

**ANNA UNIVERSITY, CHENNAI**  
**NON-AUTONOMOUS AFFILIATED COLLEGES**

**M. ARCH. (URBAN DESIGN) FULL-TIME PROGRAMME**

**REGULATIONS 2021**  
**CHOICE BASED CREDIT SYSTEM**

**1. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

- I. To provide architects with career progression knowledge and skills sets as urban designers/researchers/ teachers to address emerging challenges of mega cities.
- II. To provide architects with requisite knowledge on socio economic, cultural, political parameters that shape cities
- III. To add value multiplier skill sets to students to the process of architecture by exploring the urban condition in detail with quantitative and qualitative research methods.
- IV. To empower architects to be effective stakeholders and leaders in the domain of contemporary resilient cities with industry 4.0 skills.
- V. To be part of policy and decision making teams by gaining clear understanding of relevant area of study

**2. PROGRAMME OUTCOMES (POs):**

On successful completion of the program,

- I. Postgraduates will be able to contribute further to society through their design/research/teaching.
- II. Postgraduates will have broad understanding on the Socio economic, cultural & political aspects of cities and evolve concordant solutions to achieve the goal.
- III. Postgraduates will be equipped with critical thinking & logical reasoning skills to address emerging urban issues and frame holistic solutions.
- IV. Postgraduates will be well versed with industry 4.0 skills including IoT, cognitive computing and design automation.
- V. Postgraduates will use their design and research skills to develop public space and pursue higher livability standards.
- VI. Postgraduates will be able to engage with society & civic agencies to resolve urban & environmental concerns.

**PEO /PO Mapping**

Program Educational Objectives	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
I	3	3	3	3	3	3
II	3	3	2	-	2	2
III	3	-	3	3	-	-
IV	3	-	3	3	2	2
V	3	2	3	-	3	3

**PROGRAMME ARTICULATION MATRIX**

Year	Semester	Course Name	PO1	PO2	PO3	PO4	PO5	PO6
1	I	History and Theory of Urban Design	2	1.5	2	-	2.5	2
		Urban planning: Policy and Practice	1	1	2	2	1.5	2
		Urban Heritage and Conservation	2.5	2	2	-	1.5	2
		Social theory and the city	2	2	1	-	2.5	-
		Urban Analysis and Diagramming	2.5	-	1.5	3	-	-
		Urban design studio I	1	1.5	3	1	2.5	2.5
	II	Research Methodologies in Architecture	3	-	2.5	2.5	2	-
		Urban Housing: Types and Practice	2	2.5	1	-	2	2.5
		Urban form performance and Simulation Audit	3	-	1	2	-	1
		Geographical Information Systems for Built Environment	2.5	-	2	3	-	-
Urban Design Studio II		2.5	2	1.5	3	2	1.5	
2	III	Sustainable Urban Development	2.5	3	2.5	3	3	2
		Urban Design Practice and Processes	2	2	3	-	-	3
		Dissertation	2	2	2	2	3	2
		Urban Design Studio III	-	3	3	2	1.5	2
		Internship Training	3	2	2	-	2	2.5
	IV	Thesis Project	3	3	3	3	3	3
1	II ELECTIVE I	Culture of Public spaces	1.5	2	1.5	-	2.5	1
		Quantitative Techniques and Data Representation	1.5	1	3	-	1.5	-
		Soft skills	2	1	1	-	2	2.5
2	III ELECTIVE II & III	City Form Development in Asia	2	3	2	1	3	2
		Human Settlements	1	2	1	1	2	1
		Urban Infrastructure : Resources and Resilience	2	2	2	1	3	3
		Coding for Urban Design	2	1	2	3	1	1.5
		Urban Economics, Sociology and Management	2	3	2	-	1	1.5
		Psychology of Learning and Development	2	-	1	-	-	-
2	IV ELECTIVE IV	Urban Landscapes	2.5	1.5	2	-	3	3
		Urban Transportation Systems	2	1	1.5	1	2	2
		Disaster Prevention and Mitigation in Cities	2.5	2	2	-	1.5	3
		Theory of Architectural Education	3	1	1.5	1	-	-

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**M. ARCH. (URBAN DESIGN) FULL-TIME PROGRAMME**  
**REGULATIONS 2021**  
**CHOICE BASED CREDIT SYSTEM**  
**I TO IV SEMESTERS CURRICULA AND SYLLABUS**  
**SEMESTER I**

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>THEORY</b>								
1.	UR4101	History and Theory of Urban Design	PCC	3	0	0	3	3
2.	UR4102	Urban Planning: Policy and Practice	PCC	3	0	0	3	3
3.	UR4103	Urban Heritage and Conservation	PCC	3	0	0	3	3
4.	UR4191	Social Theory and the City	PCC	3	0	0	3	3
5.		Audit Course I*	AC	2	0	0	2	0
<b>THEORY CUM STUDIO</b>								
6.	UR4121	Urban Analysis and Diagramming	PAEC	1	0	3	4	4
<b>STUDIO</b>								
7.	UR4111	Urban Design Studio I	PCC	0	0	10	10	10
<b>TOTAL</b>				<b>15</b>	<b>0</b>	<b>13</b>	<b>28</b>	<b>26</b>

\* Audit Course is optional

**SEMESTER II**  
**(Prerequisite- Pass in Urban Design Studio I)**

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>THEORY</b>								
1.	RM4251	Research Methodologies for Built Environment	RMC	3	0	0	3	3
2.	UR4201	Urban Housing: Types and Practice	PCC	3	0	0	3	3
3.	UR4202	Urban Form performance and Simulation Audit	PCC	3	0	0	3	3
4.		Audit Course II*	AC	2	0	0	2	0
<b>THEORY CUM STUDIO</b>								
5.	MH4221	Geographical Information Systems for Built Environment	PAEC	1	0	3	4	4
<b>STUDIO</b>								
6.	UR4211	Urban Design Studio II	PCC	0	0	10	10	10
<b>TOTAL</b>				<b>12</b>	<b>0</b>	<b>13</b>	<b>25</b>	<b>23</b>
<b>PROFESSIONAL ELECTIVE</b>								
		Professional Elective I	PEC	X	X	X	3	3
<b>TOTAL</b>							<b>28</b>	<b>26</b>

\* Audit Course is optional

**SEMESTER III**  
(Prerequisite- Pass in Urban Design Studio II)

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>THEORY</b>								
1.	UR4301	Sustainable Urban Development	PCC	3	0	0	3	3
2.	UR4302	Urban Design: Practice and Processes	PCC	3	0	0	3	3
<b>STUDIO</b>								
3.	UR4311	Dissertation	PCC	0	0	4	4	4
4.	UR4312	Urban Design Studio III	PCC	0	0	10	10	10
<b>TOTAL</b>				<b>6</b>	<b>0</b>	<b>14</b>	<b>20</b>	<b>20</b>
<b>PROFESSIONAL ELECTIVE</b>								
5.		Professional Elective II	PEC	X	X	X	3	3
6.		Professional Elective III	PEC	X	X	X	3	3
<b>INTERNSHIP TRAINING</b>								
7.	UR4313	Internship Training	PAEC	X	X	X	X	2
<b>TOTAL</b>							<b>28</b>	

**SEMESTER IV**  
(Prerequisite- Pass in Urban Design Studio III)

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>STUDIO</b>								
1.	UR4411	Thesis Project	PCC	0	0	20	20	20
<b>TOTAL</b>				<b>0</b>	<b>0</b>	<b>20</b>	<b>20</b>	<b>20</b>
<b>PROFESSIONAL ELECTIVE</b>								
2.		Professional Elective IV	PEC	X	X	X	3	3
<b>TOTAL</b>							<b>23</b>	<b>23</b>

TOTALNO.OFCREDITS:103

**PROFESSIONAL CORE COURSES (PCC)**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>THEORY</b>								
1.	UR4101	History and Theory of Urban Design	PCC	3	0	0	3	3
2.	UR4102	Urban Planning: Policy and Practice	PCC	3	0	0	3	3
3.	UR4103	Urban Heritage and Conservation	PCC	3	0	0	3	3
4.	UR4191	Social Theory and the City	PCC	3	0	0	3	3
5.	UR4111	Urban Design Studio I	PCC	0	0	10	10	10
6.	RM4251	Research Methodologies for Built Environment	RMC	3	0	0	3	3
7.	UR4201	Urban Housing: Types and Practice	PCC	3	0	0	3	3

8.	UR4202	Urban Form Performance and Simulation Audit	PCC	3	0	0	3	3
9.	UR4211	Urban Design Studio II	PCC	0	0	10	10	10
10.	UR4301	Sustainable Urban Development	PCC	3	0	0	3	3
11.	UR4302	Urban Design: Practice and Processes	PCC	3	0	0	3	3
12.	UR4311	Dissertation	PCC	0	0	4	4	4
13.	UR4312	Urban Design Studio III	PCC	0	0	10	10	10
14.	UR4411	Thesis Project	PCC	0	0	20	20	20

**PROFESSIONAL ELECTIVE COURSES(PEC)**

**SEMESTER II, ELECTIVE I**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	UR4071	Culture of Public Spaces	PEC	3	0	0	3	3
2.	UR4072	Quantitative Techniques and Data Representation	PEC	3	0	0	3	3
3.	MH4073	Soft Skills	PEC	2	0	1	3	3

**SEMESTER III, ELECTIVE II & III**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	UR4001	City Form Development in Asia	PEC	3	0	0	3	3
2.	UR4002	Human Settlements	PEC	3	0	0	3	3
3.	UR4003	Urban Infrastructure : Resources And Resilience	PEC	3	0	0	3	3
4.	UR4004	Coding for Urban Design	PEC	1	0	2	3	3
5.	UR4005	Urban Economics, Sociology and Management	PEC	3	0	0	3	3
6.	MH4074	Psychology of Learning and Development	PEC	3	0	0	3	3

**SEMESTER IV, ELECTIVE IV**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	UR4006	Urban Landscapes	PEC	3	0	0	3	3
2.	UR4007	Urban Transportation Systems	PEC	3	0	0	3	3
3.	UR4008	Disaster Prevention and Mitigation in Cities	PEC	3	0	0	3	3
4.	MH4075	Theory of Architectural Education	PEC	3	0	0	3	3

**PROFESSIONAL ABILITY ENHANCEMENT COURES (PAEC)**

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	UR4121	Urban Analysis and Diagramming	PAEC	1	0	3	4	4
2.	MH4221	Geographical Information Systems for Built Environment	PAEC	1	0	3	4	4
3.	UR4313	Internship Training	PAEC	X	X	X	X	2

**AUDIT COURSES (AC)**

Registration for any of these courses is optional to students

SL. NO	COURSE CODE	COURSE TITLE	PERIODS PER WEEK			CREDITS	SEMESTER
			Lecture	Tutorial	Practical		
1.	AX4091	English for Research Paper Writing	2	0	0	0	1/2
2.	AX4092	Disaster Management	2	0	0	0	
3.	AX4093	Constitution of India	2	0	0	0	
4.	AX4094	நற்றமிழ்இலக்கியம்	2	0	0	0	

**SUMMARY**

Sl. No	Subject Area	Credits per Semester				Credits Total
		I	II	III	IV	
1	PCC	22	16	20	20	78
2	PEC	-	3	6	3	12
3	PAEC	4	4	2	-	10
4	RMC	-	3	-	-	3
	<b>Total</b>	<b>26</b>	<b>26</b>	<b>28</b>	<b>23</b>	<b>103</b>
5	Non-Credit	Audit Course I	Audit Course II			

**UR4101**

**HISTORY AND THEORY OF URBAN DESIGN**

**L T P/S C**

**3 0 0 3**

**OBJECTIVES**

- To give comprehensive understanding of development of urban form and its determinant factors in global and Indian contexts.
- To introduce and enable understanding of various aspects of urbanism through historical and theoretical frameworks
- To understand historical significance of urban design interventions.

**UNIT I INTRODUCTION**

**6**

Introduction to origin and evolution of cities: form and urbanism. Normative, positive theories; Cosmic, Machine & Organic Models; Descriptive & functional theories.

**UNIT II EVOLUTION OF URBAN FORM- GLOBAL CONTEXT**

**10**

Early Cities - classical urban form. Medieval towns. Renaissance urban form and ideal cities. Industrialization, colonialism and model settlements. Reconfiguration Paris, London, Vienna, Barcelona. Modernism, Modernity and ideal settlement form. American grid-iron planning-City Beautiful. Organic cities. CIAM IV and the zoned city. Post war, post-colonial city form, zoned city and place. Urban renewal and community. Mixed use. Development of suburbs, Impact of safety concerns, sustainability, globalization and technology on urban form.

**UNIT III EVOLUTION OF URBAN FORM – INDIAN CONTEXT**

**10**

Early settlements (Indus Valley, southern peninsula, Indo Gangetic plain). Indian notions of space from epics, literature and treatises. Temple towns and ports of Tamizhagam (Kanchipuram, Muziris). City form during Magadha and Gupta Periods (Pataliputra, Varanasi). Medieval cities (Hampi, Jaipur). Mughal urban form (Shahjehanabad, Srinagar). Early colonial settlements (Madras, Pulicat, Goa). Colonial space types and urban form (Calcutta, New Delhi, Darjeeling). Zoned cities (Bhubaneswar and Gandhi Nagar). Industrial towns (Jamshedpur). Zoned layouts (Anna Nagar-Chennai, Whitefield - Bengaluru). Globalization and Indian cities

**UNIT IV MODERN AND POST-MODERN URBANIST THEORIES**

**10**

Theories of visual-artistic and socialist tradition - Cullen's townscape theories. Three theories of urban design: figure ground, networks and place. Lynch's ideas of good city form and image-ability. Phenomenology - architecture of the city - responsive environments. Claire Cooper Marcus and behavioral studies. Public and private domains. Suburbs and periphery- privacy, territoriality and proximities theory - responsive environments - defensible spaces- community design. Social life of urban spaces. Life between buildings - right to city - gender, class and city. Jane Jacobs - Death and life of great American cities. Futuristic cities. Charles Correa: Housing and Urbanization, National Commission for Urbanization report, 1989. New urbanism

**UNIT V CONTEMPORARY URBAN INTERVENTIONS**

**9**

Contemporary Urban condition and future of cities: globalization and local culture, climate change, sustainability and urban resilience. Transportation and city infrastructure. Communication, big data

and automation overlay - contemporary processes in urban design - place and public realm in the digital age-participatory design

**TOTAL: 45 PERIODS**

**OUTCOMES**

- Knowledge of evolution of global and Indian urban form
- Ability to comprehend historical and theoretical frameworks to address contemporary urban issues.
- Understanding on the historical significance of urban design interventions in global urban scenario.

**REFERENCES**

1. Morris, A.E.J. History of Urban Form before the Industrial Revolution. Prentice Hall, 1996
2. Carmona, Mathew et.al. Public Places Urban Spaces: The Dimensions of Urban Design.Oxford: The Architectural Press, July 2010
3. Bacon, Edmund. Design of Cities. London: Penguin, 1976
4. Cullen, Gordon. The Concise Townscape. Oxford: The Architectural Press, 1978
5. Kostof, Spiro. The City Assembled. London: Thames & Hudson, 2005
6. Kostof, Spiro. The City Shaped. London: Thames & Hudson, 1991
7. Jon Lang. Urban Design: A Typology of procedures and products. Oxford: The Architectural Press, 2017
8. Correa, Charles. Housing and Urbanization. London: Thames & Hudson, 1999
9. Ali Madanipour Ed., Who's Public Space? International Case studies in Urban design and development, Abingdon-On-Thames: Routledge, 2009
10. Chakrabarti K, Dilip. The Archaeology of Ancient Indian Cities. New Delhi: Oxford University Press, India, 1995
11. Waddell, L. Report on the excavations at Pātaliputra Paperback. Book on Demand Ltd., 2013
12. Champakalakshmi. R. Trade, Ideology and Urbanization. New Delhi: Oxford University Press, 1997
13. Lynch, Kevin. Good City Form. Cambridge: MIT PRESS,1984
14. Lynch, Kevin. The Image of the City. Cambridge: MIT PRESS, 1960.
15. Rithchie. A. Sustainable Urban Design: An Environmental Approach. Abingdon: Taylor & Francis, 2000.
16. Barnett, Jonathan. An Introduction to Urban Design. New York: Harper Row, 1982
17. Broadbent, Geoffrey. Emerging Concepts in Urban Space Design. Abingdon: Taylor & Francis, 2003.
18. Gosling and Maitland. Urban Design. New York: St. Martin's Press, 1984

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	1	2	-	-	3	-
2	3	-	-	-	2	2
3	-	1	2	-	-	-
<b>AVG</b>	<b>2</b>	<b>1.5</b>	<b>2</b>	<b>-</b>	<b>2.5</b>	<b>2</b>

1- low, 2-medium, 3-high, '-'- no correlation



**OBJECTIVES**

- To give awareness about the principles of urban planning
- To present a critical overview of relevant urban planning policies, techniques and methods, planning processes and their impact on urban growth, development & infrastructure.
- To give exposure to different aspects of data, planning standards, models and projections.

**UNIT I PLANNING THEORIES AND DEFINITIONS****9**

Planning glossary. Planning theories and applications in settlement planning. Types of plans: Master Plans, development plans, structure plans, physical, economic and social plans. Planning scales: regional, city, zonal, area, planned unit development schemes. Theories of physical planning: center-place theory, gravity model, primate cities.

**UNIT II DATA BASE FOR PHYSICAL SURVEYS****10**

Data base for physical surveys including land use, building use, density, building age, etc., and socio-economic surveys. Sampling and survey techniques. Land use classification or coding. Preparation of base maps: concepts of scales, components and detailing for various levels of plans (like regional plan, city plan, zoning plan, and local area plan). Classification, delineation and ranking of regions and settlements - Guttman's Scalogram. Desire line diagrams, Threshold analysis. Input output analysis, SWOT analysis. Planning models (descriptive and decision making models). Methods of population forecasts and projections: urban- rural, urban concentration, metropolitan concentration, location dimensions of population groups- social area and strategic choice approach. Interconnected decision area analysis.

**UNIT III SPATIAL STANDARDS****9**

Spatial standards, performance standards and benchmarks, and variable standards in applicable scenarios. URDPFI guidelines - Zoning regulations/ordinances and DCR and (development control rules and regulations). Emerging techniques in settlement planning: land management techniques, Land pooling, land assembly, PRT (Plot reconstitution techniques), land readjustment, transfer of development rights.

**UNIT IV TECHNIQUES AND APPROACHES IN URBAN PLANNING****8**

Various approaches to urban land zoning: mixed zone, floating zone, white zoning etc. TOD (Transit Oriented Development). New Urbanism and PIU (Principles of Intelligent Urbanism). Public participation in planning process. Regional urban resilient planning to address climate change and global emergencies.

**UNIT V URBAN INFRASTRUCTURE****9**

Concepts of urban infrastructure-social, physical, health Infrastructure. Urban form-size implications for services integration. Infrastructure overlay in PUDs - services and utilities network - qualitative and quantitative assessment for assessment of demand - supply - water supply, sewerage/drainage and waste management-communication and transit networks & urban social Infrastructure. Infrastructure development financing models and emerging options.

**TOTAL: 45 PERIODS****OUTCOMES**

- An understanding of various urban planning principles, facets, types, scales, theories and regulations
- Familiarity with urban planning frameworks, tools, methodology and applications in contemporary situations.

**REFERENCES**

1. S K Kulshrestha, Urban and Regional Planning in India: A Handbook for Professional Practice. New Delhi, Sage Publications, 2012
2. Susan S. Fainstein (Editor), James DeFilippis (Editor). Readings in Planning Theory- 4<sup>th</sup> Edition, Hoboken: Wiley Blackwell, 2016
3. Eugénie, Birch. The Urban and Regional Planning, Abingdon-On-Thames: Routledge, 2008
4. Faludi, Andrea. A reader in planning theory. Oxford, New York: Pergamon Press, 1973
5. Kruekeberg, Donald and Arthur Silvers, Arthur. Urban Planning Analysis: Methods and Models. Hoboken: John Wiley, 1974

6. Braken, Ian. Urban Planning Methods. Abingdon-On-Thames: Routledge, 2006
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9. Margaret. An introduction to Town planning Techniques. Hutchinson Educational, Hutchinson
10. Cliff Moughtin. Urban Design Methods and Techniques. Elsevier, 2003
11. Das, Amiyakumar, Urban Planning in India, Rawat Pubns; illustrated edition, 2007.
12. Urban and regional development plans formulation and implementation (URDPFI) guidelines, Government of India, Ministry of Urban Development – Volume

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	-	1	-	-	2	3
2	1	1	-	-	1	3
3	-	-	2	2	-	1
AVG	1	1	2	2	1.5	2

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR4103

**URBAN HERITAGE AND CONSERVATION**

**L T P/S C**  
**3 0 0 3**

### OBJECTIVES

- To introduce the idea of conservation as value addition to city life, place, memory and identity
- To enable understanding of the importance of conserving building heritage, historic precincts & natural heritage
- To give awareness of conservation strategies & legislature, in preserving the essence of a heritage structure or precinct

### UNIT I INTRODUCTION TO CONSERVATION

6

Understanding the need for heritage conservation. Types of Heritage. Introduction to Conservation, preservation and adaptive reuse of buildings and historic districts.

### UNIT II CONSERVATION STRATEGIES

10

Listing of monuments. Documentation of historic structures: assessing architectural character, building material audit. Historic report- Guidelines for preservation, rehabilitation and adaptive re-use of historic structures. Seismic retrofit. Differently- abled access /services additions to historic buildings. Heritage site management. Conservation management. Concepts of integrated conservation, sustainable conservation, in-situ conservation. Case studies of global and Indian projects.

### UNIT III HISTORIC DISTRICTS AND HERITAGE TOURISM

10

Historic districts: Understanding characteristics and issues of historic districts, places and cities. Mapping, documentation and development guidelines. Overlay with new age urban infrastructure. Heritage tourism circuits management and master plan. Case studies: Varanasi, Bodhgaya, Thanjavur, Goa, Pondicherry, Aleppo, Rome, Jerusalem, Bath, Beijing, Paris, Istanbul, Galle, Bhutan and Ladakh.

### UNIT IV URBAN ECOLOGY AND NATURAL HERITAGE

10

Urban Ecology. Riparian corridors. Wetlands and urban lakes, urban forests. Coast preservation - code compliance. Case study of Nanmangalam, Guindy national park, Pallikaranai, Mambakkam Lake. Code compliance with Ministry of Environment's legislation and recommendations.

**UNIT V CONSERVATION LEGISLATION****9**

Central and state government policies and legislation. Role of Conservation Agencies and conventions: ICOMOS, ICCROM, UNESCO, ASI, INTACH, ICHN. Charters and trends in conservation: Florence Charter, Burra charter. Norms for conservation of heritage buildings and sites as part of development regulations, Heritage byelaws and special conditions. Heritage impact assessment. Community heritage leverage legislation such as LEASE Act, RENT Control Act & CESS and TDR. Government of India heritage programs such as HRIDAY and PRASAD.

**TOTAL: 45 PERIODS****OUTCOMES**

- An understanding of the role of conservation & identity in burgeoning cities.
- Familiarity with conservation types, strategies & legislation.
- Ability to use critical conservation frameworks for evaluating historical buildings and districts, urban ecology and propose strategies for preservation, conservation and adaptive reuse.

**REFERENCES**

1. PEARL. Urban heritage in Indian Cities. New Delhi: INTACH publications, 2015
2. Ed Cody and Siravo. Historic Cities: Issues in urban Conservation. Los Angeles: Getty Publications.2019
3. Appleyard, Donald. The Conservation of European Cities. Cambridge: MIT Press, 1979
4. M. Fitch, James. Historic Preservation: Curatorial Management of the Built World. Charlottesville: University of Virginia Press, 1990
5. Fielden, Bernard and E. Stipe, Robert. A Richer Heritage: Historic Preservation in the Twenty – First Century. Chapel Hill: University of North Carolina Press, 2003
6. Bernard Feilden, Bernard. Conservation of Historic Buildings. Oxford: Butterworth-Heinemann, 1994.
7. Brereton, Christopher. The Repair of Historic Buildings: Advice on principles and methods (Aspects of Conservation). London: Historic England, 1995
8. M.S.Mathews. Conservation Engineering (Restoration of Historic Monuments: Suggestions for Practice). Karlsruhe:Universität Karlsruhe, 1998

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	2	-	-	-	1
2	2	-	2	-	2	2
3	-	2	-	-	1	3
<b>AVG</b>	<b>2.5</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>1.5</b>	<b>2</b>

1- low, 2-medium, 3-high, ‘-‘- no correlation

**UR4191****SOCIAL THEORY AND THE CITY****L T P/S C****3 0 0 3****OBJECTIVES**

- To give critical understanding of the city and its underlying forces through various social theories
- To give awareness of urban processes through political, economic, social and cultural lenses.
- To give knowledge about the role of people and culture in city identity.

**UNIT I CITY, CULTURE AND ITS IDENTITY****9**

Understanding city culture. Theories of Socio-cultural memory. Understanding visual culture. Urban and cultural anthropology. Contemporary Urban issues. City and Identity. Theories of Margaret Mead, Levi Strauss, Saskia Sassen, Claire Cooper Marcus, MSS Pandian, Malcom Adisheshaiah and Arjun Appadurai.

**UNIT II HISTORIOGRAPHY AND THE CITY****9**

Understanding authorized and subaltern histories of cities - society and cities in vernacular literature, folk tradition and popular art - post-colonial theories and histories of Indian Cities.

**UNIT III POWER AND RESISTANCE IN THE CITY SPACES****9**

Understanding the concept of power and its space manifestation in cities. Historic Indian Treatises: Chanakya Neeti, Harshacharitra, Ula, Uthirmerur inscriptions, Baburnama, Ain-i-Akbari. Theories of Giddens, Aldo Rossi, Corbusier, Oscar Niemeyer, Foucault. Case studies from New Delhi, Istanbul, Los Angeles, Jerusalem, Shenzhen

**UNIT IV URBAN POLITICS****9**

City and its people. Cities and social theory: Marxism, public realm theory, difference theory, critical theory. Spatial-social justice in the city. Spatial inequalities and urban form. Neoliberalism and the city. Globalization and urban spatial politics. Theories of Jane Jacobs, Pyatok, Newmann, Saskia Sassen. Case studies of Belfast, Berlin, Curitiba city, Caracas, Scandinavian cities, Mumbai - Lokhandwala region.

**UNIT V GAZE IN THE CITY****9**

Space and body: The Flâneur, gaze and urban public spaces. Tourist gaze, gender gaze, colonial gaze. Sexuality in urban space: feminista, queer, transgender, etc.

**TOTAL: 45 PERIODS****OUTCOMES**

- An understanding of the city and its underlying forces through various social theories.
- Ability to process city through political, economic, social and cultural lenses.
- Ability to understand the city in terms of people, community & identity.

**REFERENCES**

1. Ritzer, George. Postmodern Social Theory. Beijing: Beijing da xuechu ban she. 2004
2. Sharp, Kristen, and Elizabeth Grierson. Re-Imagining the City: Art, Globalisation and Public space. Bristol: Bristol: Intellect Books, 2013
3. Phadke, Shilpa and Khan, Sameera. Why Loiter? New Delhi: Penguin India, 2011
4. Montgomery, Charles. Happy City: Transforming our lives through Urban Design. London: Penguin, 2015
5. Said, Edward. Orientalism: Western Conceptions of the Orient. London: Penguin Publication, 1978
6. Rapoport, Amos. The meaning of the built environment. Tucson: The University of Arizona Press, 1982
7. Rapoport, Amos. House, Form and Culture. London: Pearson Education, 1969
8. Srivastava A.R.N. Essentials of Cultural Anthropology. New Delhi: Prentice Hall India Private Ltd, 2005

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	2	1	1	-	-	-
2	-	3	1	-	2	-
3	-	2	2	-	3	-
<b>AVG</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>2.5</b>	<b>-</b>

1- low, 2-medium, 3-high, '-'- no correlation

UR4121

**URBAN ANALYSIS AND DIAGRAMMING**

**L T P/S C**

**1 0 3 4**

**OBJECTIVES**

- To provide knowledge on visualizing, diagramming, mapping and analyzing urban form and place
- To enable understanding of the importance of data mining and its various methods.

**UNIT I INTRODUCTION**

**12**

Introduction to urban glossary. Basics of mapping- map types. Introductory exercise. Study of an urban transect with sketch-walks.

**UNIT II COGNITIVE DIAGRAMMING AND BASE MAPS**

**12**

Basics of mapping. Preparation of figure ground maps collating satellite images, GIS, area development maps, records and ground corroboration. Cognitive mapping of tangible and intangible layers: land-use, districts and boundaries, physical histogenesis, heritage fabric, program-movement, activity, nodes, thresholds-networks, pedestrian pathways, transit density, policy initiatives, population demographics, visual and non-visual clues, social memory, community narratives and place realms, soundscape, real estate dynamics, ecology and environmental factors, physical and social infrastructure.

**UNIT III MAPPING WITH THEORY OVERLAYS**

**12**

Exploring and analyzing selected urban sites with mapping overlays of urban theories (as filters) on figure ground diagrams and base maps: imageability, permeability, variety, legibility, built, natural and cultural landscapes, perception, monuments and dwelling, spatial syntax, heritage urban form, social life of small urban spaces, life between buildings, FARMAX. Urbanism in the age of climate change, defensible space, and infrastructural urbanism, urban flows, e-cities, e-bodies, globalization and local culture, livability.

**UNIT IV DATA VISUALISATION**

**12**

Envisioning information. Graphical representation of data. Ben fry's seven steps in creating data visualization: Acquire, Parse, Filter, Mine, Represent, and Refine, Interact. Visual interconnection of facts & ideas: Relationship facts, contacts, connections, time-series, relational graphics, data maps, multivariate designs, scales. Quantitative; discrete; continuous; categorized data to be visualized with graphics software. Visualizing data for various urban development indices and quotients such as livability, walkability, mobility, commuting, off-peak travelling, local business, health, resilience, happiness, urban stress, surveillance and SDG, sustainable development goals.

**UNIT V DATA ANALYSIS**

**12**

Detection of graphical deception: design variation vs. data variation. Sources of deception. Aesthetics and Data graphical displays. Urban data mining -extracting meaningful information from raw data through simple programming software, iterative data analysis and refinement for various urban development indices and quotients. Social media data analysis as a complementary tool for urban design

**TOTAL: 60 PERIODS**

**OUTCOMES**

- Ability to analyze and comprehend urban condition with mapping- diagramming tools and an array of urban glossary

- Ability to extract, visualize and analyse urban data using analytical tools, to understand and communicate urban development issues, indices and quotients.

## REFERENCES

1. Allen, Stan. Points and Lines: Diagrams and Projects for the City. Oxford: The Architectural Press, 1999.
2. Bentley, Ian et al. Responsive environments: a manual for designers. Oxford: The Architectural Press, 1985
3. Tschumi, Bernard. Notations: Diagrams and sequences. London: Artifice Press, 2014
4. McCandless, David. The visual miscellaneum: A colourful guide to the world's most consequential Trivia. New York: HarperCollins Publishers, 2009
5. Chakrabarti, Vishaan. A Country of Cities: A Manifesto for an Urban America. New York: Metropolis Books, 2013
6. Montgomery, Charles. Happy City: Transforming our lives through Urban Design. London: Penguin, 2015
7. Dodge, Martin and Kitchin, Robin and Chris Perkins. The Map reader. Hoboken: John Wiley 2011
8. Kevin Lynch, Image of the City. Cambridge: MIT PRESS, 1960.
9. Norberg-Schulz, Christian. Towards a Phenomenology of Architecture. New York: Rizzoli, 1980
10. J. Mitchell, William. City of Bits: Space, Place and the infobahn. Cambridge: MIT PRESS, 1996.
11. Thomas A, Horan, Digital Places: Building our city of bits, Washington, DC.: Urban Land Institute, 200
12. Watson, Donald et al. Time Saver Standards for Urban Design. New York: McGraw-Hill Education, 2003
13. G. Parolek, Daniel, Parolek, Karen and C. Cram, Paul. Form Based Codes. Hoboken: John Wiley, 2000
14. Rem Koolhaas Ed. Project on the City, Great Leap Forward. Cologne: Taschen, 2001
15. Ingels, Bjarke. Yes is more. Cologne: Taschen, 2009
16. Calthorpe, Peter. Urbanism in the age of Climate Change. Washington DC: Island Press, 2011
17. Banerjee Tridib, Loukaitou-Sideris Anastasia, Companion to Urban Design, Abingdon-On-Thames: Routledge 2014
18. Edward R. Tufte, The visual display of quantitative information. Cheshire: Graphic Press LLC, 2006.

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	2	-	2	3	-	-
2	3	-	1	3	-	-
<b>AVG</b>	<b>2.5</b>	-	<b>1.5</b>	<b>3</b>	-	-

1- low, 2-medium, 3-high, '-'- no correlation

UR4111

URBAN DESIGN STUDIO I

L T P/S C

0 0 10 10

## OBJECTIVES

- To enable exploration of urban cores in flux and propose future scenarios for their development
- To enable exploration of opportunities to conserve, strengthen and revitalise city cores.

## CONTENT

Most often, city cores have substantial historic building stock and a network of places intertwined with local culture. It is imperative that old city cores - their networks, street life, and community spaces are taken into consideration in infrastructure up gradation, public projects and real estate development. New development, community infrastructure and amenities should be sympathetic to the context of the local community, architectural heritage and equity and enrich city cores.

This studio seeks to address the role of transformative place making in the context of city cores.

Students will explore the selected area of study, through experiential mapping, physical mapping, and interviews, review of policy and regulations, application of urban design theories, frameworks, data visualization and models.

This studio seeks to address the role of transformative place making in the context of city cores.

Students will explore the selected area of study, through experiential mapping, physical mapping, and interviews, review of policy and regulations, application of urban design theories, frameworks, data visualization and models.

Students will analyze various urban design parameters inclusive of:

- the role of historic districts, urban morphology and building types, places and landform types, in a city's socio-cultural identity
- urban design challenges in integrating transit, pedestrian, social, health and community infrastructure in historic fabric
- relationship between a building and public realm
- placing urban catalysts
- local cultural aspirations and notions of space-place
- safety, health and public space

Probable projects might include urban in-fills, urban catalysts, transit, and pedestrian and community infrastructure as modes for urban revitalization, conservation guidelines, and form-based code manuals for contextual transformation, cultural landscape and place making proposals.

**TOTAL: 150 PERIODS**

## OUTCOMES

- Refined understanding of issues transforming urban cores
- Ability and skill to propose strategies for transformative contextual place making at historic precincts in flux.

## REFERENCES

1. Ian Bentley ed. Responsive environments: a manual for designers. Oxford: The Architectural Press, 1988
2. Gosling and Maitland, Urban Design, New York: St. Martin's Press, 1989
3. Correa, Charles. Housing and Urbanization, London: Thames & Hudson, 1999
4. G. Parolek, Daniel, Parolek, Karen and C. Cram, Paul. Form Based Codes. Hoboken: John Wiley, 2000
5. Gehl, Jan. Life between Buildings: Using Public space. Washington, DC.: Island Press, 2011
6. Whyte, William. The Social Life of Small Urban Spaces. Project for Public Spaces, 2001
7. Lynch, Kevin. The Image of the City. Cambridge: MIT PRESS, 1960.
8. Broadbent, Geoffrey. Emerging Concepts in Urban Space Design. Abingdon: Taylor & Francis, 2003.
9. Norberg- Schulz, Christian. Towards a Phenomenology of Architecture. New York: Rizzoli, 1980
10. Watson, Donald et.al. Time Saver Standards for Urban Design. New York: McGraw-Hill Education, 2003
11. M. Fitch, James. Historic Preservation: Curatorial Management of the Built World. Charlottesville: University of Virginia Press, 1990
12. A.Goldsmith, Stephen. What We See: Advancing the Observations of Jane Jacobs. New York: New York University Press, 2010

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	1	2	3	1	2	3
2	1	1	-	-	3	2
AVG	1	1.5	3	1	2.5	2.5

1- low, 2-medium, 3-high, '-'- no correlation

**RM4251 RESEARCH METHODOLOGIES FOR BUILT ENVIRONMENT L T P/S C**  
**3 0 0 3**

### 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.

### UNIT I INTRODUCTION 9

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.

### UNIT II RESEARCH PROCESS 9

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.

### UNIT III RESEARCHING AND DATA COLLECTION 9

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.

### UNIT IV REPORT WRITING 9

Research writing in general and its components. Developing the outline, referencing, writing the bibliography, presentation, etc.

### UNIT V CASE STUDIES 9

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.

**TOTAL: 45 PERIODS**

### COURSE OUTCOMES

<b>CO1</b>	Skill to identify, decipher and interpret issues relating to architecture based on research enquiry methods
<b>CO2</b>	Knowledge of different methods of conducting research and research writing
<b>CO3</b>	Familiarity with specific research related to built environment.

### REFERENCES

1. Linda Groat and David Wang, 'Architectural Research Methods', 2nd edition, John Wiley and Sons Inc, Hoboken, New Jersey, US, 2013.



- Wayne C Booth, Joseph M Williams Gregory G. Colomb, 'The Craft of Research', 3<sup>rd</sup> Edition, Chicago Guides to Writing, Editing and Publishing, 2008.
- Iain Borden and Katerina Ruedi, 'The Dissertation: An Architecture Student's Handbook', Edition 2, Architectural Press, 2005
- Ranjith Kumar, 'Research Methodology- A Step by Step guide for Beginners', 4th Edition, Sage Publications, 2014.
- John W Creswell, 'Research Design: Qualitative, Quantitative and Mixed Methods Approaches', Sage Publications, 2013.
- JA Smith, P Flowers, M Larkin, 'Interpretative Phenomenological Analysis: Theory, Method and Research (English),I Edition, Sage Publications, 2009.

### CO – PO Mapping – Research Methodologies for Built Environment

Course Outcome (CO)	Programme Outcome (POs)					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	2	-	-	-	-
CO2	3	2	-	-	-	-
CO3	3	2	-	-	-	-
AVERAGE	$3+3+3=$ $9/3=3$	$2+2+2=$ $6/3=2$	-	-	-	-

UR4201

**URBAN HOUSING: TYPES AND PRACTICE**

**L T P/S C**  
**3 0 0 3**

#### OBJECTIVES

- To understand Indian and global fundamentals of housing practices.
- To understand the role of policy, agencies, finance models and resource mobilization for urban housing

#### UNIT I INTRODUCTION TO HOUSING

9

Housing scenario in India. Housing types and issues: single family, multi family, high density, community housing, micro housing, affordable housing, informal housing. Socio cultural & economic facets of housing. Urban and rural housing stock: adequacies and amenities. Demand & Supply Assessment - Factors of influence - Housing quality and its determinants. Market rate development and housing

#### UNIT II EVOLUTION OF HOUSING TRENDS

9

Industrialization, modernity, modularity and housing. Participatory housing. Charles Correa's housing and urbanization. Affordable housing case studies.

#### UNIT III EMERGING PRACTICES IN URBAN HOUSING

9

Alternate housing models: Commune, Co Housing, Cooperatives, Hyper Housing, Multi-cultural Housing, lab rooms and cyber homes, micro housing, Network housing, hybrid buildings, individual sheltered residences, bio homes for senior citizens.

#### UNIT IV HOUSING PROGRAMMES AND INSTITUTIONAL FRAMEWORK

9

Role of Government and public agencies in Housing Development. National housing policy. Five Year Plans and their impact on housing. National schemes: JNNURM, IHSDP, AMRUT, etc. Site and services Schemes: MUDP I & II, Cooperative Housing. Role of housing agencies. Basic housing standards and URDPFI Guidelines.

#### UNIT V HOUSING FINANCE

9

Formal and Informal systems of finance in housing. Micro financing. Public Private Partnership in resource mobilization. Case studies of BOT, BOOT, BOLT, etc. Case studies of best practices in urban housing finance – Indian Context.

**TOTAL: 45 PERIODS**

## OUTCOMES

Student will be able to

- Understand Indian and global urban housing practices.
- Recognize the role of policies, agencies, schemes and finance models for housing.

## REFERENCES

1. Tighe, Rosie and Mueller. The Affordable Housing Reader. Abingdon-On-Thames: Routledge, 2012
2. Graham Towers. Introduction to Urban Housing Design. Abingdon-On-Thames: Routledge, 2005
3. Correa, Charles. Housing and Urbanization: Building Solutions for People and Cities. Thames & Hudson, 2003
4. CarlesBronto. Innovative Public Housing. Gingko Press, 2005
5. Jingmin ZHOU. Urban housing Forms. Oxford: The Architectural Press, 2005
6. Manuel Gausa and Jaime Salazer. Housing+ Single Family Housing. Basel: Birkhauser-Publishers for Architecture, 2005

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	2	2	1	-	2	2
2	-	3	1	-	2	3
<b>AVG</b>	<b>2</b>	<b>2.5</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>2.5</b>

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR 4202

URBAN FORM PERFORMANCE AND SIMULATION AUDIT

LT P/S C

3 0 0 3

## OBJECTIVE

- To understand impact of climate change on urban environment
- To develop skill-sets to assess, audit urban form based on environmental design criteria

### UNIT I CLIMATOLOGY OF CONTEMPORARY CITIES

8

Climate change and the city. Urban environmental design parameters: environmental planning, envelope design, solar envelope and mutual shading, airflow patterns, humidity, anthropogenic heat production, air pollution, urban morphology, urban heat island and water management.

### UNIT II URBAN FORM PERFORMANCE ASSESSMENT

8

Integrated environmental design. Environmental assessment methods: cognitive, empirical and simulation analysis. Case studies of integrated design in Master Planning.

### UNIT III MICROCLIMATIC CONSIDERATIONS AND ENVIRONMENTAL STRATEGIES

10

Urban morphology. Solar access and solar control, thermal inertia. Ventilation: wind protection, natural cooling, surface properties, solar reflectance, absorbance and transmittance. Water bodies-vegetation- thermal emissivity-thermal resistance and thermal capacity. Additional elements and transitional spaces. Adaptive skins. Adaptive topographies.

### UNIT IV ENVIRONMENTAL ASSESSMENT METHODS AND MODELLING AT URBAN SCALE

10

Basics of cognitive mapping and story boarding of environmental performance. Introduction to empirical assessment. Data collection and analysis, Simulation and experimental techniques for urban form audit and assessment with software.

### UNIT V LIVE STUDY

9

Cognitive, empirical and simulation assessment of a select live case study and presentation

**TOTAL: 45 PERIODS**

**OUTCOMES**

- Students will develop understanding on urban environmental challenges.
- Students will develop skill sets to assess, audit and provide environmental design guidelines for new development or revitalization of urban space.

**REFERENCES**

1. Yannas, S. Towards More Sustainable Cities. Solar Energy, Vol.70, no. 3 pp281-294. Elsevier Science Ltd. 2001
2. Corbella, O.D., V.N. Corner and S. Yannas. Outdoor Spaces and Urban Design. Proc. PLEA 2001 Florianopolis, pp655-659, 2001
3. Yannas, S. Towards Environmentally- Responsive Architecture. Proc. PLEA 2003 Santiago de Chile, 2003
4. Chatzidimitriou, A. and S. Yannas. Microclimatic Studies of Urban Open Spaces in Northern Greece. Proc. PLEA 2004, Eindhoven.
5. Meteotest (2003). Meteororm v5.0 Global Meteorological Database for Solar Energy and Applied Climatology. Meteotest, Bern.
6. Kalamatianou, F.-L. (2004). Adaptive Topography; Martinez-CañavateSouviron, C. and K. Pratt (2004) Adaptive Green. Adaptive Skins Project, Environment & Energy Studies Programme Architectural Association Graduate School (AA EE), London

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	-	1	2	-	-
2	3	-	1	2	-	1
AVG	3	-	1	2	-	1

1- low, 2-medium, 3-high, ‘-‘- no correlation

**MH4221    GEOGRAPHICAL INFORMATION SYSTEMS FOR BUILT ENVIRONMENT    L T P/S C**  
**1 0 3 4**

**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.

**UNIT I    INTRODUCTION TO G.I.S    9**

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.

**UNIT II    SPATIAL AND ATTRIBUTE DATA    INPUT    18**

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 data file. Topology generation. Joining attributedata to its geographic features

**UNIT IV    SPATIAL ANALYSIS USING GIS    18**

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

**UNIT V    MODELLING THE MACRO ENVIRONMENT    15**

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.

**TOTAL: 60 PERIODS**

**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.

**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. AnjiReddy.M., 'Text book of Remote Sensing and Geographical Information Systems', B.S. Publications, Hyderabad, 2008.
5. Michael Law and Amy Collins, 'Getting to know ArcGIS Pro', ESRI Press, USA, 2016.
6. Paul. D. Zwick and Margaret.H. Carr, 'Smart Land-use Analysis: The LUCIS Model', ESRI Press, USA, 2007.
7. DavidMaquire,MichaelBattyandMichaelF.Goodchild,'GIS,Spatial Analysis and Modeling', ESRI Press,2005.
8. CynthiaA.Brewer,'DesigningBetterMaps:AGuideforGISUsers'–2ndEdition,ESRIPress,2015.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	-	1	2	-	-
2	3	-	1	2	-	1
AVG	3	-	1	2	-	1

1- low, 2-medium, 3-high, '-'- no correlation

**UR4211**

**URBAN DESIGN STUDIO II**

**L T P/S C**  
**0 0 10 10**

**OBJECTIVES**

- To understand urban design issues specific to contemporary cities
- To enable understanding of complex socio-economic parameters, that affect built environment and commons of cities
- To develop appropriate analytical tools and design strategies, to address unique needs and aspirations of contemporary urban living

**COURSE OUTLINE**

Contemporary cities are no longer defined by conventional urban form parameters, but shaped by flows: rapid urbanization via global and local flows of economy, people, networks, etc., Contemporary urban form is influenced by a distinct set of urban issues, needs and aspirations: it is imperative to ensure viable density, sustainability, essential life quotients of sense of place, belonging, identity and equity in urban development. In addition, land use needs to be seamlessly integrated with requisite infrastructure and existing communities. This studio seeks to equip students with the right tools and strategies, to propose future development scenarios for contemporary urban living and development scenarios.

**PROCESS AND SESSIONAL WORK**

In this studio, students will explore the unique range of land management issues that may occur in urban areas, shaped by flows - issues often related to growth patterns of the historic cores they feed off and their specific locations.

Issues to be analyzed, may include:

- Sustainable density vs. sprawl
- infrastructure provision and integration with land use
- Concomitant land use management
- Infrastructure framework and real estate development in continuity with local communities and settlements
- ecological planning of environmentally sensitive zones (such as flood plains of water bodies, wetlands and protected areas)
- Study of regulation and code-compliance
- quality built environments and commons
- safety and livability standards
- development codes for sustainability
- Infrastructural urbanism
- frameworks for environmental compliance,

Students will employ diagramming-mapping tools, ground surveys, co-relational research, case studies and theories to understand these issues. They will audit, iterate and propose future development scenarios, for selected slices of emergent urban living. Proposals might include policy, program and detailed design development strategies.

Projects might include: TOD/TAD cores, livable mixed-use communities, infrastructural urbanism, tactical urbanism, co working and co-housing development, place-community-identity-equity, green and brownfield development with sustainable density, equitable urbanism etc.

**TOTAL: 150 PERIODS**

### OUTCOMES

- Students will develop process based design and analytical frameworks to address unique urban challenges and aspirations of emergent urban lifescapes
- Students will gain awareness on interdependency of various socio-economic, spatial factors and the means to develop solutions to developing urban situations.
- Students will be familiarized with analytical frameworks and urban design strategies for contemporary cities.

### REFERENCES

1. Calthorpe Peter, Urbanism in the age of Climate Change, Island Press; 2 Edition, 2011
2. Banerjee Tridib, Loukaitou- Sideris Anastasia, Companion to Urban Design, Abingdon-On-Thames: Routledge 2014
3. Charles Correa, Housing and Urbanization, London: Thames & Hudson, 1999
4. Long, Ying and Zhang, Enjia. Data Augmented Design: Embracing New Data for Sustainable Urban Planning and Design (Strategies for Sustainability). Springer, 2020
5. Montgomery, Charles. Happy City: Transforming our lives through Urban Design. London: Penguin, 2015
6. Cooper Marcus, Claire. Housing as if people mattered: site design guidelines for medium density housing. Berkeley: University of California Press, 1988
7. Guallart, Vincent. Sociopolis: Project for a city of the Future. ACTAR, 2005

### CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	-	1	1	-	2	1
2	2	3	1	-	2	2
3	3	2	3	3	2	2
AVG	2.5	2	1.5	3	2	1.5

1- low, 2-medium, 3-high, '-'- no correlation

**OBJECTIVES**

- To understand challenges pertaining to climate change & sustainability, in a regional urban scale and sustainable design goals
- To learn analysis tools and policy mechanisms to ensure resilient urban settlements

**UNIT I CLIMATE CHANGE AND SUSTAINABILITY****8**

Exigencies of climate change. Global warming and challenges for cities. Brundtland report - Kyoto protocol – UNFCCC - SDG 2019 - Coastal Cities. Integrated, inclusive, sustainable urban development. Science of Cities - Triple bottom of sustainability. Role of UN in climate change.

**UNIT II GREEN URBANISM****8**

Climatology of contemporary cities - Urban Heat Island - Microclimatic considerations in urban design - Eco Urbanism cores - Sponge cities.

**UNIT III SUSTAINABILITY ANALYSIS TOOLS****9**

Studying the application and use of SDGs. PEST and PESTAL economic goals. Life cycle assessments of resources: ecological & carbon foot print, benefit cost analysis & impact assessment of a site. Circular Economy. Land suitability, vulnerability assessment. Pollution modelling. Environmental assessment reports.

**UNIT IV SUSTAINABLE POLICY****11**

UN's initiative towards sustainable cities to be explored through Indian examples. Well planned, inclusive and integrated urban growth frameworks - sustainable transport, urban systems and public services, safety, waste management. Government of India environmental regulations for Greenfield and brownfield development, water body's protection, coastal regulation zoning, emission and pollution controls. Energy standards for Indian cities- cases studies. Smart city projects.

**UNIT V RESILIENT URBANISM****9**

Regional planning and technology integration to combat climate change, pandemics and global emergencies. Best practices in ecological urbanism and urban resilience - 100 resilient cities, sponge cities. Social networks and cartography. Community based environmentalism- relevant case studies

**TOTAL: 45 PERIODS****OUTCOMES**

- The students will gain understanding of sustainability concepts and development goals related to urban design and development.
- Students will be well versed with resilient strategies to combat global climate change and other emergencies.

**REFERENCES**

1. Dominique Gauzin–Muller, 'Sustainable Architecture and Urbanism: Concepts, Technologies and Examples', Basel: Birkhauser, 2002.
2. Farr, Douglas. Urban Design with Nature. Hoboken: John Wiley & sons, 2008Cohen, Steven, The Sustainable City, Columbia University Press, 2017.
3. Dominique Gauzin–Muller, 'Sustainable Architecture and Urbanism: Concepts, Technologies and Examples', Birkhauser, 2002.
4. Calthorpe, Peter. Urbanism in the age of Climate Change. Washington DC: Island Press, 2011.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	2	3	3	-	3	2
2	3	-	2	3	-	2
AVG	2.5	3	2.5	3	3	2

1- low, 2-medium, 3-high, '-'- no correlation

**OBJECTIVE**

- To familiarize students with current trends in Urban design research and practice.
- To enable understanding of various stakeholders & mechanisms in urban design practice.

**UNIT I EMERGING TRENDS 9**

Theories of community based social change, gentrification, global and local challenges facing cities, stake holders and agencies. Emerging models and its application in urban design.

**UNIT II CITY AND ITS AGENCIES 9**

Defining the role of state and central governments and other stake holders. Local bodies and state agencies: municipal corporations - urban development boards - transport departments - housing board - Water Supply and sewerage agency - Urban Finance and Infrastructure Development agencies - Tourism department - ASI and other heritage agencies.

**UNIT III URBAN DESIGN PRACTICE 9**

Project planning and management: technological challenges, limitations of IoT, equity issues. Urban Design Processes: Documentation, mapping, assessment methods, stakeholder identification, and bottom up approach, policy formation, program delineation, and design development. DPR - Public presentations and iteration - Funding and resource mobilization - Implementation mechanisms. Allowance for change and growth-urban management. Inter-agency coordination - Contract negotiation - Resolution and management - Funding mechanism - Conflicts in funding - Land use management - Leadership change - Legal issues.

**UNIT IV TACTICAL URBANISM 9**

Issues of Urban design practice: political will - proactive citizenry – media - civic agencies - citizen groups. Bottom up approach - community participation - Information dissemination. Access to maps, cartography, data and other resources for base maps and research. Data collection and questionnaires. Participatory design charters. Research dissemination through critical and op-ed writing. DIY Urbanism.

**UNIT V FUTURISTIC CITIES 9**

Creating a new glossary for cities. Cities of the future. Role of technology in urban design and governance. Resilient cities. Global village and local cultural aspirations. Social media and city. Big Data and cities. HDI: Happiness, livability indices, society and city.

PROGRESS THROUGH KNOWLEDGE **TOTAL: 45 PERIODS**

**OUTCOME**

- Students will understand challenges in urban design practice.
- Students will be familiarized with issues of urban design implementation, conflict resolution and contracts.

**REFERENCES**

1. Order without Design – How markets Shape Cities, Alain Bertaud, Cambridge: The CAMBRIDGE: THE CAMBRIDGE: MIT PRESS, 2019
2. Dodd, Melanie ed. Spatial Practices: Modes of Action and Engagement with the City. New York: Routledge, 2019
3. Hamdi, Nabeel. The Spacemaker's Guide to Big Change: Design and Improvisation in Development Practice (Earthscan Tools for Community Planning). New York: Routledge, 2014
4. Batty, Michael. Inventing Future Cities. Cambridge: The CAMBRIDGE: THE CAMBRIDGE: MIT PRESS, 2018.
5. Lyndon, Mike and Garcia, Anthony. Tactical Urbanism: Short-term Action for Long-term Change. Island Press, 2015.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	-	3	-	2	-
2	1	2	-	-	-	3
AVG	2	2	3	-	-	3

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR 4311

DISSERTATION

L T P/S C  
0 0 4 4

### OBJECTIVES

Each student is required to prepare a dissertation on a subject concerning urban design and development, under the guidance of an advisor, approved by the department.

- To expose students to various thrust and emerging areas in urban design.
- To inculcate the spirit of research and collaborative ideation between related streams
- To enhance technical writing and interdisciplinary research skills in urban design

The objective of the dissertation is to provide an opportunity to each student to undertake in-depth and original study research in the field of their interest. It also provides an opportunity to synthesize knowledge and skillsets, acquired through theory courses and urban design studios.

Dissertation is a self-directed exploration of an urban design topic of the students' choice – a written document of the student's findings in a chosen specific area of interest within the realm of urban design through a rigorous process of original research. The subject of the dissertation may be contemporary, historical, analytical, comparative or interdisciplinary research in urban design and development (topic to be approved by departmental jury). The process would consist of choosing of an area of interest/challenge, phasing out primary studies, clarifying intent, identifying methodologies to approach and achieve the intent, exploring ways of primary data collection (reading, first hand studies, experimentation, documentation, interviews and so on), structuring the information, analyzing and interpreting it, and finally concluding with well-argued inferences. The dissertation should serve to concretize notions and ideas relating to urbanism and/or the concerns and challenges of urban design.

The study must comprise of an aim, the objectives, the scope and limitations of their dissertation, hypothesis (if any), methodology followed by extensive review of literature through references and documentation. The analysis of the work must be substantiated either empirically or through extensive arguments. A dissertation could serve as a prelude to the Thesis preparation 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. The topic will have to be approved at the start of the semester and the progress of work will be reviewed periodically, culminating in a viva-voce to a jury at the end of the semester.

**TOTAL: 90 PERIODS**

### OUTCOMES

- A dissertation book which is based on accepted norms of technical writing.
- Ability to increase depth of knowledge on an area of interest through study and analysis and finally conclude the findings.
- Ability to carry out independent research and develop an understanding leading to formation of thesis ideas.

### REFERENCES:

1. Borden, Ian and Kaaterina Rue diRay. The Dissertation: An Architecture Student's Handbook. Oxford: The Architectural Press; 2006
2. JA Smith, P Flowers, M Larkin. Interpretative Phenomenological Analysis: Theory, Method and Research (English) FIR Edition. New Delhi: Sage Publication, 2009.
3. W Creswell, John. Research design: Qualitative, Quantitative and Mixed Methods Approaches. New Delhi: Sage Publications, 2011.



4. Groat, Linda and Wang, David. Architectural Research Methods – 2nd edition. Hoboken: John Wiley & Sons Inc., 2013.
5. Kumar, Ranjit. Research Methodology- A step by step guide for beginners-3rd Edition. New Delhi: Sage Publications, 2011
6. Wayne C Booth et al. The Craft of Research-3rd Edition. Chicago: Chicago guides to writing, editing and publishing, 2008 Chicago guides to writing, editing and publishing.
7. Stephen Bailey. Academic Writing: A Handbook for International Students. New York: Routledge, 2011.
8. Vian Ahmed, Alex Opoku, Zeeshan Aziz, 'Research Methodology in the Built Environment'. New York: Routledge, 2011

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	1	2	2	2	3	2
2	3	-	3	-	-	2
3	3	2	2	2	-	2
<b>AVG</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>

1- low, 2-medium, 3-high, '-'- no correlation

UR 4312

URBAN DESIGN STUDIO III

L T P/S C  
0 0 10 10

### OBJECTIVES

- This studio seeks to equip students with understanding of macro urban issues, global urban design challenges/trends and their effect on various scales of local urban intervention.
- This studio will aid students in understanding the role of sustainable, resilient, regional infrastructure systems and technology in inclusive development.

### COURSE OUTLINE

Emerging technologies, global trends and exigencies rapidly transform cities: such urban transformations are at best inclusive and integrated.

This studio will examine specific global urban design challenges, which require comprehensive understanding at a global and regional scale: it will investigate the same in various local contexts such as:

- city wide natural systems, ecological zones (might include riparian corridors, lakes and water networks, coastal resilience etc.)
- infrastructural urbanism, resilience and regional networks
- integrative governance frameworks and technology for inclusive, participatory community development
- Happiness and livability

### PROCESS and sessional work

Students will analyze global trends and issues through literature review and research. They will localize their research through experiential mapping, physical mapping, diagramming, data visualization and analysis, combined with parametric analysis, GIS data sets (density analysis, spatial statistics and spatial relations to present development scenarios) and development indices, to propose regional solutions for global urban issues. They will evaluate resilient growth frameworks for inclusive, integrated urban development.

Studio projects may include but not limited to - Ecological mapping and scenarios for riparian corridors rejuvenation, Climate change and coastal city resilience, building urban resilience through revitalization of built, natural and cultural landscapes, cities-communities- happiness quotient - urban heat island and micro climate analysis - infrastructural urbanism and regional transportation studies -

social-public health infrastructure and pandemic response - regional development policy - participatory and inclusive planning with technology, etc.

**TOTAL: 150 PERIODS**

**OUTCOMES**

- Students will gain understanding of multiple complex urban design issues from a global perspective and application in a regional scale
- Students will develop theoretical framework and skill sets to facilitate and propose resilient urban environments
- Students will acquire requisite skill-sets to be effective stake holders in the age of urban explosion and resilience.

**REFERENCES**

1. Stimmel, Carol. Building Smart Cities: Analytics, ICT, and Design Thinking. Abingdon-On-Thames: Auerbach Publications 2015
2. Rithchie. A. Sustainable Urban Design: An Environmental Approach. Abingdon: Taylor & Francis, 2000.
3. Maibritt Pedersen Zari, Regenerative Urban Design and Ecosystem Biomimicry. New York: Routledge Research in Sustainable Urbanism, 2019
4. Dominique Gauzin–Muller, 'Sustainable Architecture and Urbanism: Concepts, Technologies and Examples', Basel: Birkhauser, 2002.
5. Cohen, Steven, The Sustainable City, Colombia University Press, 2017
6. J. Mitchell, Mitchell. City of Bits: Space, Place and the infobahn. Cambridge: The CAMBRIDGE: THE CAMBRIDGE: MIT PRESS, 1996.
7. Batty, Michael. Inventing Future Cities. Cambridge: The CAMBRIDGE: THE CAMBRIDGE: MIT PRESS, 2018.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	-	3	3	-	1	2
2	-	3	3	2	2	2
<b>AVG</b>	-	<b>3</b>	<b>3</b>	<b>2</b>	<b>1.5</b>	<b>2</b>

1- low, 2-medium, 3-high, '-'- no correlation

UR 4313



**INTERNSHIP TRAINING**

**L T P/S C**  
**0 0 0 2**

**OBJECTIVE**

- To introduce students to Urban design practice.
- To enable overall understanding of processes and stake holders in Urban Design practice.
- To understand the role of the government, urban policy, various agencies and stake-holders, market economy and various processes &stages in Urban design practice

**COURSE CONTENT**

The Practical Training would be done in government agencies / development firms and architecture – master planningfirms. The progress of practical training shall be assessed periodically internally through submission of log books and with portfolio of work done by the students in terms of drawings, reports, etc., along with the regular progress report from the employers.

The students would be evaluated based on the criteria related to their contribution in the office some of which are given below.

- Understanding and involvement in the framing project objectives, policy perspectives and delineation of project scope and limitations.
- Understanding of funding mechanisms and economic liabilities for urban projects.

- Contribution in projects on the basis of data collection, collation and analysis, design and presentation, embedded technology, etc.
- Adherence to time schedule, overall responsibility and professional conduct.
- Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings and skill in this regard.
- Ability to work as part of a team in an office and contribute to related activities.
- Ability to participate in client meetings, stake-holder consultations and public opinion discussions.
- Involvement in supervision at project site.
- Involvement/ initiative/ participation in any other aspects during the course of the training.

At the end of the Practical Training, a portfolio of work done during the period of internship along with certification from the office has to be submitted for evaluation through a viva voce examination.

### OUTCOME

- Ability to understand the overall idea of the nuances of urban design practice.
- An understanding of various process and stages, stakeholders and funding mechanisms in the realm of urban design.
- Maturity in using the experience gained from internship in future academic projects, being able to effectively translate ideas into reality.

### CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	3	1	2	3	2	1
2	3	3	2	-	2	3
3	3	2	-	-	3	3
AVG	3	2	2	-	2	2.5

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR4411

THESIS PROJECT

L T P/S C  
0 0 20 20

### OBJECTIVES

- To integrate the knowledge gained in the previous semesters with respect to issues/ tools of urban design.
- To understand and identify issues appropriate to a particular project or urban area, through independent thinking as well as to design in a manner appropriate to the project context.

The students will synthesize 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 an urban design project with a strong research component. The project would desirably extend the critical position developed within the theory and studio projects as well as dissertation. The scale of the project could extend from urban infill projects with an impact on the larger urban fabric, to large-scale urban planning scenarios. The initial process shall be rigorous, incorporating background research on the topic, case studies, documentation of project issues, thorough analysis of physical, social and cultural context, tangible and intangible factors, site and building information, programming. The process would culminate in design interventions at scales appropriate to the topic. The project shall desirably have the potential to serve as a starting point for practice and/ or further research.

Students will submit a detailed proposal on their topic of interest(s). The Proposal shall be approved by the thesis review committee. The thesis project will be reviewed periodically by the review committee. At the end of the semester, the final thesis will be submitted and presented through a viva voce examination before a jury.

**TOTAL: 300 PERIODS**

### OUTCOME

- Students would be able to integrate various contemporary/ advanced issues and techniques into the urban design process.

- Students would be able to identify and go in depth into specific and appropriate aspects relating to the realm of urban design.

### CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	3	3	3	3	3	3
2	3	3	3	3	3	3
<b>AVG</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR 4071

CULTURE OF PUBLIC SPACES

L T P/S C

3 0 0 3

### OBJECTIVES

- To understand the role of art in articulating city culture.
- To understand Cultural memory and art form associations in cities
- To understand the way public spaces in Indian cities have been used, appropriated and conceived.
- To understand the role of art in altering meanings and perceptions of public spaces

### UNIT I PRODUCTION OF SPACES – PUBLIC SPACE 9

Space: relative and absolute space, production of space in books, movies and literature. Definitions of public spaces, history of public spaces, typologies and characteristics of public spaces: parks, streets, plazas, Indian bazaars, etc.

### UNIT II CITY, MEANINGS AND MEMORY 9

Regeneration, culture and the city. Understanding urban popular cultural influences: Traditions – folklore - histogenesis. Urban landscape as public history. Formation of public space: power, resistance and meaning.

### UNIT III PERFORMITIVITY AND TEMPORALITY IN SPACES 9

Everyday activities in the city: space, body, signs, rituals. Art and the city: role of art festivals in cultural shifts. Religion, ritual space, festival and spectacle in the city. Case studies of Kala ghoda festival, Pongal fairs and festivals, arupathumoovar, santhanakoodu and velankanni chariot festival.

### UNIT IV ACTIVISM AND PUBLIC SPACES 9

Theory of democratic public spaces: democratic theory, democratic performances. Theorizing and evaluating public spaces: place and politics, democratic assemblies, protests and the public sphere, city and its representative space. Global case studies of urban space, protests and activism

### UNIT V CONSUMPTION OF URBAN SPACES 9

Visual, sensory and experimental consumption of urban spaces. Digital culture and virtual consumption of spaces. Branding of cities and their urban spaces. Case studies of Shanghai, Time Square, Paris, Marina beach, George Town, Chennai.

**TOTAL: 45 PERIODS**

### OUTCOMES

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

- Understand the role of art in city culture, its perceptions and the collective memory.
- critically evaluate contemporary public space from theoretical, social, experiential and everyday perspectives and conceptualize alternate narratives
- Communicate their ideas about public space effectively using a variety of means such as writing, speaking and multimedia presentations.

### REFERENCES

1. Ritzer, George. Postmodern Social Theory. Beijing: Beijing da xuechu ban she. 2004
2. Sadler, Simon. Situationist City. Cambridge: MIT PRESS,1998.

3. Storey, John. Cultural Theory and Popular Culture: An Introduction. Abingdon-On-Thames: Routledge, 2018.
4. Neal, Zachary "Locating Public Space" in Antony Orum and Zachary Neal, Eds. Common Ground? Readings and Reflections on Public Space, New York: Routledge, 2010
5. Lefebvre, Henri. Toward an Architecture of Enjoyment. Minneapolis: University of Minnesota Press, 2014.
6. Harvey, David. Spaces of Hope (California Studies in Critical Human Geography). Berkeley: University of California a Press, 2000

### CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	2	3	1	-	3	1
2	2	3	1	-	3	-
3	2	2	3	-	3	1
4	1	1	1	-	2	1
<b>AVG</b>	<b>1.5</b>	<b>2</b>	<b>1.5</b>	<b>-</b>	<b>2.5</b>	<b>1</b>

1- low, 2-medium, 3-high, '-'- no correlation

UR 4072

**QUANTITATIVE TECHNIQUES AND DATA REPRESENTATION**

**L T P/S C**

**3 0 0 3**

#### OBJECTIVES

- To acquire knowledge in statistical and numerical techniques and to take up quantitative analysis and research
- To provide in-depth understanding of various research methods in the field of planning and urban design

#### UNIT I STATISTICAL METHODS

**8**

Data: Statistical and Numerical data. Types of data measurement scale – Nominal, ordinal, interval, ratio, Variables. Discrete, continuous- Data collection, coding and decoding, methods, tabulation and graphic presentation of data. Frequency distribution. Measures of central tendency: mean, median, mode. Measures of dispersion, Correlation and Regression. Introduction to spread sheets and statistical software – SPSS, Data Fit etc.

#### UNIT II HYPOTHESIS TESTING

**10**

Sampling Distribution. Test based on Normal, t, Chi-square and F-Distributions. Discrete random variables, Completely Randomized Design. Randomized Block Design. Latin Square Design. ANOVA.

#### UNIT III QUANTITATIVE TECHNIQUES IN PLANNING & DEMOGRAPHIC ANALYSIS

**6**

Elementary association models and decision making. Index numbers, weighted and un-weighted index numbers. Application of index number in spatial planning. Calculation techniques of vital events. Methods of demography and population studies, population projections, introduction to Census data and sampling Techniques.

#### UNIT IV FORECASTING AND TIME SERIES ANALYSIS

**9**

Time series forecasting- line chart, curve fitting. Function approximation – approximation theory and numerical analysis, interpolation, extrapolation, pattern recognition, econometrics, segmentation, Univariate linear and nonlinear measures and bivariate measures. Visualization Charts, Braided graphs, Line charts, Slope graphs, Gap Chart, Horizon graphs, reduced line chart (small multiples), Silhouette graph, Circular silhouette graph etc.

**UNIT V DATA REPRESENTATION****12**

Data Ideograms and the Language of Symbols- Braille, Morse Code, Sign, and Gesture Data Abstraction, Task Abstraction, Common Visualization Idioms such as Bar Chart, Pie Chart and Coxcomb Plot, Line Chart, Area Chart etc., -Spatial data, networks, trees - Making Maps-encoding, Stacked & Grouped data, Manipulate View, Facet into Multiple Views, Case Studies in Visualization and Information tools

**TOTAL: 45 PERIODS****OUTCOMES**

- The students will be exposed to data analysis techniques and will be equipped with necessary analytical skills to pursue quantitative research.
- The student will develop necessary skills to identify and interpret issues based on research inquiry methods.
- The student will learn how to write and publish research work in journals

**REFERENCES**

1. Agarwal B L. Programmed Statistics. New Delhi: New Age International Publishers, 2007
2. C. Acock, Alan. A Gentle Introduction to STATA. Revised Third Edition. 2012
3. Wooldridge. Introductory Econometrics: A Modern Approach. Noida: Thomson Press, 2011
4. F. Punch, Keith. Introduction to Social research: Qualitative and Quantitative Approaches. London: Sage Publications, 2013
5. 3. W Creswell, John. Research design: Qualitative, Quantitative and Mixed Methods Approaches. New Delhi: Sage Publications, 2011.
6. Evergreen, Stephanie DH. *Effective data visualization: The right chart for the right data*. New Delhi: Sage Publications, 2019.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	1	-	3	-	1	-
2	2	1	3	-	2	-
AVG	1.5	1	3	-	1.5	-

1- low, 2-medium, 3-high, ‘-’- no correlation

**MH4073****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 organizational communication and develop skill in it.
- To enable skill in reading and writing.

**UNIT I INTRODUCTION TO SOFT SKILLS AND PERSONALITY****9**

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.

**UNIT II INTERPERSONAL COMMUNICATION****9**

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.

**UNIT III ORGANISATIONAL COMMUNICATION 12**

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.

**UNIT IV ADVANCED READING AND WRITING SKILLS 15**

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.

**TOTAL:45 PERIODS**

**OUTCOME**

- Awareness of importance of soft skills.
- Knowledge and skill in interpersonal communication.
- Knowledge and skill in organizational communication.
- Competency in reading and writing.

**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.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	2	-	-	-	1	3
2	2	1	-	-	-	2
3	2	-	1	-	2	3
<b>AVG</b>	<b>3</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>2</b>

1- low, 2-medium, 3-high, ‘-’- no correlation

## OBJECTIVES

- Understanding factors that shaped morphology of Asia.
- Understanding future trajectories of mega cities of Asia.

### UNIT I WEST ASIA

9

Birth of cities in ancient west Asia. Influence of Roman and Byzantine empires. Urban structure of West Asian Islamic cities. Colonial urban development. Oil boom and mega city complexes. Globalization, urban spectacle, leisure, tourism and city form in west Asia.

### UNIT II SOUTH ASIA

9

Archaeology and ancient city form. Settlement types: Port cities, fortified cities, trade towns, Buddhist learning complexes, Bhakti movement and ritual cityscapes. Records, inscriptions, texts, literature and folklore on cities and culture. Defensive and leisure type forms, public spaces in Indian context Colonial Urban Form. Post-independence urban planning and growth. Globalization and urban space. Rethinking mega city regions of South Asia.

### UNIT III CENTRAL ASIA

9

Mongol Empire: Yurt camps, Micro Oasis and cities. Chinese society, culture and urban form. Cosmic Diagram, three tiers of settlement and prototype Chinese urban form, Well-field system and the Artificer's record. Imperial era urban planning: regional cities, colonial cities, city states and Imperial city models. Pre-modern, socialist and post socialist city form. Globalization, morphological shifts and development of business districts.

### UNIT IV EAST ASIA

9

Early cities. Srivijaya Empire and city form. Sultanate of Malacca and Singapore. Japanese urban planning: Toshikeikaku (Urban Planning) and Machizukuri (Community- Building). Colonial shop house districts. Post-colonial urban development. Hyper density and contemporary East Asian cities. Rise of Asian economy, tourism and city regions.

### UNIT V MEGA CITIES AND FUTURISTIC URBANISM

9

Case studies of key urban challenges, policies and prospects of Megacities of Asia: Shanghai, Mumbai, Singapore, Hong Kong, Colombo, Dubai, NCR (Delhi, Gurgaon, Noida).

**TOTAL: 45 PERIODS**

## OUTCOMES

- Students will gain detailed understanding of socio political shifts that shaped urban form of Asia.
- Students will understand transformation of Asian cities during Colonial, Post-colonial & globalization era and future challenges of mega cities of Asia.

## REFERENCES

1. Nilakandasastri.K.A. 1995. History of South India from Prehistoric times to fall of Vijayanagar, Fourth Edition. Chennai: Oxford University Press, 1997
2. Champakalakshmi.R. Trade, Ideology and Urbanization. New Delhi: Oxford University Press, 1997
3. Coningham, Robin and Young, Ruth. The Archaeology of South Asia: From the Indus to Asoka, c.6500 BCE–200 CE (Cambridge World Archaeology). Cambridge: Cambridge University Press, 2015
4. Lim, William SiewWai, , Author, Lim, William SiewWai, and Asian Urban Lab. *Public Space in Urban Asia*. Singapore: World Scientific, 2014.
5. Dutt, Ashok K. *The Asian City : Processes of Development, Characteristics, and Planning*. Dordrecht ; Boston: Kluwer Academic, 1994.
6. Al-Asad, Mohammad, Mehrotra, Rahul, Derakhshani, Farrokh, Mostafavi, Mohsen, and Aga Khan Award for Architecture , Issuing Body. *Shaping Cities : Emerging Models of Planning Practice*. Berlin, Germany: HatjeCantzVerlag GmbH, 2016.

## CO-PO MAPPING



CO	PO					
	1	2	3	4	5	6
1	1	3	2	-	3	1
2	3	3	2	1	3	3
AVG	2	3	2	1	3	2

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR 4002

HUMAN SETTLEMENTS

L T P/S C  
3 0 0 3

### OBJECTIVES

- To provide awareness on evolution of settlements from various eras & categories.
- To make students understand the importance of land Economics as a development tool.
- To familiarize students on the definitions & patterns of human settlements.

### UNIT I INTRODUCTION

9

Ekistics- Doxiadis, Human Settlements: Terminologies and definitions types, patterns, indicators of the Settlements, Chronological pattern of settlements, settlements and basic services anthropology and Ethnic groups. Determinants of settlement form: mobility, socio cultural, climate, technology, etc.,

### UNIT II EVOLUTION OF SETTLEMENTS

9

Historical evidence of difference settlements. Civilization and the Settlement Pattern. Impact of urbanization/ industrialization on the planning approaches. Settlements – Type and structure of human settlements. Traditional settlement planning principles of Vedic period, Indus valley, Jaipur, Madurai etc. and its continuing impact on settlement form and growth.

### UNIT III LAND ECONOMICS & SURVEYS

9

Study and analysis of existing settlements - methodology of conducting diagnostic surveys and studies - land use survey - density survey - FSI survey - traffic surveys - presentation of data. Economies: Concepts, issues, aspects - Land & housing economics – valuation – rent - sinking fund - development cost - sources of finance - market characteristics - key constraints. Evaluation Tools: Survey techniques, Evolution analysis & visual analysis.

### UNIT IV URBAN RENEWAL AND PLANNING TECHNIQUES

9

Urbanization and urban growth, impact on physical growth of urban settlement. Causes and consequences of urban blight and obsolescence. Rebuilding our cities: Penalty for neglect, Urban renewal, Necessity and Advantages of urban renewal- various steps in urban renewal program, JNNURM, AMRUT case examples. Town planning theories & models: Geddes – Howard – Perry – Corbusier – Batty. Different types of land use development model.

### UNIT V LEGISLATION, BYE LAWS & NEW HORIZONS

9

Constraints & possibilities. Legislation, DCR, Acts & Bye laws, Strategies, Government & non-governmental agencies. Changing nature of human settlements/ Impact of global economy, trade, and information and communication technology. Emergent settlement forms: self-sustained communities, SEZ, transit development, integrated townships. Case studies.

**TOTAL :45 PERIODS**

### OUTCOMES

- Ability to gain understanding on the inter-relation between human settlements and social dynamics.
- An understanding on the nature of shaping parameters of human settlements.
- An understanding on the techniques, principles and concepts for the new horizon.

### REFERENCES

1. Government of India. "Report of the National Commission on Urbanisation". New Delhi, 1988.
2. Hansen N., "Regional Policy and Regional Integration", Edward Elgar, UK, 1996.

- Sandhu. R. S. Sustainable Human Settlements-Asian Experience. New Delhi: Rawat publications, 2001.
- Gastek.P. Living Plans: New concepts for advanced housing. Basel: Brikhauser publications, 2005.
- Mumford L, 'The City in History', Harcourt Brace International,1968.
- Morris A E J. History of Urban form before the Industrial Revolution. Abingdon-On-Thames: Routledge,1994

### CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	1	3	1	-	2	1
2	2	1	2	1	2	2
3	1	3	1	1	2	1
AVG	1	2	1	1	2	1

1- low, 2-medium, 3-high, '-'- no correlation

**UR 4003                    URBAN INFRASTRUCTURE: RESOURCE AND RESILIENCE                    L T P/S C**  
**3 0 0 3**

#### OBJECTIVES

- To enable students' understanding of quantitative & qualitative aspects of urban resources and infrastructure design & management.
- To familiarize students with need, demand & supply mechanisms of physical and social infrastructure.
- To enable understanding of resilient city infrastructure.

#### **UNIT I                    WATER SYSTEMS                    9**

Natural and man-made water sources. Traditional water systems: *Ooruni, Kulam, Yeri, Thaangal, Kalannai, Step wells & vavs, Ghats, chirpron*. Colonial responses to water edges, piers and promenades. Modern water systems. Water as a generator of urban form. Economic and community based water issues. Politics of water. Modern water system typologies. Case studies of RAMSAR, IHS, World Bank projects, etc.

#### **UNIT II                    URBAN ENERGY                    9**

Introduction to sources of urban energy systems: solar farms, wind farms, tidal, hydro, thermal, geothermal. Energy infrastructure: power grids, sub stations. Energy loss. Utility firms. Energy distribution and economic generation modules.

#### **UNIT III                    PHYSICAL & SOCIAL INFRASTRUCTURE                    9**

Understanding of urban infrastructure. Qualitative and quantitative assessment - Need, Supply, Demand analysis of infrastructure: Water Supply, Sewerage, electricity, storm water drains, solid Waste Management, health, education, utilities & services, parks & open spaces - URDPFI standards.

#### **UNIT IV                    TRANSPORTATION                    9**

Urban mass transportation systems: urban transit problems, travel demand, types of transit systems, public, private, para-transit transport, mass and rapid transit systems, BRTS and Metro rails. IRC standards, UTTIPEC, ITDP etc.

#### **UNIT IV                    RESILIENT CITY INFRASTRUCTURE                    9**

Need for resilient cities. Integrative framework (society, environment, economy, governance, technology) for resilience. Strategies for mitigation of natural & man-made disasters. E-governance, IoT and big data in urban resilience. Case studies in Indian & global context.

**TOTAL: 45 PERIODS**

#### OUTCOMES

- Student will gain knowledge of urban Infrastructure design, implementation and management.
- Students will be familiarized with urban infrastructure assessment techniques, need, demand and supply analysis
- Students will learn about urban infrastructure policies and agencies.

**REFERENCES**

1. Ed. Paranjpye, Vijay, Badam, Chakravarty. Traditional water management systems of India. New Delhi: Aryan Books International. 2006
2. Madireddy, Subba Rao. Water Conservation, management and analysis. New Delhi: Readworthy Publications Pvt Ltd, 2011
3. Mohanty, Prasanna. Financing cities in India. New Delhi: Sage publications India Pvt. Ltd, 2016.
4. Eduardo Vasconcellos. Urban Transport Environment and Equity: The Case for Developing Countries. New York: Earth scan publications, 2001

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	1	3	1	-	2	1
2	2	1	2	1	2	2
3	1	3	1	1	2	1
<b>AVG</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>

1- low, 2-medium, 3-high, ‘-‘- no correlation

**UR 4004**

**CODING FOR URBAN DESIGN**

**L T P/S C**

**1 0 2 3**

**OBJECTIVES**

- To train students in using simulation and coding, to understand and re-imagine urban scenarios
- To familiarize students with complex automation algorithms in big data crunching and urban projections

**UNIT I INTRODUCTION**

**6**

Role of Computational tools in understanding urban complexity- augmenting urban design work flows - streamlining complex and multidimensional planning tasks

**UNIT II APPLICATION OF COMPUTATIONAL TOOLS**

**12**

Application of computational tools in Urban design. Modelling and visualisation, simulation. Data driven and evidence based decision making process. Urban morphometric studies. Feasibility studies. Platform urbanism: scenario planning and design alternatives. public participation, monitoring and evaluation projects.

**UNIT III OPEN SOURCE CODING TOOLS**

**18**

Use of open source coding tools for Spatial data analysis, land use planning scenarios, density, place making, spatial econometrics, spatial demographics, Urban energy systems, Disaster management, TOD, livability, urban growth index, network analysis, urban mobility, urban accessibility, environmental modelling, collaborative mapping applications and policy compliance

**UNIT IV CASE STUDIES**

**9**

Case studies and best practices in Urban design Projects using simulation and coding

**TOTAL: 45 PERIODS**

**OUTCOMES**

- To learn to automate urban development scenarios
- To deploy algorithms and coding to propose innovative solutions in urban design

**REFERENCES**

1. Ayeni, Bola. Concepts and Techniques in Urban Analysis (Volume 17). Abingdon-On-Thames: Routledge, 2017
2. Tedeschi, Aruturo. AAD Algorithms-Aided Design: Parametric Strategies using Grasshopper. Paris: Le Penseur, 2014
3. Charytonowicz, Jerzy and Falcão, Christianne. Advances in Human Factors, Sustainable Urban Planning and Infrastructure: Proceedings of the AHFE 2018 International Conference on Human Factors in Intelligent Systems and Computing). New York: Springer, 2018
4. William J. Mitchell, City of Bits: Space, Place and the infobahn, Cambridge: MIT PRESS, 1996.
5. Portmann Edy, Designing Cognitive Cities (Studies in Systems, Decision and Control Book 176) .New York: Springer, 2018.

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	2	1	2	3	1	1
2	2	1	2	3	1	2
AVG	2	1	2	3	1	1.5

1- low, 2-medium, 3-high, ‘-‘- no correlation

UR 4005

URBAN ECONOMICS, SOCIOLOGY AND MANAGEMENT

L T P/S C  
3 0 0 3

### OBJECTIVES

- To introduce the principles of economics, public finance and influence of market forces on urban planning
- To understand the role of sociology in planning and housing.
- To familiarize students with policies, urban management issues, funding agencies, fiscal tools and templates

### UNIT I URBAN ECONOMICS

9

Introduction to Urban economics: Development of cities-city models, size and economic structure. Mono centric vs polycentric city models. Land use and spatial organization of activities within cities. Economies of agglomeration –Market access, connectivity, transportation, industry clusters, technology, taxation and public policy in the economic development of cities.

### UNIT II URBAN SOCIOLOGY

9

Introduction to sociology and social science. Structure and variance of society. Sociology theories, concepts of urbanization. Urban migration and adjustment. Difference between urban and rural life styles. Urban poverty mitigation.

### UNIT III SOCIAL ASPECTS OF URBAN FORM

9

Societal impact on urban form, growth and planning policy. Urban conflict: social movements and politics. Neighborhood as social institution.73<sup>rd</sup> and 74<sup>th</sup> Amendment Act. Institutional mechanisms – Local governance and decentralization. Peri urban interface of Indian cities.

### UNIT IV SOCIAL IMPLICATIONS OF HOUSING AND PUBLIC POLICY

9

Affordable housing: national income estimate – planning need, issues and five-year plans- national housing policy –Impact of speculative urbanism – welfare schemes- equitable and inclusive housing- URDPFI guidelines- public policy and real estate management – Role of UNCHS.

### UNIT V DEVELOPMENT MANAGEMENT AND FINANCE

9

Key issues in urban development and management. National goals, policy and management strategies for urban planning projects – recommendations by national committees and task forces on development management. Role of national and international agencies for mobilization and management of urban development funds and resources. Evolution and structure of urban development bodies. Land based fiscal tools: area based development charges, municipal bonds, levies and betterment charges. Case studies of innovative and successful development management and finance models from South Asian cities and alternate models of economic development.

**TOTAL: 45 PERIODS**

### OUTCOMES

- After successful completion of this course, student will be able to understand the interrelationship of urban economics, sociology and housing
- Students will be aware of urban management policies, strategies and finance models in urban planning.

### REFERENCES

1. Narendra K. Singhi , Theory And Ideology In Indian Sociology, RewatPublication , Jaipur and New Delhi

2. V Banerjee, Abhijit and Duflo, Esther. Poor Economics: rethinking poverty and ways to end it. Noida: Random House India, 2011
3. Jayapalan, N. Urban Sociology. New Delhi: Atlantic Publishers, 2002.
4. M. Haralambos, R. M. Heald. Sociology Themes and Perspectives. Oxford: Oxford University Press, 1980
5. Mohanty, P.K. Financing Cities in India: Municipal Reforms, Fiscal Accountability and Urban Infrastructure. New Delhi: Sage Publications, 2016

## CO-PO MAPPING

CO	PO					
	1	2	3	4	5	6
1	3	3	2	-	1	2
2	2	3	2	-	1	1
3	2	3	2	-	1	2
<b>AVG</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>1</b>	<b>1.5</b>

1- low, 2-medium, 3-high, ‘-’- no correlation

**MH4074**

**PSYCHOLOGY OF LEARNING AND DEVELOPMENT**

**L T P/S C**  
**3 0 0 3**

### 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.

### UNIT I INTRODUCTION

**7**

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.

### UNIT II EDUCATIONAL PSYCHOLOGY

**9**

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.

### UNIT III UNDERSTANDING LEARNER STAGES OF HUMAN DEVELOPMENT

**9**

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.

### UNIT IV LEARNING AND MOTIVATION

**11**

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.

### UNIT V APPRECIATION AND CRITICISM

**9**

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.

**TOTAL: 45 PERIODS**

## COURSE OUTCOMES

<b>CO1</b>	Knowledge about major social and psychological processes involved in learning and development in an educational setting.
<b>CO2</b>	Ability to engage in knowledgeable and productive dialogue with colleagues about human learning, development, and educational practice.

## 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.

## CO -PO Mapping - Psychology of Learning and Development

Course Outcome (CO)	Programme Outcome (POs)					
	PO1	PO2	PO3	PO4	PO5	PO6
<b>CO1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>2</b>
<b>CO2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>2</b>
<b>AVERAGE</b>	$3+3=6/2=3$	$3+3=6/2=3$	$3+3=6/2=3$	$2+2=4/2=2$	<b>-</b>	$2+2=4/2=2$

UR 4006

**URBAN LANDSCAPES**

**L T P/SC**  
**3 0 0 3**

### OBJECTIVES

- The course seeks to familiarize students with issues of urban ecology and landscape and address the same
- To understand and address the issues of derelict urban pockets at different scale
- To understand the various assessment and planning strategies in using landscape urbanism concept in addressing ecological crisis.

### UNIT I INTRODUCTION TO LANDSCAPE

**9**

Introduction to landscape and ecology - purpose, domain and context. Understanding ecological concepts like population growth, regulation, carrying capacity, stability and resilience of ecosystem. Ecosystem degradation. City and pattern: hierarchy of streets and squares, spatial organization and land use, road networks and basic services, Open spaces within urban environment. Introduction to landscape ecology: landforms and landscape processes, pattern and structure of landscapes, concepts of patch, corridor and matrix, landscape dynamics and function.

### UNIT II LANDSCAPE AND URBANISM

**9**

Landscape and urbanism. Relationship between man and nature. Analytical aspects of landscape - natural and cultural setting. Evolution of landscape planning – concepts and projects. Landscape planning models – METLAND concept. The purpose of landscape planning. Domain and context. Principles of planning. Procedure in landscape planning. Cultural, social and aesthetic value of urban spaces and its perception.

### UNIT III PLANNING STRATEGIES

**9**

Influence of landscape design on our physical, visual environment. Tool to utilize the site resources, site analysis for larger developments. Planting strategies for various habitats: wooded areas, grassland and meadows, wetlands, coastal edges, waterside, etc. Wilderness areas. Site planning for larger developments: new towns and urban extensions, developments for tourism and eco-tourism. Case studies on landscape regional planning, policies - contemporary urban landscape issues at national and international levels. Role of IUCN and other bodies.

**UNIT IV LANDSCAPE ASSESSMENT 9**

Principles and procedure in landscape planning: problem defining, goal setting, inventory and analysis. Basics of collecting, analyzing, projecting and presenting data in landscape planning. Visual assessment and aesthetic dimension. Suitability analysis- techniques and models for assessing landscape resources. Land use impact assessment models. Model to assess ecological values. Land Evolution and site Assessment model (LESA). Ecological modelling Application of G.I.S. and remote sensing in Regional Landscape Planning.

**UNIT V DERELICT LANDS 9**

Derelict landscapes – Brownfields. Reclamation and restoration. Conservation and preservation of ecological fragile areas such as wetlands, creeks etc. National and International case studies

**TOTAL: 45 PERIODS**

**OUTCOMES**

- Students will be able to address ecological issues using landscape urbanism framework.
- They will be aware of assessment tools, planning strategies for urban landscapes.
- They will be aware on the adaptive reuse of the left over/ derelict urban pockets in different scale.

**REFERENCES**

1. Waldheim, Charles. Landscape as Urbanism: A general theory. Princeton: Princeton University Press, 2016.
2. Hagan, Susannah. Ecological Urbanism: The Nature of the City. New York: Routledge, 2014.
3. Waldheim, Charles. The Landscape Urbanism Reader. Princeton: Princeton Architectural Press, 2012.
4. Palmboom, Frits. Drawing the Ground – Landscape Urbanism Today, Basel: Birkhäuser Architecture, 2010.
5. Duany Andres and Emily Talen. Landscape Urbanism and Its Discontents, Gabriola Island: New Society Publishers, 2013.
6. Wong, Ming, H, and Anthony Bradshaw D. The Restoration and Management of Derelict and degraded land. Berkeley: University of California Press, 2003.

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	1	2	-	3	3
2	2	2	2	-	3	3
3	3	2	2	-	3	3
<b>AVG</b>	<b>2.5</b>	<b>1.5</b>	<b>2</b>	<b>-</b>	<b>3</b>	<b>3</b>

1- low, 2-medium, 3-high, ‘-‘- no correlation

**UR 4007**

**URBAN TRANSPORTATION SYSTEMS**

**L T P/S C**  
**3 0 0 3**

**OBJECTIVES**

- To gain specialized knowledge in urban transportation systems, techniques and their integration with built environment.
- To understand the importance of transit-oriented development.
- To understand the various standards, norms & assessment methods

**UNIT I INTRODUCTION 9**  
 Urban Transportation systems. Classification of transport systems. Technical characteristics of transport modes and systems. The nature of demand and supply of transport services-scope of urban transport planning. Interdependency of transport & land use. Approaches in transportation planning.

**UNIT II CONCEPT OF MOBILITY 9**  
 Introduction to Pedestrian, Motorized and Non-Motorized Vehicles. Mobility Measures- types of transportation survey related with traffic estimation. Projections - forecasting of traffic in-line with land use, TOD/ TAD, transit surveys.

**UNIT III STAGES IN URBAN TRANSPORTATION 9**  
 Trip Generation: Introduction, Definitions. Trip Purposes- Factors associated with Trip generation and Attraction. Method of analysis. Multi-linear Regression Analysis- Assumptions, Applications- Shortcomings (No Numerical Problems)  
 Trip Distribution: Introduction, Methods, Growth Factor, Uniform growth factor, Average Growth factor, Fratar Methods and synthetic Analysis. Gravity Model. Simple Numerical Problems  
 Trip Assignment: Definition, Applications, Resistance to travel, Minimum travel path tree. Assignment Techniques- All- Or- Nothing, Multiple Route, Capacity Restraint, Diversion Curves.

**UNIT IV MODAL SPLIT 9**  
 Introduction. Factors affecting Modal Split in the Transportation Planning Process. Public Transportation modes: Systems in India, problems and prospects, present practices in urban transportation. Metro, Mono, and high capacity buses.

**UNIT V TRANSPORTATION & PARKING NORMS 9**  
 Parking in transport system, parking surveys, parking norms & standards and new approaches to parking systems. Design of transport Infrastructure. Recent innovations in technologies and its probable impacts on future urban Forms-Government transport policies and evaluation of transportation proposals.

**TOTAL: 45 PERIODS**

**OUTCOMES**

- Students will gain knowledge of inter dynamics between transportation systems and urban planning.
- Students will learn the importance of transit-oriented development.
- Students will learn about various surveys and norms related to transportation systems.

**REFERENCES**

1. Kadiyali, L., R. Traffic Engineering and Transport Planning. New Delhi: Khanna Publishers, 1987.
2. Dimitriou, Harry, T.A Developmental Approach to Urban Transport Planning. New York: Routledge, 1995.
3. Bruton, Michael, J. Introduction to Transportation Planning. New York: Routledge, 1992.
4. Black, John. Urban Transport Planning. Baltimore: John Hopkins University Press, 1981.
5. B.G.Hutchinson -Principles of Urban Transport Systems Planning. New York: McGraw-Hill Inc.,1981

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	1	2	1	2	3
2	3	2	2	-	2	2
3	2	1	1	1	2	2
<b>AVG</b>	<b>2</b>	<b>1</b>	<b>1.5</b>	<b>1</b>	<b>2</b>	<b>2</b>

1- low, 2-medium, 3-high, ‘-’- no correlation



**OBJECTIVES**

- To understand the importance of Disaster Risk Mitigation and Reduction.
- To understand the policies and role of various agencies in disaster mitigation.
- To understand the importance of community participation in DRR.
- Understanding the need for risk assessment, vulnerability analysis and mitigation.

**UNIT I INTRODUCTION****9**

Introduction to Natural and man-made disasters. Conceptual approach to disaster management. Hazard & Vulnerability identification in Urban Context. Urban disaster risks, perspectives and approaches. Forecasting of disaster in urban context. Vulnerability Mapping and Assessment.

**UNIT II URBAN RISK IMPACT: ISSUES & CONCERNS****9**

Urban disaster impact and role of urban planning in risk mitigation. Environmental impact of urban risks. Urban Transport as a factor in disaster risk reduction. Health issues due to urban disasters. Climate Change emergencies, pandemics and their impact.

**UNIT III ACTION PLAN AND STRATEGIES****9**

Introduction to urban development policies and governance in urban disaster mitigation. Techno- legal frame work for urban risk Reduction. Mitigation framework & measures for both structural and non-structural safety: Earthquakes, Urban Flooding, coastal degradation and Urban Fires. Introduction to National Building code for risk management in buildings.

**UNIT IV CAPACITY BUILDING ON DISASTER RISK MANAGEMENT****9**

Risk identification, assessment and vulnerability analysis and mitigation strategies of urban areas. National and international case studies.

**UNIT V FRAMEWORK FOR BUILDING RESILIENT CITIES****9**

Introduction to policies and frameworks for urban risk management. Community participation in risk management. Use of technology in disaster mitigation and management. Role of various agencies like NDMA, NIUA, and SIUD etc.

**TOTAL: 45 PERIODS****OUTCOMES**

- Students will be able to undertake risk assessment, vulnerability analysis of urban areas
- Students will be aware of policies, frame works and agencies related to disaster mitigation.
- Students will develop an understanding of action plan & capacity building of communities.

**REFERENCES**

1. National research council. Mitigating Shore Erosion Along Sheltered Coasts, Washington, DC: National Academies Press, 2007
2. Sener, S.M., C.A. Brebbia& O. Ozcevik. Disaster Management & Human Health Risk IV, 2015.
3. Osti, Rabindra, and K. Miyake. Forms of Community Participation in Disaster Risk Management Practices. New York: Nova Science Publishers, 2011.
4. Singh, Jagbir. Biodiversity Environment & Sustainability, New Delhi: M D Publications Pvt. Ltd, 2008

**CO-PO MAPPING**

CO	PO					
	1	2	3	4	5	6
1	3	2	3	-	3	3
2	2	-	-	-	1	3
3	2	2	2	-	1	3
4	3	2	3	-	1	1
<b>AVG</b>	<b>2.5</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>1.5</b>	<b>3</b>

1- low, 2-medium, 3-high, ‘-‘- no correlation

**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.

**UNIT I INTRODUCTION**

7

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

**UNIT II TOOLS/ TECHNIQUES TO TEACH ARCHITECTURE**

9

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.

**UNIT III SYNECTICS AS A MODEL OF TEACHING.**

9

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.

**UNIT IV STUDENT DEVELOPMENT**

11

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.

**UNIT V LEARNING IN ARCHITECTURE DESIGN STUDIO**

9

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.

**TOTAL: 45 PERIODS****COURSE OUTCOME**

<b>CO1</b>	Awareness of the importance of contextual excellence in architectural design and methods for the same.
<b>CO2</b>	Knowledge about and ability to integrate interdisciplinary and cognitive aspects of learning, teaching and development.

**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.

**CO -PO Mapping - Theory of Architectural Education**

Course Outcome (CO)	Programme Outcome (POs)					
	PO1	PO2	PO3	PO4	PO5	PO6
<b>CO1</b>	3	3	-	-	3	2
<b>CO2</b>	3	3	-	-	3	2
<b>AVERAGE</b>	3+3 =6/2=3	3+3 =6/2=3	-	-	3+3 =6/2=3	2+2 =4/2=2

## AUDIT COURSES

**AX4091**

**ENGLISH FOR RESEARCH PAPER WRITING**

**L T P C**  
**2 0 0 0**

### **OBJECTIVES**

- Teach how to improve writing skills and level of readability
- Tell about what to write in each section
- Summarize the skills needed when writing a Title
- Infer the skills needed when writing the Conclusion
- Ensure the quality of paper at very first-time submission

### **UNIT I INTRODUCTION TO RESEARCH PAPER WRITING**

**6**

Planning and Preparation, Word Order, breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and Vagueness

### **UNIT II PRESENTATION SKILLS**

**6**

Clarifying Who Did What, Highlighting Your Findings, Hedging and Criticizing, Paraphrasing and Plagiarism, Sections of a Paper, Abstracts, Introduction

### **UNIT III TITLE WRITING SKILLS**

**6**

Key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check

### **UNIT IV RESULT WRITING SKILLS**

**6**

Skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions

### **UNIT V VERIFICATION SKILLS**

**6**

Useful phrases, checking Plagiarism, how to ensure paper is as good as it could possibly be the first-time submission

**TOTAL: 30 PERIODS**

### **OUTCOMES**

CO1 –Understand that how to improve your writing skills and level of readability

CO2 –Learn about what to write in each section

CO3 –Understand the skills needed when writing a Title

CO4 – Understand the skills needed when writing the Conclusion

CO5 – Ensure the good quality of paper at very first-time submission

### **REFERENCES**

1. Adrian Wall work, English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011
2. Day R How to Write and Publish a Scientific Paper, Cambridge University Press 2006
3. Goldbort R Writing for Science, Yale University Press (available on Google Books) 2006
4. Highman N, Handbook of Writing for the Mathematical Sciences, SIAM. Highman's book 1998.

**OBJECTIVES**

- Summarize basics of disaster
- Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- Describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- Develop the strengths and weaknesses of disaster management approaches

**UNIT I INTRODUCTION****6**

Disaster: Definition, Factors and Significance; Difference between Hazard and Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.

**UNIT II REPERCUSSIONS OF DISASTERS AND HAZARDS****6**

Economic Damage, Loss of Human and Animal Life, Destruction of Ecosystem. Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts and Famines, Landslides and Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks and Spills, Outbreaks of Disease and Epidemics, War and Conflicts.

**UNIT III DISASTER PRONE AREAS IN INDIA****6**

Study of Seismic Zones; Areas Prone to Floods and Droughts, Landslides and Avalanches; Areas Prone to Cyclonic and Coastal Hazards with Special Reference To Tsunami; Post-Disaster Diseases and Epidemics

**UNIT IV DISASTER PREPAREDNESS AND MANAGEMENT****6**

Preparedness: Monitoring of Phenomena Triggering a Disaster or Hazard; Evaluation of Risk: Application of Remote Sensing, Data from Meteorological and Other Agencies, Media Reports: Governmental and Community Preparedness.

**UNIT V RISK ASSESSMENT****6**

Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques of Risk Assessment, Global Co-Operation in Risk Assessment and Warning, People's Participation in Risk Assessment. Strategies for Survival

**TOTAL: 30 PERIODS****OUTCOMES**

- CO1: Ability to summarize basics of disaster
- CO2: Ability to explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- CO3: Ability to illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- CO4: Ability to describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- CO5: Ability to develop the strengths and weaknesses of disaster management approaches

**REFERENCES**

1. Goel S. L., Disaster Administration And Management Text And Case Studies”, Deep & Deep Publication Pvt. Ltd., New Delhi,2009.
2. NishithaRaj, Singh AK, “Disaster Management in India: Perspectives, issues and strategies “NewRoyal book Company,2007.
3. Sahni, PardeepEt.Al. ,” Disaster Mitigation Experiences And Reflections”, Prentice Hall OfIndia, New Delhi,2001.

**OBJECTIVES**

Students will be able to:

- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional
- Role and entitlement to civil and economic rights as well as the emergence nation hood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

**UNIT I HISTORY OF MAKING OF THE INDIAN CONSTITUTION**

History, Drafting Committee, (Composition & Working)

**UNIT II PHILOSOPHY OF THE INDIAN CONSTITUTION**

Preamble, Salient Features

**UNIT III CONTOURS OF CONSTITUTIONAL RIGHTS AND DUTIES**

Fundamental Rights, Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies, Directive Principles of State Policy, Fundamental Duties.

**UNIT IV ORGANS OF GOVERNANCE**

Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions.

**UNIT V LOCAL ADMINISTRATION**

District's Administration head: Role and Importance, □Municipalities: Introduction, Mayor and role of Elected Representative, CEO, Municipal Corporation. Pachayati raj: Introduction, PRI: ZilaPachayat. Elected officials and their roles, CEO ZilaPachayat: Position and role. Block level: Organizational Hierarchy(Different departments), Village level:Role of Elected and Appointed officials, Importance of grass root democracy.

**UNIT VI ELECTION COMMISSION**

Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners - Institute and Bodies for the welfare of SC/ST/OBC and women.

**TOTAL: 30 PERIODS**

**OUTCOMES**

Students will be able to:

- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party[CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
- Discuss the passage of the Hindu Code Bill of 1956.

## SUGGESTED READING

1. The Constitution of India,1950(Bare Act),Government Publication.
2. Dr.S.N.Busi, Dr.B. R.Ambedkar framing of Indian Constitution,1st Edition, 2015.
3. M.P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis,2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

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நற்றமிழ்இலக்கியம்

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UNIT I

சங்க இலக்கியம்

6

1. தமிழின் துவக்கநூல்தொல்காப்பியம்  
- எழுத்து, சொல், பொருள்
2. அகநானூறு (82)  
- இயற்கைஇன்னிசைஅரங்கம்
3. குறிஞ்சிப் பாட்டின்மலர்க்காட்சி
4. புறநானூறு (95,195)  
- போரைநிறுத்தியஒளவையார்

UNIT II

அறநெறித்தமிழ்6

1. அறநெறி வகுத்ததிருவள்ளுவர்  
- அறம்வலியுறுத்தல், அன்புடைமை, ஒப்புரவறிதல், ஈகை, புகழ்
2. பிறஅறநூல்கள் - இலக்கியமருந்து  
- ஏலாதி, சிறுபஞ்சமூலம், திரிகடுகம், ஆசாரக்கோவை  
(தூய்மையைவலியுறுத்தும்நூல் )

UNIT III

இரட்டைக்காப்பியங்கள்

6

- 1.கண்ணகியின்புரட்சி  
- சிலப்பதிகாரவழக்குரைகாதை

சமூகசேவைஇலக்கியம்மணிமேகலை

- சிறைக்கோட்டம்அறக்கோட்டமாகியகாதை

UNIT IV

அருள்நெறித்தமிழ்

6

1. சிறுபாணாற்றுப்படை  
- பாரிமுல்லைக்குத்தேர்கொடுத்தது, பேகன்மயிலுக்குப் போர்வை  
கொடுத்தது, அதியமான்ஒளவைக்குநெல்லிக்கனிகொடுத்தது,  
அரசர் பண்புகள்
2. நற்றிணை  
- அன்னைக்குரியபுன்னைசிறப்பு
3. திருமந்திரம் (617, 618)  
- இயமம்நியமம்விதிகள்
4. தர்மச்சாலையை நிறுவிய வள்ளலார்
5. புறநானூறு  
- சிறுவனேவள்ளலானான்

6. அகநானூறு (4) - வண்டு  
நற்றிணை (11) - நண்டு  
கலித்தொகை (11) - யானை, புறா  
ஐந்திணை 50 (27) - மான்ஆகியவைபற்றியசெய்திகள்

## UNIT V

### நவீனதமிழ்இலக்கியம்

6

1. உரைநடைத் தமிழ்,
  - தமிழின் முதல்புதினம்,
  - தமிழின் முதல்சிறுகதை,
  - கட்டுரை இலக்கியம்,
  - பயண இலக்கியம்,
  - நாடகம்,
2. நாட்டு விடுதலைபோராட்டமும்தமிழ்இலக்கியமும்,
3. சமுதாய விடுதலையும்தமிழ்இலக்கியமும்,
4. பெண்விடுதலையும்விளிம்புநிலையினரின்மேம்பாட்டில்தமிழ்இலக்கியமும்,
5. அறிவியல் தமிழ்,
6. இணையத்தில் தமிழ்,
7. சுற்றுச்சூழல் மேம்பாட்டில்தமிழ்இலக்கியம்.

**TOTAL : 30 PERIODS**

### தமிழ்இலக்கியவெளியீடுகள் / புத்தகங்கள்

1. தமிழ்இணையகல்விக்கழகம் (Tamil Virtual University)- [www.tamilvu.org](http://www.tamilvu.org)
2. தமிழ்விக்கிப்பீடியா (Tamil Wikipedia)-<https://ta.wikipedia.org>
3. தர்மபுரஆதீனவெளியீடு
4. வாழ்வியல்களஞ்சியம்-தமிழ்ப்பல்கலைக்கழகம், தஞ்சாவூர்
5. தமிழ்கலைக்களஞ்சியம்-தமிழ்வளர்ச்சித்துறை ([thamilvalarchithurai.com](http://thamilvalarchithurai.com))
6. அறிவியல்களஞ்சியம்-தமிழ்ப்பல்கலைக்கழகம், தஞ்சாவூர்

PROGRESS THROUGH KNOWLEDGE