 2014. ISBN:978-145452812

MEAS-314: Sustainable Architecture and Renewable Energy Systems

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent

- To integrate architecture and renewable energy systems, creating a sustainable solution.
- Understanding the role of renewable energy systems in transforming the architecture and developing a more efficient solution.
- Identify and discuss current challenges and emerging trends in renewable energy and its applicability to architecture.

Methodology

- Classroom teaching would include lectures and presentations.
- Conducting case studies, researching the literature (journals, books, etc).

Contents:

Fundamentals of renewable energy and RES:

Renewable Energy and RES (Renewable Energy Systems): Understanding the concept of RES; Analysis of the role and impact of RES on the built environment; examining the role of RES in major energy laws and policies.

Solar Energy Systems and its impact on the built environment: Understanding of basic terminologies with relation to solar energy (e.g. solar radiation, irradiation, insolation, azimuth, orientation); Study of Photovoltaics and Building Integrated Photovoltaics (BIPV); Emerging trends in the field of BIPV focussing on the emergent PV technology; Examination of design strategies for integrating PV with the architecture.

Wind Energy Systems in Building: Understanding the basic terminologies related to wind energy systems, examining the feasibility of integration of wind energy systems within the building design (i.e. utilising the wind velocity for wind driven ventilation, passive cooling strategies); examining the correlation of wind energy systems and urban design.

Geothermal and Biomass Energy Systems: Concept of geothermal energy and biomass energy systems; application of the geothermal energy systems in the architecture; strategies for integrating the geothermal and biomass energy systems within the site planning and zoning layout.

Architectural Sustainability and Integration Strategies:

Concepts of architectural sustainability: Exploration of concepts like resilience and adaptability in architecture. Climate responsive design to address climate variability and future environmental challenges.

Energy efficiency and building performance: Energy modelling and simulation methods. Discussion of various software's with both energy and architecture interface; discussions of software with capability to incorporate the energy systems along with architectural inputs (i.e. PV Sol, PVSyst, Energy Builder etc.)

Integration strategies: Passive solar design and daylighting techniques, Building-integrated photovoltaics (BIPV), Solar thermal systems in building applications, Wind energy considerations in urban and architectural settings, Geothermal heating and cooling in buildings

Suggested Reading:

Freundlich, Gerald, and Ludovic Larif. *Understanding Renewable Energy Systems*. Wiley, 2018. ISBN: 978-1119158456.

Koehne, Jessica. *Renewable Energy Systems: Enhanced Resilience, Lower Costs*. Wiley, 2021. ISBN: 978-1119519943.

Nikolakakis, Ioannis, et al., editors. *Optimization of Hybrid Renewable Energy Systems*. Academic Press, 2020. ISBN: 978-0128206873.

Dincer, Ibrahim, and Calin Zamfirescu, editors. *Sustainable Energy Systems and Applications*. Wiley, 2019. ISBN: 978-1119218883.

Koutroulis, Elias. *Particle Swarm Optimization of Hybrid Renewable Energy Systems*. Elsevier, 2022. ISBN: 978-0128248035.

MEAS-316: Research Project (EAS)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent

- To help the student in preparing a project proposal for the thesis to be conducted in semester four.
- To develop an investigative approach towards the thesis, by ensuring rigorous literature review and analysis.
- To develop the aims and objectives to be achieved in the thesis, by critical review of existing research related to the field of study.

Content

The aim of this research project would be to help students develop a clear and detailed research proposal for their thesis in semester 4. The research project would highlight the selection of the thesis topic, supported by relevant literature review and feasibility study.

The report would establish the aims, objectives, methodology, tools and scope of the research. The focus would be to conduct a detailed literature review and identify the research gaps and derive methodical process of conducting the research.

In this semester the student should be able to define the challenges and barriers in integrating, designing an energy efficient solution through the application of renewable energy systems and other sustainability strategies.

MEAS 411: Thesis (EAS)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	12	200	-	150	350	-	14

Intent

The objective of the thesis project is analysing the ability of the student to design an energy efficient, sustainable design project, with the help of renewable energy systems, passive design approaches and effective strategies of integrating the sustainability aspect.

The project context should be within the current needs and governmental policies.

The student should be able to design a building (residential, commercial, institutional) which should be efficient and sustainable. The integration of renewable energy system should be the part of initial concept.

The design should be supported by relevant research, and validation should be done through simulation.

The design should adhere with the regulatory norms, standards and policies related to energy.

Methodology

The student should submit the final synopsis based on the research project developed in the third semester.

A guide to supervise the studies will be appointed for each student.

Regular progress in studio will be carried in stages during the exercise; each stage will have a presentation to the internal jury for thesis.

The stage submissions must be based and supported by detailed analytical studies that lay down the validity of the design criteria and detailed methodology.

MEAS 412: Seminar: Project Management (EAS)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	4	90	-	60	150	-	6

Intent

- Critically assess innovative and sustainable technologies relevant to energy use in buildings and urban settings.
- Identify and analyse key challenges related to climate change, carbon emissions, and the transition from fossil fuels to renewable energy systems.
- Conduct in-depth research to evaluate emerging technologies and their applicability in architectural design and energy optimization.

Methodology

To Prepare a research project focused on innovative, emerging technologies in energy optimization, sustainability, and renewable energy integration, a structured, interdisciplinary, and research-driven approach is essential.

It should enable individual students to investigate key climate change issues, carbon emissions, fossil fuel dependence, and renewable solutions, culminating in actionable architectural innovations.

Develop comprehensive research projects proposing feasible, innovative solutions for sustainable energy integration in the built environment.

Stages of submissions would be defined broadly based on:

Literature Review and Problem Identification: Conduct a comprehensive review of recent advances in energy optimization technologies, sustainable design principles, and renewable energy integration within the built environment. Identify existing gaps, challenges, and opportunities particularly related to climate change mitigation, carbon emissions, and transitioning away from fossil fuels

Research Design and Conceptual Framework Development: Selecting the appropriate and feasible research design (i.e. qualitative, quantitative and mixed methods). Development of conceptual framework model, with defined processes and methods to be followed.

Data collection and identification of tools of conducting the research

Analysis and synthesis

Communicate research findings effectively through written reports and presentations.

M. Arch (Recreation Architecture)

Code: MREA

MREA-114: Recreation Architecture: Concepts & Paradigms

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent:

- The course aims to introduce students to the fundamental concepts, evolution, and paradigms of recreation and their significance in enhancing human well-being, community development, and sustainable urban environments.
- It explores the interdisciplinary relationship between recreation, leisure, tourism, society, economy, and the built environment.

Learning Outcomes:

- Students are able to explain the concepts, evolution, and significance of recreation, leisure, and tourism, and their contribution to individual well-being and societal development.
- Assess the roles of public, private, and community organizations in the development, management, and governance of recreational facilities.
- Case Studies to be taken up by students (in consultation with the concerned teacher) for understanding through critical appreciation.

Contents:**Unit 1: Introduction to the Concept of Recreation**

- Meaning of recreation and benefits of Recreation
- Need of recreation and its impact on psychology and physiology of human behaviour.
- Understanding historical development of recreation through anthropological and sociological perspective
- Importance of recreation, leisure and tourism to national economies

Unit 2: Value of Recreation to economy and society

- Recreation and tourism as drivers of local, regional, and national economies
- relationship between recreation and leisure and concepts of globalization
- Role of Public, private sector organization
- Social equity, inclusivity, and accessibility in recreational planning
- Recreation needs and relevance across age groups, genders, and socio-economic strata

Unit 3: Introduction to Paradigms of Recreation

- Traditional Community-Oriented Paradigm
- Therapeutic Recreation Paradigm
- Sustainable Recreation Paradigm
- Adventure Experience Paradigm

Unit 4: Understanding of Recreational Spaces (in the realm of public spaces / Semi public/ Private)

- Cultural and performing art places / Community Centers
- Museums and Art Galleries
- Markets/ Haat/ CBD's.
- Parks and Gardens
 - Various typologies – Regional parks, District parks, City parks, Memorial gardens, Botanical gardens, Children parks, tot lots etc.
- Amusement Parks and Water Parks
 - With study of how these places can be energy and resource efficient.
- Sport complexes, stadiums and local *maidans*.

Suggested Readings:

People Places: Design Guidelines for Urban Open Space, *By Clare Cooper Marcus & Carolyn Francis*

The Social Life of Small urban Spaces, *William H Whytes*

The Economics of Recreation, Leisure and Tourism, *John Tribe*

Design for Outdoor Recreation by *Simon Bell*

Semester I

MREA-115: Project Studio-I: Ideation of Recreational Spaces

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Intent:

This studio aims to introduce students to the systematic understanding of neighbourhoods as socio-spatial entities, with a special focus on recreational patterns, open spaces, community life, and everyday leisure environments. The studio develops foundational skills in reading, documenting, analysing, and interpreting urban areas from the perspective of recreation planning and design.

Learning Outcomes:

- To develop an understanding of neighbourhood structure, character, and evolution.
- To analyze recreational spaces and activities at the neighbourhood scale.
- To develop an understanding of design consideration of the public spaces for recreation at a neighbourhood level.

METHODOLOGY:

- Students would be briefed about the design problem. In context to which they have to identify a potential site.
- Field work with documentation and analysis of existing issues and problems should help students frame a proposal
- Learning and Analysis has to be enhanced by taking up case studies, referring design standards and bye-laws.

EXERCISES:

Identification and ideation of recreational spaces in a neighborhood. Students will pick up a neighborhood in an urban area and conduct an area appreciation study and give proposals.

Suggested Readings:

Life between buildings, by *Jan Ghel*

The Image of the City, by Kevin Lynch

Recreation Planning and Development by *Neil Ravenscroft*

Recreation Centres: A design guide

URDPFI Guidelines, Government of India

Master Plans

Semester II

MREA-214: Designing with Nature

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	1	30	45	-	75	3	3

Intent:

- Understand natural systems (climate, soils, hydrology, vegetation, wildlife).
- Further learning towards application of ecological design principles and Integrate nature-based solutions (NBS) into planning process.
- Imparting knowledge regarding Urban Ecology making towards sustainability.

Learning Outcomes:

- Students able to explain the principles of ecological planning and environmental design and interpret their application in recreation architecture.
- Analyze ecosystem functions, natural systems and able to apply Nature-Based Solutions (NBS), and frame out ecological restoration strategies.
- Students able to identify the gaps present in the current situations

Contents:**Unit 1: Understanding of Design and Nature: Ecological Planning & Environmental Design**

Introduction to McHarg's ecological approach to planning and design, emphasizing the integration of natural systems—geology, hydrology, climate, vegetation, and human settlement

Unit 2: Understanding Natural Systems

- Understanding Ecosystems: General Structure and Function: Types of Biogeochemical cycles; Carbon cycle, Global water cycles, nitrogen cycle o Natural elements water, vegetation and land.
- Nature-based design philosophies, human–nature relationship in recreation
- Introduction to Nature-Based Solutions (NBS)

Unit 3: Nature-Based Solutions for Recreational Architecture

- Understanding of Green infrastructure, blue infrastructure
- Storm water management through design, Wetland restoration and conserving nature trails
- Implementing Green roofs, green walls and creating urban forests
- Climate resilient spaces through ecological design
- Improve Biodiversity through design for natural habitats

Unit 4: Environmental management for sustainable development

- Management of Natural Resources
- Environmental ethics and stewardship in Recreation architecture
- Carrying capacity and environmental sensitivity of sites

- Sustainable Approaches towards Recreation Design

Suggested readings:

McHarg, I. L. (1969). *Design with Nature*. John Wiley & Sons.

Beatley, T. (2011). *Biophilic Cities: Integrating Nature into Urban Design and Planning*. Island Press.

Benedict, M. A., & McMahon, E. T. (2012). *Green Infrastructure: Linking Landscapes and Communities*. Island Press.

Forman, R. T. T. (2014). *Urban Ecology: Science of Cities*. Cambridge University Press.

Steiner, F. (2011). *Landscape Ecological Urbanism: Origins and Trajectories*. Island Press.

Landscape Journals

Landscape Architecture in India, by Mohammad Shaheer

Semester II

MREA-215: Project Studio-II: Urban Recreational Landscapes

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	4	60	-	40	100	-	4

Intent:

This studio aims to develop students' ability to analyze, plan, and design urban recreational landscapes that enhance environmental quality, social interaction, and urban resilience. The course focuses on the integration of landscape architecture, urban ecology, public realm design, and recreational planning to create inclusive, accessible, and sustainable open spaces.

Learning Outcomes:

- To understand recreational systems and public open-space networks at the urban scale.
- To analyze the social, cultural, ecological, and spatial characteristics of urban landscapes and their relationship with recreation.
- To study the role of parks, waterfronts, public spaces, and cultural environments in enhancing urban quality of life.
- To develop design proposals that integrate recreation, ecology, accessibility, and urban vitality within the city fabric.

Methodology:

- Students will be introduced to an urban recreation design problem at the city scale.
- Identification of a suitable site within the city based on recreation potential, ecological sensitivity, and urban needs.
- Site analysis focusing on:
 - open-space networks
 - ecological systems
 - mobility and accessibility
 - social and cultural activity patterns.
- Study of relevant national and international case studies of urban recreational landscapes.
- Reference to design standards, planning policies, and development guidelines.
- Development of an integrated urban recreation proposal responding to environmental, social, and spatial considerations.

Studio Exercise:

A city will be selected to understand its urban stress, recreational deficiencies, and ecological characteristics. Students will analyze the relationship between urban growth, environmental systems, and community recreation needs, and develop design proposals for urban recreational landscapes such as parks, waterfronts, green corridors, cultural plazas, or leisure districts.

The studio aims to foster an integrated understanding of urban ecology, recreation infrastructure, public life, and sustainable development within the city.

Suggested Readings:

Design with Nature-Ian L. McHarg
Cities for People-Jan Gehl
Design for Outdoor Recreation-Simon Bell
Life Between Buildings: Using Public Space-Jan Gehl
The Landscape Urbanism Reader-Charles Waldheim
Cities and Natural Process: A Basis for Sustainability - M. Hough
People Places: Design Guidelines for Urban Open Space-Clare Cooper Marcus & Carolyn Francis
Public Places, Urban Spaces: The Dimensions of Urban Design- Carmona, M.
Recovering Landscape: Essays in Contemporary Landscape Architecture - Corner, J. (Ed.).
URDPFI Guidelines-Ministry of Housing and Urban Affairs, Government of India
Relevant Master Plans and City Development Plans of Indian cities

Semester II

MREA-216: Dissertation-II (REA)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent:

To develop the student's ability to undertake independent research on a selected typology of recreational and leisure spaces, fostering critical understanding of their planning, design, management, user experience, and socio-environmental significance. The dissertation aims to strengthen analytical and research skills while contributing to the advancement of knowledge in the field of Recreation Architecture.

Learning Outcomes:

- Students are able to identify and formulate a research problem related to a selected typology of recreational or leisure space within the domain of Recreation Architecture.
- Critically review and synthesize literature, theories, policies, and contemporary practices relevant to the chosen research topic.
- Apply appropriate qualitative, quantitative, or mixed research methodologies to investigate planning, design, management, user behaviour, and environmental aspects of recreational spaces.
- Analyze and interpret research findings to evaluate the functional, social, cultural, environmental, and economic performance of the selected recreational typology.
- Emphasizing research competency, critical analysis, evidence-based decision-making, and scholarly communication.

Submission:

The Dissertation report to be submitted at the end of the semester comprising the Study and conclusions/proposals/guidelines.

Suggested Readings

Design for Outdoor Recreation-Simon Bell

Cities for People-Jan Gehl

Life Between Buildings: Using Public Space-Jan Gehl

People Places: Design Guidelines for Urban Open Space-Clare Cooper Marcus & Carolyn Francis

The Landscape Urbanism Reader-Charles Waldheim

Design with Nature-Ian L. McHarg

URDPFI Guidelines-Ministry of Housing and Urban Affairs, Government of India

Semester III

MREA–313: Sustainable Tourism Planning & Development

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent:

It aims to provide students with a comprehensive understanding of the principles, processes, and practices of sustainable tourism planning and development within the context of Recreation Architecture. It examines the interrelationship between tourism, recreation, natural and cultural resources, and the built environment, emphasizing the need for responsible planning that balances environmental conservation, socio-cultural values, and economic growth.

Learning Outcomes:

- Analyze tourism resources, destinations, and visitor patterns to identify opportunities and challenges for sustainable tourism planning and development.
- Evaluate the environmental, social, cultural, and economic impacts of tourism and propose strategies to minimize adverse effects while enhancing destination resilience.
- Apply sustainable tourism planning principles, destination management strategies, and policy frameworks in the planning and development of tourism and recreational destinations. Able to prepare destination circuit.

Contents:**Unit 1: Tourism Systems and Sustainability**

- Tourism as a spatial and regional development system
- Concepts of sustainable and responsible tourism
- Tourism resources: natural, cultural, heritage, and recreational landscapes
- Tourism and regional development
- Tourism types as planning contexts: eco-tourism, adventure tourism, wildlife tourism, pilgrimage and cultural tourism

Unit 2: Tourism Resource and Infrastructure Planning

- Identification and assessment of tourism resources and attractions
- Planning of tourism infrastructure and visitor facilities
- Accessibility, mobility, and transport integration in tourism regions
- Carrying capacity and visitor management considerations
- Relationship between tourism development and environmental and cultural conservation

Unit 3: Tourism Circuits and Destination Planning

- Concept of tourism circuits and regional tourism networks
- Criteria for identifying and linking tourism destinations

- Planning of heritage, ecological, recreational, and pilgrimage circuits
- Basic principles of resort planning and destination design
- Illustrative national and international tourism circuit case studies

Unit 4: Governance, Impacts and Future Challenges

- Tourism policies and institutional frameworks (national and international)
- Destination management and stakeholder coordination
- Economic, environmental, and socio-cultural impacts of tourism
- Risk management and disaster preparedness in tourism regions
- Emerging challenges: overtourism, climate resilience, and sustainable destination management

Suggested Readings:

Inskeep, Edward – Tourism Planning: An Integrated and Sustainable Development Approach

Gunn & Var – Tourism Planning: Basics, Concepts, Cases

Hall, C. Michael – Tourism Planning: Policies, Processes and Relationships

Goodwin, Harold – Responsible Tourism: Concepts, Theory and Practice

Robin Jacob – Destination Planning and Development

Goeldner & Ritchie – Tourism: Principles, Practices, Philosophies

M.R. Dileep – Tourism: Concepts, Theory and Practice

UNWTO – Global Report on Adventure Tourism

Ministry of Tourism, Government of India – Tourism Policy and Circuit Development Guidelines

Semester III

MREA-314: Heritage Interpretation and Cultural Landscapes

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	-	20	30	-	50	3	2

Intent:

It aims to provide students with a comprehensive understanding of cultural landscapes and heritage resources as dynamic expressions of the interaction between people, place, and the environment. It introduces the principles and practices of heritage interpretation to enhance the communication of cultural significance and enrich visitor experiences. The course explores the interrelationship between heritage conservation, cultural tourism, landscape management, and community participation, emphasizing sustainable approaches to preserving both tangible and intangible heritage.

Learning Outcomes:

- Students will be able to explain the concepts, values, and characteristics of cultural landscapes and heritage resources, and evaluate their significance within architectural, environmental, and socio-cultural contexts.
- Analyze the principles, methods, and techniques of heritage interpretation for communicating the significance of cultural and natural heritage to diverse audiences.
- Assess the relationships between heritage conservation, cultural tourism, recreation, and landscape management to support sustainable destination development.

Content:**Unit 1: Heritage and Cultural Landscapes**

- Concepts of heritage and cultural landscapes
- Tangible and intangible heritage resources
- Historic landscapes, heritage precincts, and cultural routes
- Cultural significance, authenticity, and heritage values

Unit 2: Principles of Heritage Interpretation

- Concept and objectives of heritage interpretation
- Key principles and approaches to interpretation
- Interpretation for education, awareness, and tourism
- International frameworks and guidelines (UNESCO, ICOMOS)

Unit 3: Interpretation Strategies and Visitor Experience

- Methods of interpretation: heritage trails, exhibitions, storytelling, guided experiences
- Interpretive media: signage, panels, digital and audio-visual tools
- Interpretation centres and museums as spatial and experiential environments
- Design of visitor facilities and interpretive landscapes

Unit 4: Conservation, Adaptive Reuse and Landscape Management

- Conservation approaches for heritage landscapes and historic environments
- Adaptive reuse of heritage buildings and cultural landscapes
- Heritage management systems and stakeholder roles
- Visitor management, carrying capacity, and impact considerations

Suggested Readings:

Freeman Tilden – Interpreting Our Heritage

Timothy & Boyd – Heritage Tourism

Graham, Ashworth & Tunbridge – A Geography of Heritage

Jokilehto, J. – A History of Architectural Conservation

ICOMOS – Charter for the Interpretation and Presentation of Cultural Heritage Sites

UNESCO – World Heritage Cultural Landscapes Guidelines

Semester III

MREA-315: Project Studio-III: Regional Recreational Planning

CLASSES/ WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOT</i>		
2	4	90	-	60	150	-	6

Intent:

- To enable students so that they are able to work on relatively large scale exercise of analysis and proposals related to recreational spaces.
- The studio aims to develop students' ability to plan and design recreational systems at the regional scale by integrating natural landscapes, cultural resources, tourism networks, and ecological systems within a comprehensive planning framework.
- The studio focuses on understanding regional dynamics, environmental sensitivity, accessibility, land-use planning, and socio-economic factors that influence the development of recreational destinations and corridors.

Learning Outcomes:

- Analyze the physical, ecological, socio-cultural, and economic characteristics of a region to identify opportunities and constraints for recreational planning and development.
- Evaluate regional recreational resources, tourism assets, environmental systems, and infrastructure networks using appropriate planning and spatial analysis techniques.
- Prepare comprehensive regional recreational plans that integrate land-use planning, ecological conservation, accessibility, tourism development, and community needs.
- Students are able to communicate regional planning proposals through analytical maps, master plans, policy recommendations, design guidelines, and professional presentations, demonstrating an integrated approach to recreation and tourism planning.

Methodology:

- The studio exercise staking up real or hypothetical situations should be the basis for understanding and relating the information.
- Learning and Analysis has to be further by taking up case studies.
- Understand the scope of Regional Recreational Planning — planning, design and management of recreational spaces at regional scale (multiple towns/villages, landscape corridors, tourism zones).

Exercises :

- Developing a Tourist Master plan of a region (City/State level)
- Identify recreational gaps and opportunities at the regional level.
- Integrate planning policy and long-term viability

Suggested Readings:

Tourism Planning: Basics, Concepts, Cases-Clare A. Gunn

Design for Outdoor Recreation-Simon Bell

Design with Nature-Ian L. McHarg

The Landscape Urbanism Reader-Charles Waldheim

Cities for People-Jan Gehl

People Places: Design Guidelines for Urban Open Space-Clare Cooper Marcus & Carolyn Francis

Planning Guidelines / Policy References

URDPFI Guidelines-Ministry of Housing and Urban Affairs, Government of India

Tourism Development Plans-Ministry of Tourism, Government of India

Regional Plans / Master Plans of relevant states and regions

UN-Habitat Urban Planning and Design Guidelines

Semester III

MREA-316: Research Project (REA)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
-	2	30	-	20	50	-	2

Intent:

- To be able to understand the underlying concepts and ideas of Recreation and how they promote a certain socio-economic activity at a certain place.
- To understand the involvement of the community of that place and the role of built and existing heritage and that of the natural environment.

Learning Outcomes:

- Students are able to critically examine the concepts, theories, and paradigms of recreation and evaluate their influence on place-making, tourism, community development, and regional economies.
- Investigate the relationship between recreational spaces, the built heritage, natural environment, and local communities using appropriate qualitative, quantitative, or mixed research methodologies.
- Collect, analyze, and interpret primary and secondary data to evaluate user behaviour, spatial patterns, environmental conditions, and socio-economic impacts within the selected study area.
- Develop a well-structured research proposal supported by a comprehensive literature review, research methodology, analytical framework, and clearly defined objectives.

Methodology:

- This is a research exercise where student may choose a contemporary idea or an activity prevalent over the ages in an existing region/ city/ town with a predominant character that promotes the idea of recreation at the destination. The student is then required to study its various aspects as per the scope of the research.
- The student is required to make site visits, collect primary data. complete literature review on the topic.
- The student is advised to have regular discussions with the supervisor.

Submission:

The Research Paper to be submitted at the end of the semester comprising the Study and conclusions/proposals/guidelines.

Suggested Readings:

Design for Outdoor Recreation-Simon Bell

Cities for People-Jan Gehl

Life Between Buildings: Using Public Space-Jan Gehl

People Places: Design Guidelines for Urban Open Space-Clare Cooper Marcus & Carolyn Francis

The Landscape Urbanism Reader-Charles Waldheim

Design with Nature-Ian L. McHarg

URDPFI Guidelines-Ministry of Housing and Urban Affairs, Government of India

Tourism Development Plans-Ministry of Tourism, Government of India

Relevant Master Plans and Regional Development Plans

Semester IV

MREA-411: Thesis (REA)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	12	200	-	150	350	-	14

Intent:

- It provides students an opportunity to independently investigate, conceptualize, and design a comprehensive recreation-oriented architectural or urban project.
- To develop a research-driven architectural design proposal in the field of Recreation Architecture, demonstrating innovation, contextual sensitivity, technical competence, and professional preparedness.
- To demonstrate independent and comprehensive research ability in the field of recreation architecture, integrating planning, design, and management aspects. Identify and critically analyze a recreation-related issue or opportunity at an appropriate scale (regional, urban, site-specific, or system-based).

Methodology:

- The thesis project shall be undertaken as an independent design and research-based studio
- Identification and approval of a contemporary research and design problem in Recreation Architecture.
- Preparation of a research framework, including objectives, scope, methodology, and work plan.

Submission:

At the end of the term students are required to submit background research, site analysis with complete set of design proposals.

Semester IV

MREA-412: Seminar: Project Management (REA)

CLASSES / WEEK		MARKS				EXAM HOURS	CREDITS
<i>L</i>	<i>ST</i>	<i>IA</i>	<i>WR</i>	<i>VV</i>	<i>TOTAL</i>		
2	4	90	-	60	150	-	6

Intent:

The seminar is intended to guide students in the systematic planning, organization, and management of their thesis research in Recreation Architecture. It focuses on research formulation, methodology, project scheduling, ethical research practices, data management, and scholarly communication. Through continuous review and critical discussion, the seminar prepares students to undertake an independent, methodologically sound, and professionally presented thesis that addresses contemporary issues in recreation architecture.

Learning Outcomes:

- To understand project management principles in the planning, design, execution, and operation of recreational and tourism-based developments.
- To study project life-cycle stages—initiation, planning, execution, monitoring, and closure—in relation to recreation architecture projects.
- To examine key management parameters such as time, cost, quality, risk, and stakeholder coordination.
- To analyze project delivery models and implementation frameworks relevant to the student's thesis topic.
- To establish a clear linkage between management studies and the thesis project so that management strategies inform design decisions.

Methodology:

- Formulation of research questions related to project planning and management aspects of thesis topic.
- Selection and analysis of relevant national and international case studies similar to the thesis project, focusing on project delivery models, scheduling, phasing, and stakeholder involvement.
- Examination of management parameters such as time, cost, quality, and risk.
- Regular discussions with the supervisor to guide and refine the study.

Submission:

- A seminar research report shall be submitted at the end of the semester comprising the study, analysis, and conclusions or guidelines related to project management aspects of the thesis project.
- The report shall be 3000–4000 words, supported by illustrations, references, footnotes, and annotations where appropriate.
- Internal evaluation will be based on presentations, assignments, and the final report.

Suggested Readings:

Construction Project Management-K.K. Chitkara
 Project Management Body of Knowledge (PMBOK)— PMI
 Project Management: A Managerial Approach-Meredith & Mantel