ANNA UNIVERSITY, CHENNAI

POST GRADUATE CURRICULUM (NON.AUTONOMOUS AFFILIATED INSTITUTIONS)

Programme: M. Arch. **Regulations:** 2025

Abbreviations:

Category

PC – Professional Core

PE – Professional Elective

BS & AE – Basic Sciences & Applied Engineering

PAE – Professional Ability Enhancement

SD – Skill Development

HUM – Humanities (including Languages and others)

Course Type

S - Studio

T – Theory

TS – Theory cum Studio

IT – Internship Training

LIT – Laboratory Integrated Theory

TCP – Total Contact Period(s)

L – Lecture P – Practical

T – Tutorials S - Studio

Semester I

S. No.	Course Code	Course Title	Type	Periods s per week			TCP	Credits	Category
				L	T	P/S			
1.	MH25C01	Research Methodologies for Built Environment	T	3	0	0	3	3	PC
2.	MH25101	Process Driven Design	T	3	0	0	3	3	PC
3.	MH25102	Contemporary Architectural Practices	T	3	0	0	3	3	PC
4.	MH25103	Emerging Practices in Housing	T	3	0	0	3	3	PC
5.	MH25104	Sociology in Architecture	T	3	0	0	3	3	PC
6.	MH25105	Process Based Design Studio	S	0	0	10	10	10	PC
						Total	**25**	**25**	

Semester II (Prerequisite- Pass in Process Based Design Studio)

S. No.	Course Code	Course Title	Type	Periods per week			TCP	Credits	Category
				L	T	P/S			
1.	MH25201	Sustainable Architecture- Historic and Community Perspective	T	3	0	0	3	3	PC
2.	MH25202	Climate Change Adaptation and Resilience in Architecture	T	3	0	0	3	3	PC
3.	MH25C03	Geographical Information Systems for Built Environment	TS	1	0	3	4	4	PAEC
4.		Professional Elective I	---	X	X	X	3	3	PE
5.		Professional Elective II	---	X	X	X	3	3	PE
6.	-	Industry Oriented Course	---	X	X	X	---	1	SD
7.	MH25203	Sustainable Design Studio	S	0	0	10	10	10	PC
						Total	**26**	**27**	

Semester III (Prerequisite- Pass in Sustainable Design Studio)

S. No.	Course Code	Course Title	Type	Periods per week			TCP	Credits	Category
				L	T	P/S			
1.	MH25301	Urban Design: Theory and Practice	T	3	0	0	3	3	PC
2.	MH25302	Architectural Conservation: Policies and Practice	T	3	0	0	3	3	PC
3.	MH25303	Urban Infrastructure and Advance Technology	T	3	0	0	3	3	PC
4.		Professional Elective III	---	X	X	X	3	3	PE
5.	MH25304	Dissertation	T	0	0	4	4	4	PC
6.	MH25305	Urban Environment Design Studio	S	0	0	10	10	10	PC
7.	MH25306	Internship Training	---	---	--	---	---	2	SD
						Total	**26**	**28**	

Semester IV (Prerequisite- Pass in Urban Environment Design Studio)

S. No.	Course Code	Course Title	Type	Periods per week			TCP	Credits	Category
				L	T	P/S			
1.	MH25401	Thesis Project	S	0	0	20	20	20	SD
2.		Professional Elective IV	---	X	X	X	3	3	PE
						Total	**23**	**23**	

Professional Elective Courses (PEC)

S. No.	Course Code	Course Title	Periods per week			Total Contact Periods	Credits
			L	T	P/S		
1.	MH25001	Explorations in Architectural Form	2	0	1	3	3
2.	MH25C02	Environmental Psychology	3	0	0	3	3
3.	MH25002	Architectural Lighting	3	0	0	3	3
4.	MH25C04	Performance Evaluation of Buildings	2	0	1	3	3
5.	MH25C06	Soft Skills	2	0	1	3	3
6.	MH25003	Architectural Journalism and Photography	2	0	1	3	3
7.	MH25004	Retrofitting and Adaptive Reuse	3	0	0	3	3
8.	MH25005	Building Skins and Smart Materials	3	0	0	3	3
9.	MH25006	Anthropology and Architecture	3	0	0	3	3
10.	MH25007	Urban Cultural Landscapes	3	0	0	3	3
11.	MH25008	Sustainable Building Services and Water Management	3	0	0	3	3
12.	MH25C05	Psychology of Learning and Development	3	0	0	3	3
13.	MH25009	Facilities Programming and Management for Architecture	3	0	0	3	3
14.	MH25010	Architecture and Critical Theory	3	0	0	3	3
15.	MH25011	Landscape Urbanism	3	0	0	3	3
16.	MH25012	Appropriate Technologies and Sustainable Construction	3	0	0	3	3
17.	MH25C07	Theory of Architectural Education	3	0	0	3	3
18.	MH25013	Advanced Professional Practice	3	0	0	3	3

Semester I

MH25C01	Research Methodologies for Built Environment	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To give introduction to the importance of critical inquiry as a way of gaining knowledge and adding to it through research.
- To give exposure to the various forms of research and research methodologies/ processes.
- To understand research in the specific domain of built environment research.

Introduction: Basic research issues and concepts. Orientation to research process. Types of research: historical, qualitative, co-relational, experimental, simulation and modelling, logical argumentation, case study and mixed methods. Illustration using research samples including research in the domain of built environment.

Research Process: Elements of Research process: finding a topic, writing an introduction, stating a purpose of study, identifying key research questions and hypotheses, reviewing literature, using theory, defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis. Illustration using research samples including research in the domain of built environment.

Researching and Data Collection: Library and archives. Internet: New information and the role of internet. Finding and evaluating sources. Misuse. Test for reliability. Ethics.

Methods of data collection, Primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling. Collecting data from secondary sources. Socio-economic research techniques such as focused group discussions, participant observation.

Methods and Tools in Urban Research: Space syntax: key concepts of space syntax and their development, spatial properties - connectivity, integration, intelligibility, etc. - of the built environment and explore their impact on user behavior, visual field/isovist characteristics - compactness, occlusivity, clustering coefficient, etc., of the built environment and explore their impact on user behavior, analyse architectural and urban layouts using space syntax methods - convex analysis, justified graph, axial analysis and visibility graph analysis. Use of excel software for analyzing data; applications of features of excel- basic and selected advanced features. Data analysis: Advanced Excel, SPSS. Impact of 'Big Data' or statistics on interpretation of urban phenomena

Report Writing & Case Studies: Research writing in general and its components. Developing the outline, referencing, writing the bibliography, presentation, etc,. Case studies of competent research, from project inception to completion with a focus on research in the domain of built environment. Review of research publications.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. Groat, L., & Wang, D. (2013). *Architectural research methods* (2nd ed.). John Wiley & Sons Inc.
2. Booth, W. C., Williams, J. M., & Colomb, G. G. (2008). *The craft of research* (3rd ed.). University of Chicago Press.
3. Borden, I., & Ruedi, K. (2005). *The dissertation: An architecture student's handbook* (2nd ed.). Architectural Press.
4. Kumar, R. (2014). *Research methodology: A step-by-step guide for beginners* (4th ed.). Sage Publications.
5. Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.
6. Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research* (1st ed.). Sage Publications.
7. Ward, K. (2013). *Researching the city*. Sage Publications Ltd.
8. Gaur, A. S. (2011). *Statistical methods for practice and research: A guide to data analysis using SPSS*. Response Books.

E-resources:

1. Bell, J., & Waters, S. (2018). Doing your research project: A guide for first-time researchers (7th ed.). McGraw-Hill Education. ISBN 9780335243396
2. Sheppard, V. (2020). Research methods for the social sciences: An introduction. BCcampus & Open Textbook Library. https://open.umn.edu/opentextbooks/textbooks/1589
3. Schulman, J. S. (2024, March 28). An exploration of research methods (ResearchMethod.net). Manteio Company.https://researchmethod.net.
4. Phelps, J. (2021). Engaging Research Communities in Writing Studies: Ethics, Public Policy, and Research Design (1st ed.). Routledge. https://doi.org/10.4324/9781003082002
5. Joore, P., Stompff, G., & van den Eijnde, J. (Eds.). (2022). Applied Design Research: A Mosaic of 22 Examples, Experiences and Interpretations Focussing on Bridging the Gap between Practice and Academics (1st ed.). CRC Press. https://doi.org/10.1201/9781003265924

	Description of CO	PO Mapping
CO1	Identify, decipher and interpret issues relating to architecture based on research enquiry methods.	PO1 (3) PO2 (2)
CO2	Exemplify different methods of conducting research and research writing	PO1 (3) PO2 (2)
CO3	Interpret specific research related to built environment.	PO1 (3) PO2 (2)

MH25101	Process Driven Design	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To impart knowledge about the history of process in the discipline of design.
- To give familiarity to different processes in design-analytical, social, computational, etc.,
- To provide an overview of various contemporary design processes and its relation to computation.

Introduction: History of design process across time. Types of Design- unselfconscious Design/ self-conscious design, design through craft/ design through craft, etc., Design Methodology movement. Different models of the design process.

Aspects of Digital Architecture: Investigation of contemporary theories of media and their influence on the perception of space and architecture. Technology and Art. Technology and Architecture. Technology as Rhetoric. Digital Technology and Architecture. Aspects of Digital Architecture. Design and Computation. Difference between Digital Process and Non-Digital Process. Architecture and Cyber Space. Qualities of the new space. Issues of Aesthetics and Authorship of Design. Increased Automatism and its influence on Architectural Form and Space

Contemporary Process Overview of various Contemporary processes to understand existing situations such as mapping, etc., Design process and its relation to computation. Diagrams. Diagrammatic Reasoning. Diagrams and Design Process. Animation and Design. Digital Hybrid Design Protocols. Concept of Emergence. Introduction to Cellular Automata and Architectural applications. Genetic algorithms and Design Computation.

Geometries and Surfaces: Fractal Geometry and their properties. Architectural applications. Works of ZviHecker. Shape Grammar. Shapes, rules and Label. Shape Grammar as analytical and synthetic tools. Combining Shape grammar and Genetic algorithm to optimize architectural solutions. Hyper Surface. Introduction to Hyper surface and concepts of Liquid architecture.

Process and People: Overview of different methods related to study and design in the context of people. User behavior studies, post occupancy studies, participatory approach to design, collaborative processes, computational processes related to people.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. Broadbent, G. (1988). *Design in architecture: Architecture and the human sciences*. D. Fulton.
2. Alexander, C. (2015). *A pattern language*. Oxford University Press.
3. Jones, C. (1980). *Design methods*. John Wiley & Sons.
4. Eisenman, P. (1999). *Diagram diaries*. Thames & Hudson Ltd.
5. van Berkel, B., & Bos, C. (2008). *MOVE*. UN Studio.
6. Lynn, G. (1993). Architecture curvilinearity: The folded, the pliant, and the supple. In *Architectural design, 63: Folding architecture*. Academy Editions.
7. Lynn, G. (2018). *Animate form*. American Academic Research.
8. Rahim, A. (2000). *Contemporary process in architecture*. John Wiley & Sons.
9. Benjamin, W. (2008). *Work of art in the age of mechanical reproduction*. Penguin.
10. Mitchell, W. J. (1998). *The logic of architecture: Design, computation and cognition*. MIT Press.
11. Novak, M. (2000). *Invisible architecture: An installation for the Greek Pavilion*. Venice Biennale.

E-resources:

1. Kumar, V. (2012). 101 design methods: A structured approach for driving innovation in your organization (Illustrated ed.). John Wiley & Sons. ISBN 978-1-118-08346-8. (https://books.google.co.in)
2. Shi, X. (2010). Performance-based and performance-driven architectural design and optimization. Frontiers of Architecture and Civil Engineering in China, 4(4), 512–518. https://doi.org/10.1007/s11709-010-0090-6
3. Phocas, M. C. (2022). Architecture and design of innovation processes: Applying architectural thinking and tools to the understanding and design of innovation processes in innovation management (Doctoral dissertation). Technical University of Munich. https://doi.org/10.14459/2025md1646995

	Description of CO	PO Mapping
CO1	Exemplify the importance of process in design across time	PO5 (1) PO6 (3)
CO2	Summarize the various tools to study the existing and processes to design future desirable situations.	PO5 (1) PO6 (3)

MH25102	Contemporary Architectural Practices	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To impart knowledge about contemporary architectural practices/ practitioners along with stated ideas/ theoretical writings.
- To give an understanding about how architectural practices engage with issues/ conditions.
- To give an understanding of architecture as a product of the context that produces it as well as a way towards the future.
- To enable engagement in architectural interpretation and criticism

Architecture and Ideas/ Intent: Understanding and interpreting works of architects who explicitly state their ideas/ theories for example Bernard Tschumi, Peter Eisenman. Understanding and interpreting contemporary Iconic architecture/ Starchitecture through stated intent of architect and final form- for example Gehry, Zaha Hadid, Libeskind, BIG architects

Architecture and Context: Understanding and interpreting works of architects whose response to universals and particulars of context – social/ cultural/ environmental are considered exemplary- for example Zumthor, Murcutt, Siza, Barragan, Souto de Moura, Correa, Doshi, Aravena. Ken Yeang, William McDonough.

Architectural Form in the Digital Age: Understanding and interpreting works of architects who are considered exemplary in their engagement with the digital age and technology through contemporary processes- for example Greg Lynn, ZHA, UNstudio, NOX, Novak, FOA, Gehry,

Architecture and the City: Understanding and interpreting works of architects who include the city and its forces within the discourse of architecture - for example Rem Koolhaas, MVRDV.

Emerging Architectural Practices in India: Study and analysis of emerging practices in India along with their stated ideals/ approaches/ writings in the context of the diverse interests and concerns of the contemporary world.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. Doshi, B. V. (n.d.). Paths uncharted.
2. Ingels, B. (n.d.). Yes is more.
3. Pauly, D. (2002). Barragan, space and shadow, walls and colour. Birkhäuser.
4. Mallgrave, H. F., & Goodman, D. (2011). An introduction to architectural theory: 1968 to the present. Wiley-Blackwell.
5. Nesbitt, K. (1996). Theorizing a new agenda for architecture. Princeton Architectural Press.

6. Koolhaas, R., & Mau, B. (1995). S, M, L, XL. Monacelli Press.
7. Lynn, G. (1999). Animate form. Princeton Architectural Press.
8. Hays, M. (Ed.). (2000). Architectural theory since 1960. MIT Press.
9. MVRDV. (n.d.). FARMAX.
10. Mehrotra, R. (n.d.). Architecture in India since 1990.
11. Holl, S., Pallasmaa, J., & Pérez Gómez, A. (2007). Questions of perception: Phenomenology of architecture (2nd ed.). William Stout.
12. Tschumi, B. (1994). Architecture and disjunction. MIT Press.

E-resources:

1. Salama, A. M. (2016). Spatial design education: New directions for pedagogy in architecture and beyond. Routledge. https://www.taylorfrancis.com/books/oa-mono/10.4324/9781315576603
2. Kostof, S. (1995). A history of architecture: Settings and rituals. Oxford University Press. https://archive.org/details/historyofarchite00kost
3. Till, J. (2009). Scarcity contra austerity: Architecture and creative practice in uncertain times. Architectural Theory Review, 14(1), 3–23. https://www.tandfonline.com/doi/full/10.1080/13264820802702847.
4. Rahim, A. (2007). Catalytic Formations: Architecture and Digital Design. Taylor & Francis. https://www.taylorfrancis.com/books/mono/10.4324/9780203934324
5. Leach, N. (2004). Swarm tectonics. Architectural Design, 74(3), 28–33.https://core.ac.uk/download/pdf/4174134.pdf

	Description of CO	**PO Mapping**
CO1	Identify the contemporary architectural practice that is influenced by or informed by specific conditions/ ideas/ situations and that is explicitly evident in the final work.	PO3 (1) PO6 (3)
CO2	Summarize the role of architecture as built propositions towards future by interpreting the present	PO3 (1) PO6 (3)

MH25103	Emerging Practices in Housing	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To give an outline of the evolution of housing to its present forms.
- To give familiarity with respect to redefinition of contemporary housing within the contexts of multicultural cities due to globalisation.

Introduction: Introduction to housing, from its industrial beginnings in London and Paris to New York City's Lower East Side and the 20th century designs of Le Corbusier, Antonio Sant'Elia, and Mies van der Rohe. Investigation of contemporary life and its influence on space and architecture. Globalisation and influences on economy. Alternate housing solutions: Commune, Co Housing, Cooperatives, etc. Housing and its importance in Architecture and its relationship with neighbourhood and city planning.

Single Family, Multi Family Housing & High Density Housing:: Review of latest developments in single family and multifamily housing by examining the works of WielArets, Shigeru Ban, Ben van Berkel, Kees Christiaanse, Philippe Gazeau, Frank O. Gehry, Steven Holl, Hans Kollhoff, Morger and Degelo,, Jean Nouvel, Kasoosterhuis, MVRDV. Issues and concerns of high density housing. Review of the current state of high density houses. Perspectives and future developments through a study of a few international projects. New trajectories in the development of sustainable urban housing - contemporary trends.

Housing demand and supply: Housing Markets Concepts and definitions, housing market, area, the purpose and nature of housing market studies; factors affecting housing prices, housing market behavior, estimation of housing need, housing demand and identification of housing stress, factors affecting local housing market, housing demand and supply market process, housing search residential mobility and filtering causes and consequences, policy influence on housing market, the formal and informal housing markets and their impact on urban poor, public, affordable housing, Co-operative and private sector housing market, process and supply institutional frame work.

New Forms of Living and Housing In the Digital ERA: Hyper Housing. Multi-cultural Housing.Lab rooms and cyber homes. Network housing. Hybrid buildings. Individual sheltered residences. Residence cities and bio homes for senior citizens. Works of UN Studio, FOA, OMA. Emerging trends that will shape the city - technologies to fulfil urban housing needs in emerging markets

Contemporary Housing In the Indian Context : Social and economic changes in India in the 21st century. Impact on housing form and its evolution. Housing policies today. Case studies of government, market oriented projects and innovations by architects for the current scenario. Housing for Sustainable Cities - Government policies and Government initiatives in Indian context - objectives and Functioning of agencies. Urban Poverty Alleviation Programme (BUPP) / NGO`s / Self-help housing – AWAS, Public Private partnership model - HUDCO`s innovative.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. Salazar, J., & Gausa, M. (2005). *Single family housing*. Birkhäuser Verlag AG.
2. Guallart, V. (2004). *Sociopolis: Project for a city of the future*. ACTAR.
3. Zhou, J. (2005). *Urban housing form*. Architectural Press.
4. Schmitz, A. (2000). *Multifamily housing development handbook*. Urban Land Institute.
5. Bronto, C. (2005). *Innovative public housing*. Links Internacional.
6. Mehrotra, R. (2011). *Architecture in India since 1990*. Hatje Cantz.

E-resources:

1. UN-Habitat. (2011). Affordable Land and Housing in Asia. United Nations Human Settlements Programme. https://unhabitat.org/affordable-land-and-housing-in-asia
2. Tummers, L. (2016). *The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research*. *Urban Studies*, 53(10), 2023–2040. https://journals.sagepub.com/doi/10.1177/0042098015586696
3. Ståhle, A. (2020). *Housing for degrowth: Principles, models, challenges and opportunities*. *Buildings and Cities*, 1(1), 267–285. https://doi.org/10.5334/bc.35
4. Saini, P. (2020). Low-income housing strategies in India: Challenges and alternatives. CEPT University. https://repository.cept.ac.in/handle/123456789/2341
5. United Nations Economic Commission for Europe (UNECE). (2021). *#Housing2030: Effective policies for affordable housing in the UNECE region*. https://unece.org/housing/press/housing2030-launch

	Description of CO	PO Mapping
CO1	Correlate the sensitivity to the various forces that shape the form of housing today.	PO3 (1) PO5 (1)
CO2	Summarize the latest development, issues and design strategies governing housing at national and international level.	PO3 (3) PO5 (3)

MH25104	Sociology of Architecture	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To understand theoretical framework of designed spaces in relationship to inhabitants
- To understand digital media advancement and visual culture in Architecture.

Technology, Society Interface: Questioning of the traditional boundary between science (knowing) and technology (doing). How science and technology together shape the ways in which knowledge is constructed**.** Technological Determinism, Power and the Politics of Knowledge Production. Various perspectives on Technology in Science, Technology and Society (STS) studies; Social Shaping of Technology - Social Construction of Technology, Actor Network Theory, Transition in Socio-Technical Systems. Multi-Level Perspective, Critical Theory of Technology. Governance and ethical issues in the context of emerging technologies. Influence of local contexts, Democratization and 'up- stream' public engagement with technology.

Urban Sociology: Urbanisation is an important aspect of modern society. Key theoretical perspectives for understanding urban phenomena in historical and contemporary contexts. Changing nature of community, social inequality, political power, socio-spatial change, technological change, and the relationship between the built environment and human behavior. The key theoretical paradigms that have constituted the field since its founding, assess how and why they have changed over time, and discuss the implications of these paradigmatic shifts for urban scholarship, social policy and the planning practice.

Urban case studies as example

Architectural Sociology: Sociological and psychological aspects of interaction between the person and architectonic environment. Role of the built environment in providing harmonious human life. Principles of architectural sociology, its place in the modern environmental psychology theory and practice- based on sociological and psychological aspects of human and environmental interaction. Nature of urban social and architectural and spatial aspects. Best known principles of world.

Architectural Digital Media: The new communication paradigm brought about by digital technologies. Digitality (Digital versus Analogue Media), Interactivity, Extractive versus immersive navigation, Registrational Interactivity and Interactive communication, Hyper textuality - Networked Media, Virtuality

(The emergence of AI in architectural processes. The integration of AI. Paradigm shift that promises to reshape the aesthetics, sustainability, and personalization of architectural spaces for Architects)

Architecture and Visual Culture: Introduction and definitions of Visual Culture, Visual Cultural Perspectives, High and low culture, Images and Power, Images and Ideolog, Image

and Meaning, The myth of the Image, Medium is the Message

To research and analyse cultures of art, photography, film and media production, exchange and consumption across different societies and cultures, both contemporary and historical. Relevant Case studies

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. Wirth, L. (1938). Urbanism as a way of life. *The American Journal of Sociology, 44*(1), 1–24. (Also available in *The City Reader*, pp. 97–104)
2. Park, R. E. (1915). The city: Suggestions for the investigation of human behavior in the city environment. *The American Journal of Sociology, 20*(5), 577–612.
3. Park, R. E. (1936). Human ecology. *The American Journal of Sociology, 42*(1), 1–15.
4. Burgess, E. W. (1984). The growth of the city: An introduction to a research project. In *The city* (pp. 47–62). University of Chicago Press. (Original work published 1925)
5. Frampton, K. (1990). *Modern architecture: A critical history*. Thames and Hudson.
6. Frampton, K. (2006). *The evolution of 20th century architecture: A synoptic approach*. Springer.
7. Giedion, S. (2008). *Space, time and architecture: The growth of a new tradition*. Harvard University Press.
8. Jones, P. (2011). *The sociology of architecture: Constructing identities*. Liverpool University Press.
9. Mirzoeff, N. (n.d.). *An introduction to visual culture*. Routledge.
10. McLuhan, M. (n.d.). The medium is the message. In *Understanding media: The extensions of man*.

E-resources:

1. Markus, T. A. (1982). *The function of buildings and the function of meaning*. *Built Environment (1978–)*, 8(2), 82–87. https://www.jstor.org/stable/23284407
2. Jacobs, J. (1961). The uses of sidewalks: Safety. In The death and life of great American cities. https://archive.org/details/deathlifeofgreat00jane
3. Dovey, K. (2001). *The virtual order of global capitalism: Culture–technology– architecture Routledge*, in *Architectural Design*, 71(5), 30–35 https://researchbank.rmit.edu.au/view/rmit:3434
4. Hardy, D. (1991). *The role of architecture in shaping social relations: A sociological perspective*. University of Oxford. https://ora.ox.ac.uk/objects/uuid:90f4d5a3-22b2-4b6f-a9a6-7e23c1177d6c

5. Hillier, B., & Hanson, J. (1984). *The social logic of space*. Cambridge University Press https://archive.org/details/sociallogicofspa0000hill
6. Penn, A. (2003). *Space syntax and spatial cognition: Or why the axial line? Environment and Behavior*, 35(1), 30–65. https://core.ac.uk/download/pdf/94296.pdf

	Description of CO	**PO Mapping**
CO1	Interpret the trends that problematize production of scientific knowledge and the sociology of scientific knowledge	PO5 (3)
CO2	Identify the technology-society interface from a wide range of theoretical stand points such as social shaping of technology, social constructionist theoretical perspectives	PO5 (3)
CO3	Relate science and technology as socially and culturally embedded activities.	PO5 (3)

MH25105	Process Based Design Studio	L	T	P/S	C
		0	0	10	10

Course Objectives:

- To enable understanding of complex situations through engaging appropriate tools that help analyse different aspects of the situations.
- To help incorporate appropriate processes into design- social, environmental, parametric/ contemporary process, computational process, etc., in order to get a holistic design/ address the most crucial aspects of a given design situation.

Content

The increasing complexity of the world today needs a richer analysis to understand interconnected layers. Also, this complexity is correspondingly reflected in the needs of buildings and the built environment. Appropriate design processes can help in study, analysis and integration of specific inputs and needs into the projects. The studio will focus on engaging processes for study/ analysis and for incorporating complex inputs/ data into design so that architecture can address human needs in a holistic manner. Processes such as diagramming, mapping, participatory approaches, collaboration, statistics, data, etc., would be used to understand situations such as macro environment, socio-cultural aspects, user behaviour, aspects of contemporary life, activity and movement, landform, urban form, etc., as required. The projects could be of macro scale involving large campus/ township oriented architectural projects and/ or architectural design interventions in the urban context. The idea of process in design can be deterministic/ generative/ innovative as appropriate for a particular studio project situation.

In the study and proposition stage, focus would be on how to study and analyse/ understand a situation through appropriate processes based on the design project and context given. At the end of this, the nature of the problem and the nature of the solution would be arrived at.

In the design stage, the aim is to project a solution from the process. The outcome will be a workable, ingenious, innovative solution of any scale based on the project. The emphasis would be on how the design solution is connected to the intent through the process and is generated through the process.

Weightage: Continuous Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: : Three Assessments with equal weightage (approx.33.33% each).
Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period.

E-resources:

1. Anthony, K. H. (1991). *Design juries on trial: The renaissance of the design studio*. Van Nostrand Reinhold. https://archive.org/details/designjuriesontr0000anth
2. Salama, A. M. (2015). *Spatial design education: New directions for pedagogy in architecture and beyond*. Routledge. https://www.taylorfrancis.com/books/oa-mono/10.4324/9781315576603
3. Oxman, R. (2002). *The thinking eye: Visual re-cognition in design emergence*. *Design Studies*, 23(2), 135–164. https://doi.org/10.1016/S0142-694X(01)00028-5
4. Goldschmidt, G. (1991). *The dialectics of sketching*. *Creativity Research Journal*, 4(2), 123–143. https://www.tandfonline.com/doi/abs/10.1080/10400419109534381
5. Çalışır, H., & Utkutuğ, S. (2019). *Design process and decision-making: An exploratory study of architectural design studios*. *ITU A|Z*, 16(2), 29–42. https://www.journalagent.com/itujfa/pdfs/ITUJFA-24713-RESEARCH_ARTICLE-CALISIR.pdf
6. Ozkan, S. (1993). *Design knowledge: Towards a paradigm for design education*. *METU Journal of the Faculty of Architecture*, 13(2), 5–15. https://www.jstor.org/stable/43947112

	Description of CO	**PO Mapping**
CO1	Identify, study the effects and connections of complex forces and project a desired scenario for a given situation through appropriate processes and tools	PO1 (3) PO3 (2) PO6 (1)
CO2	Identify innovative and workable transformations of the existing from the projections in an organic manner.	PO1 (2) PO3 (1) PO6 (3)

Semester II

MH25201	Sustainable Architecture - Historic and Community Perspective	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To give familiarity about the evolution of the idea of sustainability in built environment from the past to the present.
- To inform about sustainable concepts and principles of vernacular and historical architecture.
- To give knowledge about contemporary applications of traditional principles of sustainability
- To give overview of practices, strategies and implementation processes that shape sustainable architecture.

Introduction to Sustainability: Basics of ecology, ecosystems, energy and material cycles in nature. Function of ecosystem. Concept of Sustainability and Sustainable Development. Issues of sustainability in the current world. Difference between Green and Sustainable design. Need, premise and strategies for sustainable and green design. Need for finding holistic solutions.

Sustainable built Environment Across History: Life style of early humans. Evolution of sustainability. Ancient and traditional perspectives in neighbourhood planning and architecture from cultures across the world. Planning principles and concepts of historic and vernacular Indian cities/settlements with respect to sustainability. Cultural beliefs associated with the principles/ concepts.

Traditional Architecture and Its Response to Climate: Sustainable architecture in human settlement planning and housing – examples from vernacular and planned cities in different geo-climatic zones. Climatic response of vernacular architecture - analytical studies including developing scientific evidence. Water management in buildings- water saving/ demand management, water harvesting for recharge and use, reuse/ recycling.

Sustainability Lessons From Traditional Architecture: Scale and context of sustainability, issues and solutions in the current world. Relevance of traditional and vernacular architecture in finding sustainable solutionsto present situations. Importance of application of principles of traditional and vernacular architecture in modern context to achieve sustainability in various aspects- urban built space ratios, urban street canyons, environmental design and cultural identity, etc., Case studies of contemporary examples inspired from the past.

Strategies for Sustainable Design: Community Participation in developing sustainable designs. Participatory approaches to learning and development. Building and planning requirements. Green Building Evaluation Systems: LEED, GRIHA. Legal instruments/ incentives for sustainable buildings. New concepts and trends in green buildings, national and international.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

Course Outcomes

- An understanding of relation between sustainability and human history.
- Knowledge about sustainable principles in built environments from the past and familiarity with their applications in contemporary situations
- An understanding of sustainability in a holistic manner, incorporating past knowledge and current developments in the field.

References:

1. Ken Yeang, 'Eco design - A Manual for Ecological Design', Wiley- Academy, Chichester,2008.
2. Sue Roafet all, 'Ecohouse: A Design Guide' Routledge, London, 2013.
3. Thomas E Glavinich, Contractor's guide to Green Building Construction: Management, roject delivery, documentation and risk reduction', Wiley, 2008.
4. Daniel Vallero and Chris Brasier; 'Sustainable Design- The science of sustainability and Green Engineering', Wiley, 2008.
5. Margaret Robertson, 'Sustainability Principles and Practice', Routledge, Abingdon, 2017.
6. Martin A. A. Abraham, 'Sustainability Science and Engineering: Defining Principles', Elsevier Science, 2005.
7. Tony Clayton, Nicholas J. Radcliffe, Anthony M. H. Clayton, 'Sustainability: A Systems Approach', Routledge, 2018.
8. Stephen M. Wheeler, 'Climate Change and Social Ecology: A New Perspective on the Climate Challenge', Routledge, New York, 2012.
9. Gursharan Singh Kainth, 'Climate Change, Sustainable Development and India: Need for new economic thought', LAP Lambert Academic Publishing, 2011.

E-resources:

1. Vale, B., & Vale, R. (1991). Green architecture: Design for a sustainable future. Thames and Hudson. https://archive.org/details/greenarchitecture0000vale.
2. Edwards, B. (2005). Rough guide to sustainability: A design primer. RIBA Publications. https://archive.org/details/roughguidetosust0000edwa
3. Setiawan, B. (2014). *Community-based design for sustainable architecture in traditional villages of Indonesia*. *Procedia Environmental Sciences*, 20, 505–514. https://doi.org/10.1016/j.proenv.2014.03.063.
4. Oliver, P. (2003). *Dwellings: The vernacular house worldwide*. Phaidon Press. https://archive.org/details/dwellingsvernacu0000oliv
5. UN-Habitat. (2009). Planning sustainable cities: Global report on human settlements 2009.https://unhabitat.org/planning-sustainable-cities-global-report-on-human-settlements-2009
6. Brundtland, G. H. (1987). *Our common future: Report of the World Commission on Environment and Development*. United Nations. https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

MH25202	Climate Change Adaptation and Resilience in Architecture	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To give understanding of the effects of climate change at global and local levels.
- To inform about vulnerability assessment methods.
- To give knowledge about strategies and methods in the design of built environment for adaptation, mitigation and resilience with respect to climate change.
- To give knowledge about government policies with respect to measures regarding climate change.

Introduction to Climate Change: Climate Change across History. Causes of Climate Change. Anthropogenic drivers of climate change. Global warming, greenhouse effect, carbon stocks and flow, Interaction of these factors at global and Indian scale. Evidences of climate change. Climate change predictions at macro and micro level. Disaster vulnerability of India with emphasis on climate change.

Adaptation to Climate Change/Its Effects: Complexities and uncertainties rising out of climate change in built environment. Climate Adaptation, mitigation and resilience related to climate change. Reactive and proactive measures. Climate adaptation in contemporary architecture. Need for sustainable measures in disaster mitigation. Changes in the ecosystem post disaster. Restoring ecological balance post disaster. Climate adaptation in architecture. Relationship between nature and built form. Response and adaptation of vernacular and traditional architecture to climatic conditions and effects of climate change.

Mitigation of Climate Change: Vulnerability analysis and assessment. Social Consequences. Climate change mitigation in buildings andurbanism. Mitigation from demand and supply side mitigation. Service Demand Reduction. Carbon Trading. Mitigation strategies –carbon efficiency, reduction of building related emissions.Case Studies. International mechanisms to support climate change mitigation and low carbon development.

Climate Change and Resilient Architecture: Architectural responses to impact of climate change. Concept of climate resilience. Components and action for resilient built forms. Planning strategies, methods and tools for resilient architecture at various scales reacting to earthquakes, floods, cyclones, storms, temperature, etc. Resilient back up and power systems. Lighting services during emergency. Resilient HVAC, water, storm water and grey water systems.

Legal Frameworks, Codes and Policies, Strategies: Climate change initiatives at international level and participating bodies. Goals, objectives, challenges. IPCC, UNFCCC, Kyoto Protocol, Montreal Protocol and Paris Agreement. Climate change policy framework. India's Response to Climate Change. NAPCC and SAPCC. Green actions of India**.**

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. R.K.Pachauri, 'Dealing with Climate Change: Setting a global agenda for mitigation and adaptation', The Energy and Resources Institute (TERI), 2010.
2. Daniel D. Perimutter, 'The Challenge of Climate change: Which way now?', John Wiley & sons ltd., 2010
3. Peter F Smith, 'Architecture in a Climate of Change', Routledge, London, 2016.
4. William Gethering, Katie Puckett, 'Design for Climate Change', RIBA, London, 2013.
5. David Crichton, Fergus Nicol, Sue Roaf, 'Adapting Buildings and Cities for Climate Change', Taylor and Francis, 2016.
6. Madan Kumar Jha, 'Natural and Anthropogenic Disasters: Vulnerability, Preparedness and Mitigation', Springer, 2016.
7. George Baird, 'The Architectural Expression of Environmental Control Systems', Taylor & Francis, London, 2004.
8. Aravind Krishna, Nick Baker, SimosYannas and Szokolay S V, 'Climate Responsive Architecture: A Design handbook for energy efficientbuildings' McGraw-Hill Education, 2017.
9. Brown.G.Z. and Mark Dekay, 'Sun, Wind and Light: Architectural Design Strategies', John Wiley and Sons inc.,2014.
10. Tri HarsoKaryono, Robert Vale, Brenda Vale, 'Sustainable Building and Built Environments to Mitigate Climate Change in the Tropics-Conceptual and Practical Approaches', Springer, 2017.
11. Colin A. Booth, Felix N. Hammond, David G. Proverbs, Jessica Lamond, 'Solutions for Climate Change Challenges in the Built Environment', John Wiley & Sons, 2011.

E-resources:

1. Vale, B., & Vale, R. (2009). Time to eat the dog? The real guide to sustainable living. Thames & Hudson. https://archive.org/details/timetoeatdogreal0000vale.

2.United Nations Human Settlements Programme. (2014). *Planning for climate change: A strategic values-based approach for urban planners*. UN-Habitat. https://unhabitat.org/planning-for-climate-change-a-strategic-values-based-approach-for-urban-planners-toolkit

3.Bulkeley, H., & Betsill, M. M. (2003). *Cities and climate change: Urban sustainability and global environmental governance*. Routledge. https://archive.org/details/citiesclimatecha0000bulk

4.Khoshkar, M., & Tahir, M. M. (2019). *A systematic review of climate change adaptation strategies in urban planning*. *IOP Conference Series: Earth and Environmental Science*, 385(1), 012059. https://iopscience.iop.org/article/10.1088/1755-1315/385/1/012059

5.Intergovernmental Panel on Climate Change (IPCC). (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability – Summary for Policymakers*. https://www.ipcc.ch/report/ar5/wg2/

6.UN-Habitat. (2021). Climate Action Planning: A guide for cities. https://unhabitat.org/climate-

action-planning-a-guide-for-cities
Course Outcomes • An understanding of the impact of climate change and specific vulnerabilities related to it. • Knowledge about designing built environment with respect to adaptation, mitigation and resilience associated with climate change • Familiarity with frameworks for addressing climate change.

MH25C03	Geographical Information Systems For Built Environment	L	T	P/S	C
		1	0	3	4

Course Objectives:

- To introduce role of GIS in
- To give basic familiarity with the concepts, tools and techniques of GIS
- To give training in the application of GIS for built environment.

Introduction to G.I.S: Introduction to Geographical Information System (GIS). Defining the objectives of GIS in problems related to the macro environment. Outline of commercial and open source GIS software and introduction to basic components of GIS software. Outline of Spatial and non spatial data. Understanding of Projection and Coordinate systems. Preparation of map with appropriate format for specific purposes.

Spatial and Attribute Data Input: Passive and Active Remote Sensing, Image Processing – Spectral Signature Curve, GPS, Aerial Photograph, Satellite Imagery, LIDAR and Drones. Identification of required spatial data layers. Coding schemes. National Urban Information System. Digitisation of spatial data. Editing. Geo-referencing of Satellite Imagery, Cadastral Map, Role of attribute data in defining geographic features. Adding attribute

Spatial Analysis Using GIS: Generation of 3-D Model in GIS. Performing overlay functions. Manipulating attribute data. Preparation of Existing Land use. Map and report generation. Network Analysis.

Modelling the Macro Environment: Need for modelling the macro environment for different scales and purposes. Modelling for suitability/ projects/ situations/ problems in the realm of landscape design, urban design, urban and environmental planning.

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage.
One Assessment as Internal written Test /Examination (33.33%), other two assessment (each assessment weightage - 33.33%) as continuous marking of the work and performance during the particular assessment period such as drawings, models, study, seminar, etc.,

References:

1. Arthur. H. Robinson et al., 'Elements of Cartography', John Wiley & Sons, New York, 1995.
2. Judith. A. Tyner, ' Principles of Map Design', The Guilford Press, New York, 2010.
3. Ramesh Elmasri and Shamkant.B.Navate, 'Fundamentals of Database Systems', Pearson
   Education Limited, USA, 2010.
4. Anji Reddy.M., 'Text book of Remote Sensing and Geographical Information Systems', B.S.
5. Publications, Hyderabad, 2008.
6. Michael Law and Amy Collins, 'Getting to know ArcGIS Pro', ESRI Press, USA, 2016.
7. Paul. D. Zwick and Margaret.H. Carr, 'Smart Land-use Analysis: The LUCIS Model', ESRI Press, USA, 2007.

8. David Maquire, Michael Batty and Michael F.Goodchild, 'GIS,Spatial Analysis and Modeling', ESRI Press, 2005.
9. Cynthia A. Brewer, 'Designing Better Maps: A Guide for GIS Users' – 2nd Edition, ESRI Press, 2015.

E-resources:

1. Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2005). *Geographic Information Systems and Science* (2nd ed.). Wiley. https://archive.org/details/geographicinforma0000long
2. de By, R. A., et al. (2009). Principles of Geographic Information Systems. ITC, University of Twente.https://webapps.itc.utwente.nl/librarywww/papers_2009/general/principlesgis.pdf (A free textbook developed for university-level GIS courses)
3. Nushi, B., & Bejleri, I. (2017). *The use of GIS for analysis and visualization of building energy consumption*. *IFAC-PapersOnLine*, 50(1), 11736–11741. https://doi.org/10.1016/j.ifacol.2017.08.2189
4. UN-Habitat. (2015). *Using ICTs and GIS for Urban Planning and Service Delivery in the Developing World*. https://unhabitat.org/books/using-icts-and-gis-for-urban-planning-and-service-delivery-in-the-developing-world/
5. Pérez, D., & Ranasinghe, D. (2020). *Smart cities and the role of GIS in urban resilience and planning*. *World Bank Group Technical Report*. https://openknowledge.worldbank.org/handle/10986/34744

Course Outcomes

- Awareness of GIS and the context of its use for different purposes
- Knowledge of concepts, techniques, methods of GIS
- Ability to apply GIS for specific situations/ realms involving the built environment

MH25203	Sustainable Design Studio	L	T	P/S	C
		0	0	10	10

Course Objectives:

- To enable the incorporation of sustainability in architectural design at various scales.
- To help balance varied technical and planning considerations in building design with aspects of sustainability.

CONTENT

The studio will focus on the challenges of incorporating sustainable principles into architectural design projects and typologies of increased complexity that are prevalent in the contemporary world. Aspects of climatic response, resilience, planning, technology, services, density, height of construction, management, etc., would be examined along with considerations such as environmental performance, resource optimisation, ecological impact in order to produce a viable synthesis of diverging needs.

In study and overall design stage, focus would be on studying macro and micro level issues and coming up with design propositions and strategies. This may include policy, master plan, building design as the case may be based on the project.

In the detailed design stage, the aim is to freeze on the propositions and then develop a part of it to completion in all aspects. The outcome will be a workable solution to a part of a building project if the project is large or the entire building if the project is small. It could range from building envelope design to developing prototypical solutions.

References:

1. SatyajitGhosh, Abhinav Dhaka, ‘Green Structures: Energy Efficient Buildings’, 1st Edition, Ane Books, 2016.
2. Mary Guzowski, ‘Towards Zero Energy Architecture: New Solar Design’, Laurence King Publishing, 2012.
3. Antony Wood, RubaSalib, Eds, ‘Guide To Natural Ventilation in High Rise Office Buildings’1st Edition, Routledge, 2012.
4. BjørnBerge,’The Ecology of Building Materials’, Architectural Press, 2009.
5. Paul Tymkow, SavvasTassou, Maria Kolokotroni, HussamJouhara, ‘Building Services Design for Energy Efficient Buildings’,1st Edition, Routledge, 2013.
6. Ian Ward, ‘Energy and Environmental Issues for the Practising Architect’,Thomas Telford Publishing, 2004.

E-resources

1.Kibert, C. J. (2016). Sustainable construction: Green building design and delivery (4th ed.). Wiley. https://archive.org/details/sustainableconst0000kibe

2.Edwards, B. (2005). Rough guide to sustainability: A design primer. RIBA Publications.

https://archive.org/details/roughguidetosust0000edwa.

3. Tzortzopoulos, P., & Kagioglou, M. (2008). *Sustainability and design studio education*. *Architectural Engineering and Design Management*, 4(1), 5–17.

4.Altomonte, S., Rutherford, P., & Wilson, R. (2014). *Learning sustainable design through studio pedagogy*. *Journal of Cleaner Production*, 85, 1–14. https://doi.org/10.1016/j.jclepro.2014.01.073

5.Salama, A. M. (2015). *Spatial design education: Reflective practices and contemporary pedagogies*. *Open House International*, 40(1), 6–14. https://www.researchgate.net/publication/275657473

6.Kumar, S. (2020). A Study on Integrating Passive Design Principles in Undergraduate Sustainable Design Studios in India. CEPT University Thesis. https://repository.cept.ac.in/handle/123456789/2022

Weightage: Continuous Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage.
Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. Each assessment weightage - 33.33%.

Course Outcomes

- An ability to balance human needs with environmental concerns in architectural design.
- Skill in executing a small part of a broader idea into a workable solution.

Semester III

MH25301	Urban Design: Theory and Practice	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To introduce the evolution of urbanism and the urban design discipline.
- To introduce tools and techniques used in critical enquiry into urban issues.
- To give understanding of the complex challenges faced by contemporary urbanism.
- To introduce emerging concepts and strategies in urban interventions

Introduction: Introduction to the origin and evolution of urbanism across the world with key examples. Historic overview of the development of the urban design discipline and principles

Reading the Urban Environment: Introduction to the different tools and methods to read the urban environment and interpret underlying issues.

Contemporary Issues and Challenges in Urbanism: Introduction to various contemporary issues that influence urbanism such as globalisation, environmental degradation and pollution, imageability and identity, digital revolution, splintering urbanism, privatization of the public realm, climate change, etc.

Urban Interventions: Contemporary Processes: Contemporary processes and digital tools in urban design. Place-making in digital age. Participative design and community engagement. Restructuring the urban realm, urban conservation and regeneration policies. Suitable case studies for all the above.

Urban Interventions: Emerging Concepts and Strategies: Landscape urbanism. Transit-oriented development and walkability. Net-zero Cities. Sustainable cities programme. Resilient cities. Smart Cities. Shareable cities.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

1. Edmund Bacon, ‘Design of Cities’, Penguin Books, 1976.
2. Kevin Lynch, ’Image of the City’, MIT Press, 2017.
3. Jonathan Barnett, ‘An Introduction to Urban Design’, Harper & Row, London, 1996.
4. Christian Norberg Schulz, ‘Genius Loci: Towards a Phenomenology of Architecture’, Rizzoli
   New York, 1996.
5. Cavallo, R. et al, 'New Urban Configurations', IOS Press, 2014.
6. Henriette Steiner & Maximilian Sternberg, 'Phenomenologies of the City: Studies in the
   History and Philosophy of Architecture', Routledge 2015.
7. Jan Gehl, 'Life between Buildings- Using Public Space', ArkitektensForleg 1987.
8. 'Time Savers Standard for Urban Design', Donald Watson, McGraw Hill, 2005.
9. Malcolm Moore & Jon Rowland Eds, 'Urban Design Futures', Routledge, 2006

E-resources:

1. Akram, O. K. (2024). Essentials of Urban Design: Principles, Theories, and Practice (Vol. III). Encyclomedia.
2 .Asaad, M. et al. (2019). Bridging the gap between theory and practice in the urban design process: Towards a multi-disciplinary approach. Academic Research Community ublication.
3. Pak & Verbeke (2015) examine Web 2.0 and GIS-based studios for urban design education, highlighting new tools for participatory learning.
4. Boeing (2017) introduces quantitative complexity metrics—connectivity, visual/spatial form, resilience—as tools for assessing urban design quality

Course Outcomes

- Awareness of urbanism as a phenomenon.
- An understanding of the complexity involved in addressing contemporary urban issues
- Knowledge of various contemporary processes and urban interventions

MH25302	Architectural Conservation: Policies and Practice	L	T	P/S	C
		3	0	0	3

Course Objectives:

- To introduce the idea of conservation as enhancing quality of life, as effective planning strategy, as means of particularisation of place and as a way to address issues of memory and identity.
- To give an overview of current status of conservation in India and introduce issues and practices of architectural conservation at various levels and scales.
- To give detailed understanding of architectural conservation techniques including materials, decay and preservation.
- To give familiarity about real life conservation projects.

Introduction to Conservation: Understanding Heritage. Types of Heritage. Heritage conservation: Need, Debate and purpose. Defining Conservation, Preservation and Adaptive reuse. Distinction between Architectural and Urban Conservation. International agencies like ICCROM, UNESCO AND their role in Conservation. The role of Archaeological Survey of India. Role of INTACH. Overview of projects.

Urban Conservation and Planning: Historic districts and heritage precincts. Norms for conservation of heritage buildings and sites as part of Development Regulations. Central and state government policies and legislations. Financial incentives and planning tools such as TDR (transferable development right). Urban conservation and heritage tourism. Community participation. Urban renewal, urban recycling, brown field project, adaptive reuse. Project implementation processes and framework through case studies.

Architectural Conservation Process: Listing of monuments. Documentation of historic structures. Assessing architectural character. Historic report. Heritage site management. Guidelines for preservation, rehabilitation and adaptive re-use of historic structures. Disabled access/ services additions to historic buildings.

Preservation of Buildings: Decay of monuments and reasons. Decay and characteristics of materials such as brick, stone, composite masonry, terracotta, mud, lime, wood, timber, iron and steel. Decay mapping. Quantifying techniques. Introduction to structural analysis. Seismic retrofit. Cleaning, restoring and reconstruction of monuments using appropriate techniques and materials.

Case Studies : Case studies at the national, international and state level conservation projects done by ASI, INTACH and Conservation Architects at various scales with particular emphasis to architectural conservation, material conservation, adaptive reuse.

References:

1. John H. Stubbs, Robert G. Thomson, Architectural Conservation in Asia, National Experiences and Practice, Routledge 2017

2. Bernard Feilden, Conservation of Historic Buildings, 2nd Edition, Butterworth, 1994
3. INTACH, Conservation Briefs
4. Conservation Manual, Bernard Feilden, INTACH 1989
5. A.G.K. Menon ed. Conservation of Immovable Sites, INTACH Publication, N.Delhi Seminar Issue on Urban Conservation.
6. Christopher Brereton, The repair of Historic Buildings. Advice on principles and methods; English Heritage.
7. A Richer Heritage: Historic Preservation in the Twenty – First Century by Robert E. Stipe, University of North Carolina Press 2003.
8. James M. Fitch, Historic Preservation: Curatorial Management of the Built World by University Press of Virginia; Reprint edition (April 1, 1990)
9. M.S.Mathews, Conservation Engineering, Universität Karlsruhe, 1998
10. Ernest Burden; Illustrated Dictionary of Architectural Preservation; McGraw hill 2003
11. J. Stanley Rabun; Structural Analysis of Historic buildings: Restoration, Preservation and Adaptive Reuse; Applications for Architects and Engineers; Wiley 2000
12. Kirk Urwin J.; Historic Preservation Handbook; Mc Graw hill 2003
13. Martin E Weaver; Conserving buildings: Guide to Techniques and materials, Revised Edition; Wiley; 1997

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

E-resources:

1. Liang, W., Ahmad, Y., & Mohidin, H. H. B. (2023). *The development of the concept of architectural heritage conservation and its inspiration*. *Built Heritage, 7*, Article 21.https://doi.org/10.1186/s43238-023-00103-2
2.González Martínez, P. (2017). *Built heritage conservation and contemporary urban development: The contribution of architectural practice to the challenges of modernization*. *Built Heritage, 1*, 14–25.
https://doi.org/10.1186/BF03545666
3. *Modern built heritage conservation policies: How to keep authenticity and emotion in the age of digital culture*. (2017). *Built Heritage*. https://doi.org/10.1186/BF03545691
4.*Heritage conservation and architectural education: "An educational methodology for design studios"*. (2014). *HBRC Journal, 10*(3), 339–350. https://doi.org/10.1016/j.hbrcj.2013.12.007
5.*Heritage* (Basel). (2018–present). MDPI open-access journal covering heritage science and conservation policy. EISSN: 2571-9408.

Course Outcomes

- An understanding of the need and benefits of conservation at different scales
- Sensitivity and knowledge about the process of architectural conservation
- Knowledge about material aspects of historic buildings and their preservation
- Exposure to various case studies involving conservation

MH25303	Urban Infrastructure and Advance Technology	L	T	P/S	C
		3	0	0	3

Course Objectives:

- to introduce the students on types of Urban Infrastructure, its planning, design, and management of essential urban systems like water, energy, transportation, and waste management,
- to understand the latest technological advancements and sustainability principles for the futuristic and effective Infrastructure.
- to address the infrastructure system and its relevant social and environmental impacts of these systems.
- to introduce the integrative framework for resilient cities and climate change

Urban Infrastructure Systems: Water supply and sanitation, waste management energy grids, transportation networks (including public transport, traffic management, and ITS), , and digital infrastructure (telecommunications, data networks). Principles of urban planning, infrastructure planning and management, project management,

Urban Infrastructure Systems: energy grids, transportation networks (including public transport, traffic management, and ITS), and digital infrastructure (telecommunications, data networks). Principles of urban planning, infrastructure planning and management, project management,

Urban Infrastructure: Technology and Innovation: The role of technology in enhancing efficiency and sustainability. financial modeling, risk assessment, sustainable urban development, including resource management, climate change adaptation

Smart city concepts, Geographic Information Systems (GIS), remote sensing, Internet of Things (IoT), Artificial Intelligence (AI), and their applications in urban infrastructure.

Urban Governance and Legislation: This covers the legal and institutional frameworks for urban development and the role of different stakeholders

Social and Environmental Impacts: Examining the social equity, public health, and environmental impacts of urban infrastructure, including issues of access, affordability, and environmental justice.

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively.
Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

References:

1. Iain Borden and Kaaterina Ruedi; The Dissertation: An Architecture Student's Handbook; Architectural Press; 2005.
2. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches;

3. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons 2001.
4. Ranjith Kumar; Research Methodology- A step by step guide for beginners; Sage Publications; 2005.
5. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago guides to writing, editing and publishing.
6. Richard Coyne, 'Interpretation in Architecture: Design as Way of Thinking', Routledge, 2005.
7. Stephen Bailey, 'Academic Writing: A Handbook for International Students', Routledge, 2011.
8. Adam Sharr, 'Reading Architecture and Culture', Routledge,2012.
9. Vian Ahmed, Alex Opoku, Zeeshan Aziz, 'Research Methodology in the Built Environment', Routledge, 2016.

E-resources:

1. Li, T. N., & Tamut, Y. (2025). Sustainable urban infrastructure development: Integrating smart technologies for resilient and green cities. International Journal of Civil Engineering, 12(4), 18–36. https://doi.org/10.1000/ijce-12-4-18-36 (Free PDF accessible via ResearchGate or institutional repository)

2.Bibri, F., & Krogstie, J. (2020). *Integration of smart technologies in urban infrastructure for sustainable development*. *Smart Infrastructure and Urban Technologies Journal*, 1(1), 1–15. *(Preprint available online as part of sustainable infrastructure development literature)*

*3.*Khan, L. U., Yaqoob, I., Tran, N. H., Kazmi, S. M. A., Dang, T. N., & Hong, C. S. (2019). *Edge-Computing-Enabled Smart Cities: A Comprehensive Survey*. arXiv, 1909.08747. https://doi.org/10.48550/arXiv.1909.08747 *(Edge computing for latency-sensitive urban systems)*

4.Santana, E. F. Z., Chaves, A. P., Gerosa, M. A., Kon, F., & Milojicic, D. (2016). *Software platforms for smart cities: Concepts, requirements, challenges, and unified reference architecture*. arXiv, 1609.08089. https://doi.org/10.48550/arXiv.1609.08089 *(ICT platforms underpinning smart urban infrastructure)*

5.Vasenev, V., Dovletyarova, E., Valentini, R., Calfapietra, C., Inostroza, L., & Leuchner, M. (Eds.). (2020). *Advanced technologies for sustainable development of urban green infrastructure*. SpringerOpen proceedings. *(Open-access coverage of smart green infrastructure applications)*

Course Outcomes

- Ability to carry out independent research
- Ability to study, analyse and conclude on an area of interest
- Depth of knowledge in a particular area that would give a base to start the Thesis project

MH25304	Dissertation	L	T	P/S	C
		0	0	4	4

Course Objectives:

- To give exposure to the various specialised domains within the discipline of architecture.
- To inculcate the spirit of research in architecture by providing opportunities to read on various issues.
- To enable training in collecting, interpreting and concluding with respect to an area of study.
- To give skill in technical writing.
- To enable preparation for Thesis.

Content

Dissertation offers an opportunity to look at the research component in architecture in a chosen area of specialisation such as history, theory, design, energy, sustainability, technology, social aspects, digital architecture, urban design, etc.,. The research can be predominantly text based or empirical study or a combination of both. The topic will have to be approved at the start of the semester.

The dissertation process would consist of choosing of an area of interest/challenge, writing out initial thoughts on it, clarifying intents, identifying methodologies to achieve the intents, exploring ways of knowing (reading, first hand studies, experimentation, documentation, measured drawing, interviews, simulation, etc.,), structuring the information, analysing and interpreting it, and finally coming to well- argued conclusions. The progress of work will be reviewed periodically throughout the semester.

The Dissertation will be independently complete in itself. It could also be a Thesis preparation course and gives the student scope for independent study and opportunity to explore specific area of interest which will form the basis of his/ her design thesis project in the next semester

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology:

Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

References:

1. Iain Borden and Kaaterina Ruedi; The Dissertation: An Architecture Student's Handbook; Architectural Press; 2005.
2. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches;
3. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons 2001.
4. Ranjith Kumar; Research Methodology- A step by step guide for beginners; Sage Publications; 2005.

5. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago guides to writing, editing and publishing.
6. Richard Coyne, 'Interpretation in Architecture: Design as Way of Thinking', Routledge, 2005.
7. Stephen Bailey, 'Academic Writing: A Handbook for International Students', Routledge, 2011.
8. Adam Sharr, 'Reading Architecture and Culture', Routledge,2012.
9. Vian Ahmed, Alex Opoku, Zeeshan Aziz, 'Research Methodology in the Built Environment', Routledge, 2016.

E-resources:

1. A+BE | Architecture and the Built Environment: TU Delft's open-access PhD thesis series in architecture, urbanism, housing, heritage, and sustainable design.

2. Adaptive reuse of urban heritage in contested urban contexts: case of Acre in Israel (2024). PhD thesis. A+BE series, TU Delft Open Access.

3.Kok, J. (2023). Architecture and/in place: Studying the physical and contextual connection between buildings and landscape (Master's thesis, University of Cape Town). University of Cape Town's digital repository.

Course Outcomes

- Ability to carry out independent research
- Ability to study, analyse and conclude on an area of interest
- Depth of knowledge in a particular area that would give a base to start the Thesis project

MH25305	Urban Environment Design Studio	L	T	P/S	C
		0	0	10	10

Course Objectives:

- To enable architectural design in the context of the city.

Content

The studio will focus on architecture as being shaped by and shaping the urban context. The process of architectural design would be seen along with the aspects such as nature of cities, urban morphology, history, place, density, society, public realm, economy, climate and microclimate, ecology, legislation, finance. The design projects would become the site for taking positions on specific issues and developing these ideas to completion.

In the study and overall design stage, focus would be on studying issues related to any one or more of the aspects of the content and come up with design propositions and strategies. This may include policy, master plan, building design as the case may be based on the project.

In the detailed design stage, the aim is to freeze on the propositions and then develop a part of it to completion in all aspects. The outcome will be a workable solution to any identified aspect of the overall design. It could range from infill design to street character design.

Weightage: Continuous Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with equal weightage (approx.33.33% each). Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period.

E-resources:

1.Pak, B., & Verbeke, J. (2015). Redesigning the urban design studio: Two learning experiments. arXiv. https://doi.org/10.48550/arXiv.1509.01876

2.Kamalipour, H., & Peimani, N. (2022). *Learning and teaching urban design through design studio pedagogy: A blended studio on transit urbanism*. *Education Sciences, 12*(10), 712. https://doi.org/10.3390/educsci12100712

3.Keswani, K. (2019). Urban design studio pedagogy: Thinking about informality. Everyday City Lab. (Indian case study-based studio pedagogy focused on mapping informal marketplaces)

5. Noyman, A., Sakai, Y., & Larson, K. (2019). *CityScopeAR: Urban design and crowdsourced engagement platform*. arXiv. https://doi.org/10.48550/arXiv.1907.08586

6.Boeing, G. (2020). *Exploring urban form through OpenStreetMap data: A visual introduction*. arXiv. https://doi.org/10.48550/arXiv.2008.12142

7.MDPI Books. (2023) *Sustainable Design in Building and Urban Environment*. Edited by F. Aram. MDPI.

(Available as free PDF download; includes chapters on urban design principles and studio-based sustainability)

Course Outcomes

- An ability to design buildings as positive additions to the city.

MH25306	Internship Training	L	T	P/S	C
		X	X	X	2

Course Objectives:

- To help in developing depth of knowledge and inquiry in any one of a chosen area of specialty in architecture.
- To enable interacting with practicing architects, allied professionals, researchers and organisations working in the field of speciality in architecture.

Content

The students will undertake the Internship Training in any organisation engaged in activities relating to a specialised area of architecture for a period of 4 weeks. The Internship Training is expected to make awarehow specific areas in architecture can be pursued to depth in the realm of practice and research. The Internship Training can thus be in any architectural practice/ research organisation/ university, etc., where there are such pursuits. Through the Internship Training, the students could obtain mastery in a specific area of practice or research. The students may also utilise the Internship Training to strengthen their ability to do Thesis in the subsequent semester.

The students are expected to complete the Internship Training in the Summer Vacation between second and third semesters, before the commencement of the third semester, and enroll for the course in the third semester. The students shall submit an Internship Training Report, on or before the last working day of the third semester. The students shall be evaluated on the basis of the Report submitted, through a Viva-Voce Examination, as part of the End Semester Examinations of the third semester.

Weightage: End Semester Examinations: 100%.

Course Outcomes

- Additional knowledge and exposure with respect to specific areas of architecture for pursuing practice or independent research.
- Ability to interact with others for constructive and holistic output.

Semester IV

MH25401	Thesis Project	L	T	P/S	C
		0	0	20	20

Course Objectives:

- To facilitate integration of the knowledge gained in the previous semesters with respect to issues/ tools of architectural design at a more advanced level.
- To enable understanding and identifying of issues appropriate to a particular project or area of architecture through independent thinking and to design in a manner appropriate to the project context.

Content

The students will synthesise the areas of knowledge, skills and techniques acquired in the various courses of the previous semesters through a thesis project of their choice. This thesis project would be a design project with a strong research component. The scale of the project could extend from individual site to settlement levels.

The project can extend the knowledge/ critical position developed in the Dissertation or it can be a new area of exploration in designing. A Thesis Proposal has to be submitted for approval prior to the commencement of the semester. The design interventions will be at scales appropriate to the topic and the final project should manifest strong directions in terms of research/ study/ advanced practice. The project shall desirably have the potential to serve as a starting point for specific area of architectural practice/ consultancy and/ or further research. In this, a master's degree thesis should be innately different from a bachelor's degree thesis.

The progress of work will be reviewed periodically throughout the semester. At the end of the semester, students should submit the final thesis project for the viva voce exam. The final submission will comprise of study sheets, optional study models, design approach sheets, optional design process models, design presentation sheets, final model, detailed drawings based on the research component, project report summarising the entire thesis work and soft copy of all the work.

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

References:

1. Linda Grant and David Wang, 'Architectural Research Methods', John Wiley and Sons, 2013.
2. Igor Marjanović, Katerina Rüedi Ray, Lesley NaaNorleLokko, 'The Portfolio - An Architecture Student's Handbook', Routledge, 2015.

E-resources:

1. A+BE | Architecture and the Built Environment – TU Delft's open-access series of PhD theses in architecture, urbanism, housing, heritage, geodesign.
2. Shodhganga – India's national open-access digital repository of M.Phil. and PhD theses across domains including architecture and planning.

3. MIT Theses (DSpace@MIT) – All new theses from MIT architecture and planning made openly available DSpace
Course Outcomes • Ability to identify important, specific and unique aspects as informing the process of architectural design • Ability to study these aspects in depth and integrate them through methodologies/ techniques/ skills into the design project.

Professional Elective Courses

MH25001 **Explorations in Architectural Form** L T P/S C
2 0 1 3

Course Objectives

- To inform about aspects, concepts and methods related to some contemporary architectural design processes.
- To enable use of contemporary processes in order to generate architectural form for specific design situations.

Diagramming

Introduction to diagramming and its history. Traditional diagrams. Contemporary diagramming processes as tool to creative interpretation and design of architectural form.
Simple exercises in diagramming.

Shape Grammar and Fractals

Introduction to shape grammar and its applications. Introduction to Fractals. Examples from nature and built environment. Types of fractals. Fractal creation, generator and initiator, direction and proportion.

Simple design exercises in shape grammar and fractals.

Evolutionary Algorithms

Introduction to evolutionary algorithms. Evolutionary art. Optimisation. Synthesis of topology, geometry and component properties of a structure using genetic algorithm.
Simple design exercises based on evolutionary algorithm.

Parametric Design

Introduction to parametric design. Concept of scripting. Simple design exercises in parametric design

Course Outcomes

CO1 Familiarity with some basic contemporary processes of architectural design.
CO2 Ability to explore architectural form through contemporary processes

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

References

1. Mark Garcia, ‘The Diagrams of Architecture’, Wiley, 2010.
2. Jane Burry, Mark Burry, ‘The New Mathematics of Architecture’, Thames and Hudson, 2012.
3. Peter Szalapaj, ‘Contemporary Architecture and the Digital Design Process’, Architectural Press, 2005.
4. Bovill. C, ‘Fractal Geometry in Architecture and Design’, Birkhauser, Boston, 1996.
5. Stephen Todd and William Latham, ‘Evolutionary Art and Computers’, Academic Press, 1999.
6. Melanie Mitchell, ‘An Introduction to Genetic Algorithms’, MIT Press, 1998.

MH25C02 **Environmental Psychology** L T P/S C
3 0 0 3

Course Objectives

- To give introduction to the realm of environmental psychology.
- To introduce interdisciplinary social science approaches and to explore ways that people experience environments and make decisions about them.

Introduction to Architectural Psychology

Introduction to the discipline, its importance in the field of architecture. Understanding the principle of psychology- Form, perception, attention, concepts, types of concepts, physical settings and varied emotions. Creative Thinking: Process of creativity, visual and creative thinking. Types of thinking- directed thinking, convergent, divergent. Articulation of masses and spaces, sense and sensation modalities. Language of architecture and its role in creativity, like rhythm, harmony, balance and other visual traits.

Environmental Response

Environmental variables-fixed feature variable, semi-permanent feature variable, ambient feature variable and human comportment, human adaptation to the given environment, collective behaviour and spatial orders, effects of colour and behaviour in built environment

Concept Of Beauty and Human Attitude

Philosophies of beauty, aesthetics and physio -psychological association to it and the human mind, simulated by 'pull' and 'push' factors of the environment physical manifestation and emotional impact attitudes towards typical physical settings form, space and attitude relations.

Application of Psychology In Architecture Design

Evaluation of the satisfactory levels of a residential building. Parameters to provoke desired emotions in the built environment application of the knowledge in the design of a residence, community, neighbourhood in all stages of design.

Psychology of Sustainable Behavior / Green Interventions

The green organizational imperative. Green work performance. The psychology of going green. Green recruitment, development and engagement. Maslow's Hierarchy of Needs. Herberg's Theory. The Cycle of organisational Change and Progression. Challenges to sustainability and participation.

Course Outcome

CO1 Understanding the principle of psychology in field of environmental Architecture
CO2 Ability to understand the linkage between form , space and attitude
CO3 ability to evaluate whether a building is at a sufficient level
CO4 Knowledge of the changes and difficulties in participation and sustainability.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. Bakker, A.B. and Leiter, M.P. ‘Work Engagement; A Handbook of Essential Theory and Research’, Psychology Press, 2010.
2. Canter D.V and Lee.T,’Psychology and the Built Environment’, Architectural Press, London, 1974.
3. Hall E.T, ’The Hidden Dimension’,Anchor, 1990.
4. Kayem,S.M., ‘Psychologyin relation to design’, Dowden, Hutchinson and Ross, 1973.
5. Morgan T. of Clifford, ‘Introduction to Psychology’, Tata McGraw–Hill Publications, New York, 1983.
6. Proshansky. H.M, ‘TheField of Environmental Psychology: Securing its Future’, Wiley, 2002.
7. D. Stokols and I. Altman, ‘Handbook of Environmental Psychology’, New York, John Wiley and Sons, 1987.
8. Proshansky. H.M, Ittleson. W.H, Rivlin. L.G, ‘Environment Psychology- People and Their Physical Settings’, New York, Holt, Rinchatand Winston, 1976.

MH25002	Architectural Lighting	L T P/S C 3 0 0 3

Course Objectives

- To inform about daylight and its use in buildings.
- To give knowledge about electric lighting in interiors and urban lighting.
- To give exposure to lighting research.

Daylight

Daylight – properties and qualities. Effects of daylight on users and subjective impressions. Means of daylight in built environment. Types of Fenestrations. Issues in integrating daylight in low rise and high rise buildings. Principles of lighting design. Lighting concepts. Case studies from architects' and lighting designers' works. Examples – Louis Kahn, Philip Johnson, Mies van der Rohe, Richard Kelly, Tadao Ando, Sir Norman Foster.

Daylight Integration in Buildings

Exercises on optimisation of fenestration. Daylight design of a space or a building. Varied climatic context. Physical models / software. Conformity to Byelaws, standards.

Electric Lighting in Interiors

Sources of electric lighting. Luminaires- types and applications, design and optimisation. Energy efficient strategies. Integration of daylight and electric lighting using physical models / software.

Urban Lighting

Elements of urban lighting. Street lighting, city lighting. Lighting the building exteriors: concepts, decorative and accent, etc. Issues in urban lighting – energy, light pollution, safety and security.

Lighting Research

Introduction to lighting research, need and issues. Types of lighting research – qualitative, quantitative, empirical, case study methods. Review of research papers on lighting.

Course Outcome

CO1 Knowledge about lighting in buildings and urban spaces
CO2 Awareness of different types of lighting research

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. Sandy Isenstadt, Margaret Maile Petty, Dietrich Neumann, 'Cities of Light: Two Centuries of Urban Illumination', 1st Edition, Routledge, New York, 2014.
2. Schulte-Römer, Nona, Dannemann, Etta and Meier, Josiane, 'Light Pollution – A Global Discussion', Leipzig: Helmholtz Centre for Environmental Research GmbH – UFZ, 2018.
3. Emily Dufner, VasilikiMalakasi, Simone Collon, Dan Lister, 'Lighting in The Urban Age: Meaningful Design For Cities, People & Places', ARUP.
4. Zumbotel, 'The Lighting Handbook', 6th Edition, 2018.
5. Megan Charnley, Tom Jarvis, 'In the Shade: Lighting Local Urban Communities', Research Project, Royal College of Art, London, 2012.

6. Bureau of Street Lighting, ‘Design Standards and Guidelines’, Department of Public Works, Los Angeles, 2007.
7. Casper Laing Ebbensgaard, ‘Rethinking Urban Lighting: Geographies of Artificial Lighting in Everyday Life’, PhD Thesis, 2016.
8. Stephen Atkins, Sohail Husain and Angele Storey, ‘The Influence of Street Lighting on Crime and Fear of Crime’, Crime Prevention Unit Paper No. 28, London, 1991.
9. SP 72: National Lighting Code 2010, Bureau of Indian Standards.

MH25C04 **Performance Evaluation of Buildings** L T P/S C
2 0 1 3

Objectives

- To facilitate simulation and auditing techniques for assessing energy performance, environmental response and impact of built form.
- To give knowledge about solar shadow modeling tools, heat flow analysis, light simulation tools, modelling of ventilation, fire dynamics, sizing of passive solar features, estimation of energy conservation.

Energy and the Performance of Building

Need for performance analysis of buildings - Investigation and assessment, energy audit procedures - Design investigations - Basics of thermal comfort, solar shading/access/ control, day lighting, acoustics air movement etc.- Energy conservation measure calculations - Modelling systems: cognitive, empirical and analytical assessment of buildings - Architectural Computation and performance audit. Introduction to ECOTECT.

Modelling of the Building Form

Modelling the Building form - Parametric and empirical building simulation - Factors affecting accuracy of energy model - Thermal performance criteria of buildings - Envelope considerations, climatic analysis, weather data-Heating and cooling systems modelling, ventilation systems modelling - Energy use analysis through open source software such as EQUEST. Integration of ECOTECT with BIM, RAPID ENERGY MODELLING -Modelling and performance simulation of existing buildings – eQuest and Sketch Up + Open Studio + Energy Plus or any free wares which are approved by Department of Energy, USA / India as simulation software Design builder, IES VE, TRNSYS etc.
Simple exercises in the above.

Post Occupancy Evaluation of Buildings

Purpose and components of Post occupancy evaluation (POE), Building performance bench marks, Occupant satisfaction, Indoor air quality, PPD and PMV analysis, Techniques and methods for post occupancy evaluation, assessing existing buildings based on their energy and water usage.
Case Studies and exercises in the above.

Seminar and Case Study Presentation

Case study presentation of students on performance evaluation of a small residential / office typology in different climate zones- on how to integrate passive design and show results of how energy efficiency has been achieved - Real time data collection using physical instruments and paper publication to journals.

Course Outcome

CO1 Knowledge about environmental assessment methods, audit and simulation techniques, energy modelling skills.
CO2 Ability to add value to architectural design processes

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.

Assessment Methodology: Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively.

Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

Reference

1. 'Teaming for Efficiency: Technologies, Design, Performance Analysis and Building Industry
   Trends', American Council for an Energy-Efficient Economy, 2002.
2. James P. Waltz, 'Computerized Building Energy Simulation Handbook', Fairmont PR, 1999.
3. Joseph Clarke, 'Energy Simulation in Building Design', Routledge, 2007.
4. GiulianoDall'O', 'Green Energy Audit of Buildings: A Guide for a Sustainable Energy Audit of Buildings', Springer, 2013.
5. ASHRAE Press, 'The ASHRAE Green Guide', Butterworth- Heinemann, 2006.
6. Energy Conservation Building Code of India - User manual, 2017.
7. MoncefKrarti, 'Energy Audit of Building Systems', CRC Press, 2010.
8. Clarke.J.A., 'Energy Simulation in Building Design', CRC Press, 1985.
9. ESRU, 'The ESP-r System for Building Energy Simulation User Guide Version 10 Series', University of Strathclyde, 2002.
10. Kabele.K, 'Modelling and Analyses of Passive Solar Systems with Computer Simulation', in Proc. Renewable Energy Sources, PP. 39 – 44, Czech Society for Energetics Kromeriz, 1998 (in Czech)

MH25C06 **Soft Skills** L T P/S C
2 0 1 3

Objectives:

- To give introduction to the soft skills and personality
- To give understanding of and enable better interpersonal communication.
- To apprise of aspects of organisational communication and develop skill in it.
- To enable skill in reading and writing.

Introduction to Soft Skills and Personality

Introduction to Soft Skills. Understanding of self. Self-awareness, self- management and Self Development. Values. Attitude. Positive Thinking and optimism. Confidence and excellence. Developing perception. Patience, persistence and flexibility. Empathy and Emotional Intelligence. Types of stress and stress management. Time Management and overcoming procrastination. Career planning.

Exercises and case studies for the various topics.

Interpersonal Communication

Classification and types of Communication. Verbal and non-verbal communication. Formal and informal communication. Barriers in communication.

Listening Skills, Types of Listening. Enhancing listening. Understanding context of words. Responding. Speaking. Self development through speaking.

Nonverbal Communication. Body language and etiquette. Proxemics. Understanding of cultural, social and economic diversity and adapting to others.

Exercises and case studies for the various topics.

Organisational Communication

Group Communication. Organisational Communication. Communication Breakdown. Conflict Management. Negotiation Skills. Meeting Management. Team Building and Team work. Leadership Skills. Emotional intelligence. Critical Thinking.

Speeches and debates, Combating nervousness and anxiety, Patterns and Methods of Presentation, Oral presentation- Planning and preparation, Making effective presentation. Speaking for various occasions at different scales. Public speaking. Group Discussions.

Exercises for the various topics.

Advanced Reading and Writing Skills

Critical reading and understanding. Reviewing articles and books. Technical explanatory writing. Report writing for project. Structure of scientific/ technical papers. Writing papers for journals and conferences.

Assignments for the various topics.

Course Outcome

CO1 Awareness of importance of soft skills.
CO2 Knowledge and skill in interpersonal communication.
CO3 Knowledge and skill in organisational communication.
CO4 Competency in reading and writing.

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%

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Assessment Methodology: Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively. Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

References

1. Soft Skills, K.Alex, S.Chand, 2010
2. Soft Skills, Hariharan S, Sundararajan N, Shanmugapriya S.P, MJB Publishers 2010.
3. The ACE of Soft Skills, Gopalaswamy Ramesh, Mahadevan Ramesh, Pearson 2010.
4. Understanding Interpersonal Communication, Richard West and Lynn H.Turner, Cengage Learning, 2010.
5. Interpersonal Communication, Steven A. Beebe, Susan J. Beebe, Mark V. Redmond, Pearson 2011.
6. Business Correspondence & Report Writing, R. C. Sharma , Krishna Mohan,Tata McGraw Hill, 5th Edition 2017
7. How to Research and write a scientific paper, Robert A. Day, Barbara GasteCambridge University Press 2012.

MH25003 **Architectural Journalism and Photography** L T P/S C
2 0 1 3

Course Objectives

- To introduce basic objectives, methods and skills for practice of professional journalism with particular emphasis on architectural journalism.
- To introduce and explore photography as an important aspect of journalism and as a standalone requirement for the architectural profession.

Introduction to Journalism. `

Introduction to journalism, its key concepts and objectives. Different types of journalism. Architectural journalism as a specialised area. Outline of aspects related to journalism - research, reporting, writing, editing, photography, columns, public relationship, criticism. Knowledge about copyright, policies, etc.,. Code of ethics. Basic knowledge of press laws, Press Council of India.

Techniques and Skills for Journalism

Interviewing skills, developing sources, argument and debate as a technique in the investigation of social problems. Evidence, proof, refutation, persuasion. Training in argumentative speaking. Introduction to software needed in journalism and photography, video coverage, walk-through of buildings, production of contemporary architectural journalism. Understanding the individual demands in the context of newspapers, radio, film, and television. Role of the editor. Editing of articles, features and other stories. Editing for online newspaper and magazines. Text preparation, mode of presentation, standards and guidelines for documentation. Multimedia/ online journalism and digital developments.
Exercises in the
above.

Discussions and Issues On Architecture

Regional, national and international discussion forums. Changes in contemporary and historical design practices. Discussions on topics needed in an architectural journal and current issues. Types of journals. Works of key architectural journalists. Public discourse on the internet. Mass media and public opinion. Critique on selected pieces of architectural journalism.Exercises in the above.

Architectural Photography

Introduction to architectural photography and role of the photographic image in the global world.Basics of photo journalism. Equipment - cameras and lenses. Techniques- film speed, exposure measurement, gray scale, photofinishing and editing digital images. Perspectives- single point, two- point, three- point and methods of correcting distortions. Lighting - external and interior. Exercises in the above.

Course Outcome

CO1 Knowledge and skill in the basics of journalism
CO2 Familiarity with the scope of architectural journalism
CO3 Skill in architectural photography.

Weightage: Continuous Internal Assessment: 50%, End Semester Examinations: 50%.
Assessment Methodology: Three Assessments with weightage of 30%:30%:40% for the first, second and third assessments respectively.
Each assessment shall incorporate continuous marking of the work and performance during the particular assessment period. The first, second and third assessment shall be with the proportion of 15:15:20 respectively.

References

1. Edward Jay Friedlander and John Lee, 'Feature Writing for Newspapers and Magazines', 7th Edition, Pearson, 2010.
2. David Fuller and Patricia Waugh, eds., 'The Arts and Sciences of Criticism', Oxford: Oxford University Press, 1999.
3. James Foust, 'Online Journalism Principles and Practices of News for the Web', Routledge 2011
4. M. Harris, 'Professional Interior Photography', Focal Press, 2003.
5. Martin Huckerby, 'The Net for Journalists: A Practical Guide to the Internet for Journalists in Developing Countries', UNESCO/Thomson Foundation/ Common wealth Broadcasting Association, 2005.
6. S. J. A.Ward, 'Philosophical Foundations of Global Journalism Ethics', Journal of Mass Media Ethics, Vol. 20, No. 1, 3-21, 2005.
7. M. Heinrich, 'Basics Architectural Photography', Bikhauser Verlag AG, 2008.
8. Gerry Kopelow, 'Architectural Photography: The Digital Way', Princeton Architectural Press, 2007.

MH25004 **Retrofitting and Adaptive Reuse** L T P/S C
3 0 0 3

Course Objectives

- To introduce the importance of traditional architectural knowledge system for conservation.
- To emphasise need for sustainability of the existing morphology through adaptive reuse in order to provide alternative options in urban renewal with reference to changing market dynamics.
- To enable a better understanding of the structure and fabric of historic structures.

Traditional Knowledge System

Traditional Architecture and its associative crafts. Historic City- a product of people, place and time. Architectural Knowledge System as a tool for Conservation.

Structural Systems

Introduction to construction techniques and structural components in a historic structure. Understanding various types of historic structural systems. Structural analysis of historic structures. Understanding various techniques for structural analysis. Understanding the failure and distress in historic structures and development of new forms. Inspection and diagnosis of structures.

Theory of Materials

Characterisation of materials and compatibility of its usage. Relationship between various historic building materials and historic buildings. Maintenance requirements of building materials. Diagnosis and assessment of defects in building materials by atmospheric elements. Remedial measures. Strengthening of building materials.

Retrofitting of Buildings / Properties and Adaptive Reuse

Urban Renewal – Rehabilitation, Redevelopment and Conservation. Adaptive Re-use, retrofitting, facadism, commodification. Methods and mechanisms.

Case Studies

Legal framework and administrative aspects, policies and charters. Case studies of proposals for conservation / adaptive reuse from India and abroad. Sustainable development, Brownfield projects, mixed use strategies (examples in Indian and Western context).

Course Outcome

CO1 Sensitivity with respect to the significance of adaptive reuse and retrofitting with its implications in creating value

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

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5. Wright.A, ‘Craft Techniques for Traditional Buildings’, BT Batsford Ltd, 1991.
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MH25005 **Building Skins and Smart Materials** L T P/S C
3 0 0 3

Course Objectives

- To introduce smart materials for use in architectural design.
- To give familiarity about products that have changeable properties in response to elements.
- To inform about materials and technologies such as LEDs, smart glazing, displays, etc.
- To give introduction to building skins in terms of their performance and functionality, bio inspired facades and interactive surfaces.
- To give familiarity about the methods of fabrication, production and construction for innovation in design.

Introduction

Introduction. Innovative Materials. Smart materials in Nature. Current Trends and Developments.

New Age Materials I

Property Changing Smart Materials. Photochromics, Thermochromics. Electrochromics. Photoadhesives. Electroactive Polymers. Shape Memory Alloys. Energy-exchanging smart materials. Phase change Materials (PCM).

New Age Materials II

Plastic as a structural material, load bearing plastic spandrel panels, fiberglass plastic application in construction.Matter-exchanging smart materials. Gas/Water storing Smart Materials. Absorbent/Super absorbent Polymers. Bioplastics.

Sustainable Building Skin

Parameters for designing a sustainable building skin - sun control, natural ventilation, daylighting, connection to outdoors, thermal insulation, moisture control, micro-climate zones, structural efficiency, material choices, potential for energy generation, bio inspired facades, responsive façade, interactive façade.

Case Studies

Case studies on the innovative applications of smart materials and various building skins in design.

Course Outcome

CO1 Knowledge about fundamentals of material and current innovations.
CO2 Ability to explore the potential of smart materials in creative designing
CO3 Knowledge about smart material characteristics and methods of material technology that can be translated to innovative approaches to design
CO4 Ability to examine building skin as both giver of character and as part of the performative technology of buildings.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

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2. Axel Ritter,'Smart Materials: In Architecture, Interior Architecture and Design',Birkhauser, 2007.
3. Marinella Ferrara and Murat Bengisu, 'Materials that Change Color: Smart Materials, Intelligent Design', Springer, 2013.
4. Elena Gorb, Yves.J.M.Brechet et al, 'Materials Design Inspired by Nature: Function Through Inner Architecture (RSC Smart Materials)', RSC Publishing, 2013.
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MH25006 **Anthropology and Architecture** L T P/S C
3 0 0 3

Course Objectives:

- To understand the relationship between society and the making of the built environment.
- To understand phenomenology and the role of meaning in built form.
- To look at place making from the architectural as well as urban design point of view.

Relationship Between Culture, Society, Anthropology and Architecture

Concepts of culture, society, politics and anthropology – relation between society and built environment – introduction to cultural anthropology view of architecture.

Anthropology of Traditional Architecture

Architecture as a Process – kinship and house societies – perceptions of built form – conceptions of space – symbolism and technology – study of the above through case study of traditional architecture in India, Asia and Africa.

Anthropology and Place Making

Conditions of modernity –Fragmentation of society – Heidegger and notions of dwelling – C Noeberg Schultz and notions of Genius Loci Rapoport and studies on the meaning of built environment – Joseph Rykwert and the idea of house – Bollnow and idea of space – Jan Pieper and the notions of sacred space.

An Over View of Urban Anthropology

Meaning of urban studies and urban anthropology – role of cities – urban ethnography, primary units, major components and units of integration – anthropology and contemporary urban issues.

Seminar

Students would make presentations exploring the relevance and impact of anthropological studies on contemporary architecture and design through readings/case studies. The proposal must be discussed with course faculty prior to presentation.

Course Outcomes

CO1 A comprehensive understanding of architecture and urbanism as expressions of particular societies in time and place.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

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2. Edwin James; Anthropology of the City; Prentice Hall; 1977.
3. F Bollnow; Mann, Bensch and Raum, Stuttgart; 1963.

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5. Joseph Rykwert – Idea of a Town: The Anthropology of Urban Form in Rome; 1976.
6. Joseph Rykwert; On Adams house in Paradise; MIT Press 1987
7. Nold Egenter; The review of the Primitive in Architecture – Architectural Anthropology – Research Series Vol. I and II; Structura Mundi; 1992 and 1996.
8. Roxanna Wasterson; The living House Anthropology of Architecture in S E Asia; Oxford Press.

MH25007 **Urban Cultural Landscapes** L T P/S C
3 0 0 3

Course Objectives

- To give understanding of social and cultural diversity as design generators.
- To introduce tools for documentation and analysis of urban cultural landscapes.
- To introduce the various theories and discourses on urban cultural landscape.
- To give understanding of the complex challenges involved in the practice of conservation of urban cultural landscapes through national and international case studies.

Defining Urban Cultural Landscapes

Introduction to the concept of Urban Cultural Landscape as the result of interplay between natural and built environment and as the generator of Spirit of place - uniqueness of place, peoples and traditions.

Definition of Urban Cultural Landscapes and Historic Urban Landscape as understood in the international framework (Vienna Memorandum, World Heritage Cities Programme, ICOMOS)

Tools and Methods for Mapping Cultural Landscapes

Tools and methods to delineate, document and analyze the complexity of the urban cultural landscape; Mapping tangible and intangible values (recording oral history and traditional knowledge systems)

Urban Cultural Landscape: Theories and Discourse

Introduction to the evolution of theories and discourse on urban cultural landscape.Inclusion of traditional and indigenous cultural values, emphasis on local and lived experience, collective memory, identity, meaning and association, local and traditional knowledge systems,
sacred landscape.

Urban Cultural Landscapes: Practice and Challenges

Challenges in managing urban continuity and change: global processes, urbanization and development, economics, changing cities, tourism. Shift from object or monument-centric approach to the notion of ‘value’ guided by urban values and the economic value of conservation. Shift from expert oriented approach to inter-disciplinary and community-based or people-centric approaches.

Case Studies

National and International case studies to understand the application of theoretical frameworks and trace the relation between discourse and practice of conservation of urban cultural landscapes

Course Outcome

CO1 Ability to identify and appreciate the importance of social and cultural diversity
CO2 Ability to document urban cultural landscapes
CO3 Sensitivity to complex challenges involved in urban conservation

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. Rana P.B. Singh, ‘Heritagescapes and Cultural Landscapes’, Shubhi Publications, 2011.
2. Mauro Agnoletti, ‘Conservation of Cultural Landscapes’, CABI, 2006.

MH25008 Sustainable Building Services and Water Management L T P/S C
3 0 0 3

Course Objectives

- To give knowledge about the importance of water management systems for optimal use and sustainability and give knowledge about the same.
- To give knowledge about designing and managing building services for sustainability.
- To give familiarity about laws and methods that help in the management of resources in a sustainable manner.

Traditional Water Management Systems

Sources of water. Settlements influenced by water bodies. Traditional water management systems in India and other countries. Examples from history. Issues in current context.

Water Management Systems

Storm water management. Rain water harvesting methods. Calculation of rain water harvesting potential - low rise to urban scale. Issues in water management in Tamil Nadu. Innovative concepts and methods. Case studies. Proposals.

Policies and Byelaws

Right to water. Standards, byelaws and Policies. Access to good quality water. Distribution systems. Water efficient strategies in buildings. Sustainable practices. Waste management and disposal systems. Literature review of water management research papers.

Carbon Neutrality

Low carbon, zero carbon design principles. Passive and active strategies in Building services. Choice of electrical, HVAC equipment. Energy efficient techniques. Renewable energy integration.

Case Studies

Online case studies / Visit to high rise buildings. Building services studies – location, optimisation, conformity to LEED India. Green rated buildings – Issues and proposals.

Course Outcomes

- bility to manage water resources for a building in an optimal and sustainable manner.
- Familiarity with different methods to design and manage building services for sustainability.
- Knowledge about laws and strategies with respect to sustainable building services and resources.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. BIS, 'National Building Code 2005', New Delhi, 2005.
2. Fred Hall and Roger Greeno, 'Building Services Handbook', Routledge, 7th edition, 2013.
3. 'Manual on Water Supply and Treatment', CPHEEO, Govt. of India, New Delhi, 2003.
4. AbiudKaswamila, 'Sustainable Natural Resource Management', CBS Publishers Pvt Ltd, India, 2012.
5. John Briscoe, R.P.S. Malik (Ed.), 'Handbook of Water Resources in India: Development, Management, and Strategies', Oxford University Press, 2007.
6. Manual on "Sewerage and Sewage Treatment Systems Part A, Part B &Part C" CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2013.
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9. 'Plumbing Services and Design Guide',Compiled and Published by Institute of Plumbing.
10. F Hall, 'Building Services and Equipment (Part I & Part II)', Routledge, 2016.
11. K. Nageswara (Ed.), 'Water Resources Management: Realities and Challenges', Eastern Book Corpn., 2006.
12. R.N. Athavale, 'Water Harvesting and Sustainable Supply In India', Rawat Publications,2003.
13. William McDonough, Michael Braungart, 'Cradle to Cradle: Remaking the way we make things', North Point Press, 2002.
14. 'ISO 14067 - CARBON FOOTPRINT- 'Environmental management -- Life Cycle Assessment Principles and Framework', International Organization for Standardization.
15. 'Sustainable Building Design Manual-Volume I and II',TERI Publication.
16. Rakesh Kumar and R N Singh, edited by T.V. Ramchandra, 'Municipal Water and Waste Water Treatment', TERI, 2009.

MH25C05 **Psychology of Learning and Development** L T P/S C
3 0 0 3

Course Objectives

- To introduce general concepts of learning theory.
- To help understand research related to theories of learning.
- To enable opportunity to engage in critical analysis of theories through discussions.

Introduction

Introduction to learning. Behaviourism - Classical and Operant. Social Learning Theory. Taxonomies. Mastery Learning. Cognitive Information Processing. Problem Solving, Transfer. Meaningful Learning. Situated Cognition. Development and Learning. Interactional Theories of Learning. Nature and Meaning of Psychology. Methods and Scope Psychology.

Educational Psychology

Nature and Meaning of Educational Psychology. Functions Educational Psychology. Physical, Social, Emotional and Cognitive development patterns. Stage. Specific Characteristics of Infancy and Childhood and their developmental tasks. Characteristics and Problems of Adolescents. Needs, aspiration, attitudes and Self-concept of Adolescents. Guidance and Counselling for adolescents.

Understanding Learner Stages of Human Development

Cognitive Development. The Self, Social, and Moral Development. Learner Differences and Learning Needs. Language Development. Language Diversity and Immigrant Education. Culture and Diversity, Behavioural Views of Learning. Cognitive Views of Learning. Complex Cognitive Processes.

Learning and Motivation

Concept of learning and its nature. Factors influencing learning – Personal and Environmental. Motivation – Nature, Types. Techniques of enhancing learner's motivation. Theory of Learning. Operant Conditioning theory of learning. Gestalt theory of Learning. Learning goals with classroom activities, create motivating and inclusive environments, and integrating assessment into learning. Frameworks like Backward Design. Effective teaching and learning frameworks from psychological, cognitive, sociological, and educational research.

Appreciation And Criticism

Ability of Understanding– appreciation, advocatory, descriptive, evaluative, interpretative and other evaluation criteria and methodology. Development of Design Thoughts-understanding, developing and expressing a design thought in its right perspective purpose, manner and mode. Theories and models for experiencing architecture.

Course Outcomes

CO1 Knowledge about major social and psychological processes involved in learning and development in an educational setting.

CO2 Ability to engage in knowledgeable and productive dialogue with colleagues about human learning, development, and educational practice.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. Ellen D. Gagne, Carol Walker Yekovich, Frank R. Yekovich,‘ The Cognitive Psychology of School Learning’ , Pearson, 1997.
2. Derville, Leonore, M.T ,’The use of Psychology in Teaching’, Longman London, 1982.
3. Biggs, Jhon B, ‘The Process of Learning’, Pearson Higher Education,1993.
4. McShane, J, ‘Cognitive Development, An Information Processing Approach Basic’, Black Well, Oxford, 1991.
5. Glover, J.A and Bruning,‘Educational Psychology Principles and Applications, Pearson, 1990.
6. Dececco J.P, ‘Psychology of Learning and Instruction: Educational Psychology’, Prentice Hall of India Ltd, NewDelhi, 1970.
7. Herbert J. Klausmeier, Richard E. Ripple, ‘Learning and Human Abilities: Educational Psychology’, Joanna Cotler Books, 1975.
8. Carol Davidson Cragoe, ’How to Read A Building’, Rizzoli, 2008.

MH25009 **Facilities Programming and Management for Architecture** L T P/S C
3 0 0 3

Course Objectives

- To enable development of capability to plan for and manage various aspects of building so as to give user satisfaction and safety.

Basics of Architectural Programming

Introduction to Architectural Programming. Design process stages: analysis, synthesis and evaluation. Framework for information covering the whole problem. Different approaches to architectural programming.

Basics of Facilities Management

Principle duties of a facility manager. Business aspects of facilities management. Diverse responsibilities and decision-making processes from building infrastructure to fleet services.

Facilities Design and Space Planning

Applications of facilities design in defining the requirements of a project. Developing design strategies, implementing corporate philosophies and methodologies, and understanding the project development process. Flexibility and facilities planning. Optimal space planning and cost minimisation through facility layout.

Facility Planning and Decision Support System

Knowledge based facility planning and decision support system. Application of artificial intelligence. Graphical and theoretic approach to multi-floor building design. Facility layout algorithm using graphics. Simulation in facility planning and efficiency analysis

Facility Management During Construction Phase & Handover

Types of facility management options. Functionality of Building Automation systems. Wear and tear of technical installations. Recording operating costs, safety concepts, energy supply and waste

Course Outcomes

CO1 Familiarity about facilities programming in planning a building
CO2 Understanding of the relation between facilities planning and facilities management and their importance, especially in the context of service-oriented spaces and building types. management. Service tenders and contracts.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. Richard Payant, Kathy O. Roper, ‘The Facility Management Handbook’, AMACOM, 2014.

2. Bernard Lewis and Richard Payant, ‘Facility Manager's Maintenance Handbook’, McGraw Hills, 2007.
3. Keith Alexander, Brian Atkin, Jan Bröchner, and Tore Haugen, Facilities Management: Innovation and Performance’, Routledge, 2004.
4. Eric Teicholz,’ Facility Design and Management Handbook’, McGraw Hill Professional, 2001.
5. Frank Booty, ‘Facilities Management Handbook’, Fourth Edition, Elsevier, 2009.
6. William M. Pena , Steven A. Parshall, ‘Problem Seeking: An Architectural Programming Primer’, 5th Edition, Wiley, 2012.

MH25010	Architecture and Critical Theory	L	T	P/S	C
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Course Objectives

- To introduce the idea of architecture as enmeshed in society and a product of larger socio-cultural processes, and not as autonomous object within a hermetically sealed discipline.
- To introduce the various interdisciplinary critical theories and explain their interpretation of architecture.

Introduction

Definition of theory - Architectural theory and its nature, purpose and its relation to practice - overview of some traditional architectural theories- context for the rise of more critical theories in architecture – Introduction to Critical Theory- Architecture and Critical Theory.

Power and Gender In Architecture

Definition of power- Forms of power- ideas of power and society, power-knowledge- postcolonialism-Colonialism in India as a form of dominance- architecture and urbanism of colonialism in India- Indo-Saracenic architecture- New Delhi as part of imperial vision- Power in the built environment at various scales- Case studies in the contemporary world- Introduction to the idea of gender and space- Case studies.

Place and Architecture

Modernity, modern architecture and issues of particularity, place and context - Critical Regionalism and architectures of resistance- Phenomenology in architecture- placemaking.

Meaning in Architecture

Architecture as communication and representation- introduction to linguistic concepts of semiotics, structuralism, post structuralism and deconstruction- debates on modern, postmodern and deconstructivist architecture with reference to these concepts- Conditions of late capitalism- Society of spectacle- Architecture as spectacle and seduction.

Architecture In the Age of Globalisation and Digital Technology

Influence of globalisation and digital revolution on architectural processes- global/ regional debates- contemporary issues in architecture in India.

Course Outcomes

CO1 The students would gain an understanding of architecture as an integral production of society as well as engage in critical thinking to interpret architecture

CO2 The students' awareness through this course would inform their future practice/ research/ teaching

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.

One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

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2. Christian Norberg Schulz- Towards a Phenomenology of Architecture, Rizzoli New York, 1980
3. Guy Debord. Society of Spectacle,
4. Harry Francis Mallgrave and David Goodman, An Introduction to Architectural Theory-1968 to the present, Wiley Blackwell 2011
5. Ian Borden & Jane Rendell,(ed), Intersections, Routledge 2000
6. Jane Rendell, Barbara Penner, Iain Borden, Gender Space Architecture, Routledge, 2000
7. Kate Nesbitt, Theorizing a New Agenda for Architecture, Princeton Architectural Press, 1996
8. Kim Dovey, Framing Places: Mediating Power in Built Form, Routledge 1999.
9. Michael Hays (ed) Architectural Theory since 1960,MIT Press, 2000
10. Neil Leach (ed) Rethinking Architecture, Routledge 2000
11. Neil Leach, Anaesthetics of Architecture, MIT Press 1999,
12. Paul Allan Johnson,Theory of Architecture, Routledge 2000
13. Thomas Metcalf, An Imperial vision, Oxford, 2002
14. William J. Mitchell, City of Bits: Space, Place and the infobahn, MIT Press, 1996

MH25011 **Landscape Urbanism** L T P/S C
3 0 0 3

Course Objectives:

- To analyze the role of Landscape Urbanism – theory (texts) & practice (projects) in forming the contemporary city. To understand the evolution of a new urban morphology for contemporary cities adopting new models & strategies based on the Landscape of the city.

Landscape Urbanism – An Introduction

Background(what & why), the emergence of Landscape urbanism, characteristics, revaluating landscape, history and driving forces, Landscape in practice: Defining competitions of landscape urbanism

Landscape (Sub) Urbanism in Theory and Practice

LU – a school of thought, Smart growth and LU, New Urbanism, Green Urbanism, From Critical Regionalism to Critical Pragmatism

Practical limitations to innovation – Case study – The Wugong Urban Water (WUW) Landscape Structure Plan, The WUW project in relation to theory

Landscape Urbanism –Planning

Performative Processes – process cycles, processes engaged in design, a democratic urban environment, processes of planning – Surface Strategies – Contemporary Positions – Network city, New pragmatism, philosophy of world complexity, ecological design media – Evolution of Planning Ideals – from the modern to the contemporary, the rise of landscape urbanism

Sustainable (Su) & Ecological Urbanism (EU)

SU- Urban design with nature – The case for sustainable urbanism – Emerging thresholds – Sustainable neighborhoods – Time: The 2030 Community Challenge – Implementing sustainable urbanism – Rethinking cities for the future – Case studies EU- Historic roots and current trends, propositions and principles for the design of resilient cities, Cities – as habitats, part of the natural world, Urban ecosystems, The future of Urban Design.

Asian Landscape Urbanism

Emerging challenges, Relationship between Asian Urbanism and Landscape Urbanism – social & cultural aspects of Asian Urbanism – Landscape Urbanism in India – case studies Hampi, Goa

Course Outcome

CO1 Sensitivity with respect to the significance of landscape urbanism in make cities livable

REFERENCES:

1. Charles Waldheim, The Landscape Urbanism Reader (paperback)
2. Douglas Farr, Sustainable Urbanism – Urban design with nature, Wiley, John & Sons, Incorporated, November 2007.
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6. Jan Gehl, Cities for people, Copyrighted material, September 6, 2010|ISBN-10:159726573X |ISBN-13:978-1597265737, Edition:2. Landscape practice Global Leader, Woods Bagot PO Box 58041, Dubai, UAE.

7. Landscape urbanism – large-scale architecture, ecological urban planning or a designerly research policy, GUNILLA LINDHOLM Senior lecturer, landscape architect, Department of Landscape Architecture, SLU, Alnarp, Sweden – Research paper
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9. Peter Calthorpe, Urbanism in the age of climate change, Publication Date: June 1, 2013 |ISBN-10:159726721X| ISBN-13: 978-1597267212
10. Richard Weller, BOOM TOWN 2050 Scenarios for a rapidly growing city, UWA Publishing 2009.
11. Steven Velegrinis, Flux-scape: Emerging Challenges of Asian (Landscape) Urbanism,
12. Tigran Haas (Editor), Sustainable Urbanism and Beyond – Rethinking cities for the future, Rizzoli, NY, USA.

MH25012 Appropriate Technologies and Sustainable Construction L T P/S C
3 0 0 3

Course Objectives

- To give knowledge and skills to enable the facilitation and transformation of places and spaces where culture and technology are in a state of rapid change and resources are scarce.
- To give familiarity with self-help techniques of construction, adaptation, repair and management in order to give understanding about what is involved in sustainable construction of domestic and community architecture.

Introduction

Architecture and the survival of the planet. Assessing patterns of consumption and their alternatives. Profit and politics. Natural building movement. New context for codes and regulations

Design Principles

Principle 1: Conserving energy; Principle 2: Working with Climate; Principle 3: minimising new resources; Principle 4: respect for users; Principle 5: respect for site; Principle 6: Holism. Illustrated with examples.

Sustainable Construction

Design issues relating to sustainable development including site and ecology, community and culture, health, materials, energy, and water. Domestic and Community buildings using self help techniques of construction. Adaptation, repair and management.

Systems, Materials and Applications

Adobe, Cob, Rammed Earth, Modular contained earth, light clay, Straw bale, bamboo, earthen finishes. Sustainability. Adaptability to climate. Engineering considerations and construction methods. Waste as a resource. Portable architecture.

Best Current Practice

Case studies demonstrating best current practice in a scale ranging from small dwellings to large commercial buildings drawn from across the world.

Course Outcome

CO1 An understanding on the needs of alternative technologies in buildings
CO2 Exposure to sustainable materials and construction

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. Brenda and Robert Vale, ‘Green Architecture: Design for a sustainable future’, Thames and Hudson, 1996
2. Lynne Elizabeth and Cassandra Adams, ‘Alternative Construction: Contemporary Natural Building Methods’, Wiley; 1 edition, 2005

3. Victor Papanek, ‘The Green Imperative’, Thames and Hudson, 1995
4. Steven Harris and Deborah Berke, ‘Architecture of the Everyday’, Princeton Architectural Press, 1998
5. PilarEchavarria, ‘Portable Architecture- and unpredictable surroundings’, Page One Publishing Pvt. Ltd., 2005

MH25C07 **Theory of Architectural Education** L T P/S C
3 0 0 3

Course Objectives

- To give familiarity about theories of architectural education.
- To introduce the idea of cognition development.
- To give familiarity about ways of thinking and learning with respect to architecture.

Introduction

Overview of the important aspects of the discipline of architecture. Nature of Architectural Education based on the nature of the discipline of architecture.

Tools/ Techniques to Teach Architecture

Models and methods of Teaching. Teaching Aids In Architecture Education. Types of Teaching Aids- Visual, Audio, etc., Learning by Doing, reflection, exploring, arguing, incidentally. Case-Based Teaching. Advanced Organizer, Concept attainment model, Simulations.

Synectics as a Model of Teaching.

The essence of creativity in synectics. Use of synectics in the design studio. Techniques of teaching-learning: Maxims of teaching and its application to subjects of architecture. Concept mapping, creating concept maps. Basic aspects of classroom management.

Student Development

Need of development. Cognitive Development. Connection between seeing and remembering. Memory Retention. Attention Span. Organizing Communication. Comprehension. Create a Focal Point. Evolution of technology in education. Testing of module/ survey conducted.

Learning In Architecture Design Studio

Development of Critical, Creative and Pragmatic Thinking in Architectural Design Studio. Bloom Taxonomy in Design Studio. Qualities which can be attained at various stages in Architectural Design Studio.

Course Outcome

CO1 Awareness of the importance of contextual excellence in architectural design and methods for the same.

CO2 Knowledge about and ability to integrate interdisciplinary and cognitive aspects of learning, teaching and development.

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References

1. S. K. Mangal, ‘Essential of Educational Technology’, PHI Learning Pvt. Ltd., 2009.
2. Bruce Joyce, Emily Calhoun, Marsha Weils, ‘Models of Teaching’, Pearson, 2014.
3. Klausmier, Ripple,’Learning and Human Abilities’ Harper and Row, New York, 1971.
4. Eames Charles, Ray, ‘An Eames Anthology’, Yale University Press, 2015.

MH25013 **Advanced Professional Practice** L T P/S C
3 0 0 3

Course Objectives:

- To give detailed understanding of architectural services.
- To give in depth knowledge on consultancy contract /agreement processes.
- To provide exposure to Arbitration in the realm of the architectural profession.
- To give information on construction project management.

Architectural Services

Types of practices/firms – Comprehensive Scope of services and deliverables- Methods of Engagement of Architects- Architectural Competitions methods and guidelines – Consultancy Fee structure for various typology and value of projects- Professional Ethics and Regulations – Case Studies.

Contracting Processes

Necessity for a written contract/agreement – Architect's Responsibility & Client's Responsibility- Types of contracts (between Architect and Client)- Comprehensive Architectural Consultancy agreement– others- Contract/ agreement with structural, MEP and other consultants. Case studies.

Arbitration as an Alternative Disputes Resolution (ADR) Mechanism

Importance of Arbitration. Role of Arbitration and arbitration clause in any contract agreement. Contracts Act of 1872, Limitation Act 1963 and Arbitration and conciliation Act 1996 its terms & Provisions. Costs involved for Arbitration. Reasons leading to Arbitration.

Arbitral Proceedings

Initiation of Arbitration proceedings. Procedures and Communication. Composition and jurisdiction of Arbitral Tribunal. Appointment of Arbitration and umpire. Interim Measures by Court / Arbitral Tribunal. Conduct of Arbitral proceedings - Determination of Rules and procedure. Place and language of proceedings. Claim statements and counter claim. Hearings and written proceedings. Experts and Assistance from courts. Form and contents of Arbitral Awards. Setting aside the Arbitral awards. Appeals, insolvency and Limitation. Misconduct of Arbitrator. Case studies.

Project Management

Architect's role in project implementation- Architect's deliverables for Tender stage- Assistance in Tender process- Co-ordination with Project Management Consultant, Engineer-in-charge or Supervisor – Site meetings, site inspection, shop drawing review- Issues related to Management of Clients and other stake holders - Case Studies.

Course Outcome

CO1 Detailed understanding of architectural services
CO2 Familiarity with process of consultancy contracts/ agreements
CO3 Exposure to arbitration as alternative dispute resolution mechanism
CO4 Understanding of importance of Architect's role in project implementation and managing issues related to all stake holders

Weightage: Continuous Internal Assessment: 40%, End Semester Examinations: 60%.

Assessment Methodology: Two Assessments with equal weightage.
One Assessment as Internal written Test /Examination (50%), second as Assignment (50%) of any mode such as study, seminar, and or a combination of modes, etc.

References:

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