

**ANNA UNIVERSITY, CHENNAI  
NON-AUTONOMOUS AFFILIATED COLLEGES  
REGULATIONS 2021**

**M. ARCH. (REAL ESTATE DEVELOPMENT) FULL-TIME PROGRAMME**

**CHOICE BASED CREDIT SYSTEM**

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

- i. To provide students with domain knowledge and expertise in the principles and framework of Real Estate design, development, management and valuation.
- ii. To equip students to broaden scope of professional abilities through an integrated, research-based approach across disciplines.
- iii. To prepare students to face challenges, develop decision making skills, initiate entrepreneurial ventures and make a resourceful value addition.
- iv. To enable students to be responsive and contribute to the larger spectrum of society, environment and sustainable development.

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

**PO# Programme Outcomes**

- 1 An ability to showcase nuances of theoretical knowledge, skill quotient, comprehension of process and application to professional practice.
- 2 An ability to critically review, assess and evaluate Real Estate based process, options, potentials and constraints in real time projects.
- 3 An ability to interpret case-based studies, engage in interdisciplinary research, publications and prepare technical documents and reports
- 4 An ability to integrate technical expertise, strategic decision making and legal mechanism to provide innovative and practical solutions.
- 5 An ability to be responsive and adapt to changing scenarios pertaining to land, development, market and environment.
- 6 An ability to contribute to holistic development solutions that are context specific and in the larger global perspective.

**4. PEO/PO Mapping:**

PEO	PO					
	1	2	3	4	5	6
I.	3	2	-	1	-	-
II.	1	-	3	-	-	2
III.	-	2	-	3	-	1
IV.	-	1	-	-	2	3

1,2,3,-, scale against the correlation PO's with PEO's

**PROGRAM ARTICULATION MATRIX OF PG M. ARCH (Real Estate Development)**

		<b>COURSE NAME</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>
<b>YEAR I</b>	<b>SEMESTER I</b>	Introduction to Real Estate Development and Design	1.5	3	1	1	3	3
		Urban Development Process and Policy	3	1	-	2	2	2
		Re-Enterprising the City	1	3	-	-	2.5	3
		Real Estate Finance and Investment	2	2	2.5	3	-	-
		Building Information Modelling	2	3	3	3	-	1
		Real Estate DevelopmentStudio- I	2	3	-	2	-	2
	<b>SEMESTER II</b>	Research Methodologies for Built Environment	-	2	3	-	2	-
		Legal Frame Work for Real Estate	2	2	-	3	3	3
		Housing and Land Dynamics	1.5	3	-	3	3	3
		Geographical Information Systems for Built Environment	2.5	3	-	-	-	-
Real Estate Development Studio- II		1	2.5	1	3	3	1	
<b>YEAR II</b>	<b>SEMESTER III</b>	Valuation and Arbitration	3	2	2	3	-	1
		Sustainability and Resilience in Real Estate	3	2	-	-	3	3
		Dissertation	2	3	2	3	-	1
		Real Estate DevelopmentStudio- III	3	3	1	2	2	3
		Internship Training	3	3	1	2	1	2
	<b>SEMESTER IV</b>	Thesis Project	2	2	1	3	1	3

**PROGRAM ARTICULATION MATRIX OF PG M. ARCH (Real Estate Development)**

**PROFESSIONAL ELECTIVE COURSES (PEC)**

		<b>COURSE NAME</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>
<b>YEAR I</b>	<b>SEMESTER II</b>	Critical Thinking Skills and Development	2	1.5	-	2	-	2
		Urban Infrastructure	2.5	-	-	2	-	2
		Landscape Ecology, Planning and Management	3	3	1	1.5	3	2
		Soft Skills	2	-	3	-	-	-
<b>YEAR II</b>	<b>SEMESTER III</b>	Economics and Social Development	2	3	-	2.5	3	1
		Contract Law and Regulation	1	-	3	3	2	-
		Development Impact Assessment	2	2	2	2	1	-
		Performance Evaluation of Buildings	2	-	1	3	-	-
		Construction Project Management	2	1	-	3	1	-
		Marketing Techniques and Strategies	2	3	1	2	2	1
		Psychology of Learning and Development	2	2	-	1	-	-
	<b>SEMESTER IV</b>	Uncertainty and Recovery Mechanism	2	3	-	2.5	3	-
		Global Real Estate	3	3	-	1	1	3
		Facility Management	2	2	-	2	1	-
		Theory of Architectural Education	3	-	-	2	-	-



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

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
<b>THEORY</b>								
1.	RE4101	Introduction to Real Estate Development and Design	PCC	3	0	0	3	3
2.	RE4102	Urban Development Process and Policy	PCC	3	0	0	3	3
3.	RE4103	Re-Enterprising the City	PCC	3	0	0	3	3
4.	RE4104	Real Estate Finance and Investment	PCC	3	0	0	3	3
5.		Audit Course I*	AC	2	0	0	2	0
<b>THEORY CUM STUDIO</b>								
6.	MH4121	Building Information Modelling	PAEC	1	0	3	4	4
<b>STUDIO</b>								
7.	RE4111	Real Estate Development 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 Real Estate Development Studio- I)**

S. NO.	COURSE CODE	COURSE TITLE	CATE - GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
<b>THEORY</b>								
1.	RM4251	Research Methodologies for Built Environment	RMC	3	0	0	3	3
2.	RE4201	Legal Frame Work for Real Estate	PCC	3	0	0	3	3
3.	RE4202	Housing and Land Dynamics	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.	RE4211	Real Estate Development 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>								
7.		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 Real Estate Development Studio- II)

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>THEORY</b>								
1.	RE4301	Valuation and Arbitration	PAEC	3	0	0	3	3
2.	RE4302	Sustainability and Resilience in Real Estate	PCC	3	0	0	3	3
<b>STUDIO</b>								
3.	RE4311	Dissertation	PCC	0	0	4	4	4
4.	RE4312	Real Estate Development 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.	RE4313	Internship Training	PAEC	X	X	X	X	2
<b>TOTAL</b>							<b>28</b>	<b>28</b>

**SEMESTER IV**  
(Prerequisite- Pass in Real Estate Development Studio- III)

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
<b>STUDIO</b>								
1.	RE4411	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>

**Total No. of Credits: 103**

**PROFESSIONAL CORE COURSES (PCC)**

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	RE4101	Introduction to Real estate Development and Design	PCC	3	0	0	0	3
2.	RE4102	Urban Development Process and Policy	PCC	3	0	0	0	3
3.	RE4103	Re – Enterprising the City	PCC	3	0	0	0	3
4.	RE4104	Real Estate Finance and Investment	PCC	3	0	0	3	3
5.	RE4111	Real Estate Development Studio - I	PCC	0	0	10	10	10
6.	RM4251	Research Methodologies for Built Environment	RMC	3	0	0	0	3
7.	RE4201	Legal Frame Work for Real Estate	PCC	3	0	0	3	3
8.	RE4202	Housing and Land Dynamics	PCC	3	0	0	0	3
9.	RE4211	Real Estate Development Studio-II	PCC	0	0	10	10	10
10.	RE4302	Sustainability and Resilience in Real Estate	PCC	3	0	0	3	3
11.	RE4311	Dissertation	PCC	0	0	4	4	4
12.	RE4312	Real Estate development Studio- III	PCC	0	0	10	10	10
13.	RE4411	Thesis Project	PCC	0	0	20	20	20

**PROFESSIONAL ELECTIVE COURSES (PEC)**

**SEMESTER II, ELECTIVE I**

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	RE4001	Critical Thinking Skills and Development	PEC	3	0	0	3	3
2.	RE4002	Urban Infrastructure	PEC	3	0	0	3	3
3.	RE4003	Landscape Ecology, Planning and Management	PEC	3	0	0	3	3
4.	MH4073	Soft Skills	PEC	2	0	1	3	3

**SEMESTER III, ELECTIVE II & III**

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	RE4004	Economics and Social Development	PEC	3	0	0	3	3
2.	RE4005	Contract Law and Regulation	PEC	3	0	0	3	3
3.	RE4006	Development Impact Assessment	PEC	3	0	0	3	3
4.	MH4072	Performance Evaluation of Buildings	PEC	2	0	1	3	3
5.	RE4007	Construction Project Management	PEC	2	0	1	3	3
6.	RE4008	Marketing Techniques and Strategies	PEC	3	0	0	3	3
7.	MH4074	Psychology of Learning and Development	PEC	3	0	0	3	3

**SEMESTER IV, ELECTIVE IV**

SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	RE4009	Uncertainty and Recovery Mechanism	PEC	3	0	0	3	3
2.	RE4010	Global Real Estate	PEC	3	0	0	3	3
3.	RE4011	Facility Management	PEC	3	0	0	3	3
4.	MH4075	Theory of Architectural Education	PEC	3	0	0	3	3

**PROFESSIONAL ABILITY ENHANCEMENT COURES (PAEC)**

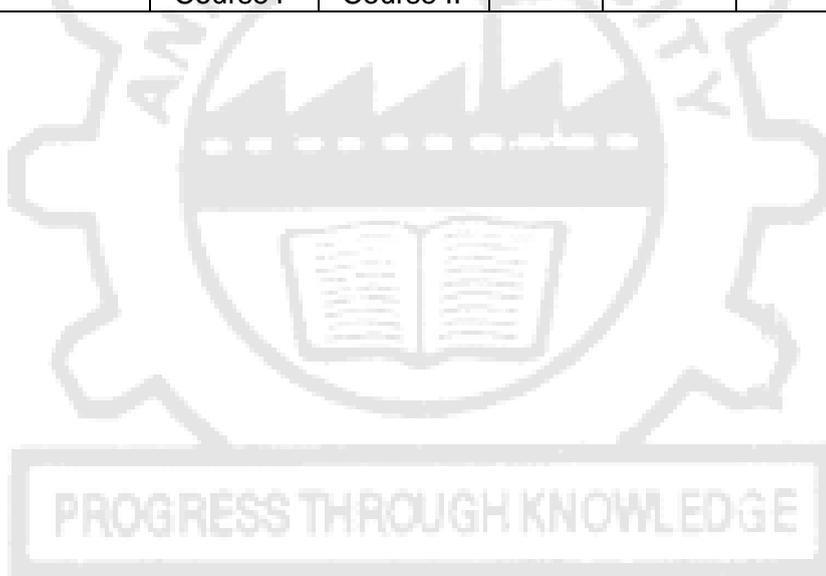
SL. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P/S		
1.	MH4121	Building Information Modelling	PAEC	1	0	3	4	4
2.	MH4221	Geographical Information Systems for Built Environment	PAEC	1	0	3	4	4
3.	RE4301	Valuation and Arbitration	PAEC	3	0	0	0	3
4.	RE4313	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	<b>1/2</b>
2.	AX4092	Disaster Management	2	0	0	0	
3.	AX4093	Constitution of India	2	0	0	0	
4.	AX4094	நற்றமிழ் இலக்கியம்	2	0	0	0	

**SUMMARY**

Sl. No	Subject Area	CREDITS PER SEMESTER				Credits Total
		I	II	III	IV	
1	PCC	2	16	17	20	75
2	PEC	-	3	6	3	12
3	PAEC	4	4	5	-	13
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			



**OBJECTIVES**

- To enable understanding of land as a resource and a commodity.
- To provide adequate inputs to help understand the whole development process as a seamless activity and be aware of the tactical aspects of the entire process of real estate development and design.
- To equip students with the knowledge of various layout planning parameters and approval process involved.
- To encourage students to explore current trends in asset building and property development.
- To enable an appreciation of the role of team work to make a successful project.

**UNIT I CONCEPTS****6**

Fundamental Concepts- Physical/Economic Characteristics, Types of Real Estate, Techniques & Sequential events in Real Estate Development Process- surveys and data rationalization; Development planning – preparation and interpretation.

**UNIT II PRE PROJECT-STUDIES AND EVENTS****6**

Site-Inventory, Evaluation & Feasibility Studies, Understanding & Analysis of Trends and Market Trajectories (Micro and Macro market), Factors affecting real estate demand, Development Team assembly.

**UNIT III LAYOUT/DEVELOPMENT PLANNING & APPROVAL PROCESS****9**

Planning objectives, Layout Planning Parameters-Plot, Road Network, Infrastructure and open spaces, Efficiency of Layout/Development, Master plan & Detailed Development Plan. Front end clearances and Approvals from various authorities.

**UNIT IV CURRENT TRENDS IN REAL ESTATE****12**

SEZ, SPV, Joint ventures, Franchisee systems, Types & Parameters, Smart city concepts, Green building, Certifications and Rating for Buildings/Townships (IGBC, CARE, CRISIL, ICRA)

**UNIT V HANDING OVER OF ASSETS****12**

Business Communication Tools required for presenting the project, in house sales promotion, public relations, transfer of completed project, Setting of Project Management Office, Estate Management

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

- Understanding of land as a resource and public domain and its endless opportunities for inclusive growth.
- Skill in applying the various principles and techniques taught in the subject in real estate design and development process.
- Understanding of principles in transactions relating to the allied operations of real estate.
- Knowledge about the recent trends and innovations in real estate.
- Knowledge in the transfer of completed projects and communication tools required for presenting the project.

**REFERENCES**

1. Fillmore W Galaty, "Modern Real estate practice" (2002); Dearborn Trade Publishing, New York, U.S.A.
2. Gerald R Cortesi, "Mastering Real estate principles" (2001); Dearborn Trade Publishing, New York, U.S.A.
3. Mike .E. Miles, "Real estate development – Principles & Process 3<sup>rd</sup> edition, (2000); Urban Land Institute, ULI – Washington DC
4. Richard B Peiser & Anne B. Frej, "Professional real estate development" – The ULI guide to the business – (2003), Urban Land Institute U.S.A.
5. Tanya Davis, "Real estate developer's handbook", (2007), Atlantic pub company, Ocala, USA.
6. Prasad Reddy, G., and P. Mohan Reddy. "INDIAN REAL ESTATE INDUSTRY: Issues And Initiatives." CLEAR International Journal of Research in Commerce & Management 6.7 (2015)
7. Dr. KR.Thooyavan. "Human Settlements – A planning guide for beginners", (2005), Ma Publications

CO	PO					
	1	2	3	4	5	6
1	1				3	
2		3				
3			1	1		
4						3
5	2		1			
<b>AVg.</b>	1.5	3	1	1	3	3

RE4102

URBAN DEVELOPMENT PROCESS AND POLICY

L T P/S C  
3 0 0 3

### OBJECTIVES

- To inform about the evolution, form and pattern of urban growth and its impact on the city.
- To enable understanding of the related planning theories concerned with urban growth and the factors affecting decision making in land use.
- To enable understanding of the implications and effects of urbanisation and ways to sustainably manage urban issues.
- To introduce various regulatory regimes, policies on land and development present in the country.
- To impart a broader knowledge of all aspects of public-private partnerships and their short/long term effects on real estate.

### UNIT I UNDERSTANDING URBAN GROWTH

9

Basics of Urban Planning- Historic Overview of City Planning, Dynamic forces driving Urban growth – Urban spatial configuration. Regional influences on settlement hierarchy.

### UNIT II LOCATIONAL DETERMINANTS

6

Land Economics-Land use Structure & Planning-(Permissible & Non Permissible Uses) – Community & Neighbourhood Dynamics, Neighbourhood Unit Theories - Urban Land rent & Location Theories

### UNIT III QUALITY OF DEVELOPMENT

10

Urban Quality –Urban Infrastructure, degeneration –Urban Renewal & regeneration – Self Sustaining and shared facilities, Sustainable development in Peri Urban areas

### UNIT IV POLICIES ON URBAN DEVELOPMENT

10

Public policies on land & real estate, Government Policies – on public & private housing – Redevelopment & Rehabilitation, Urban Fiscal Policies- Govt. Finance, Budgeting, Property Taxation, Impact of Govt. Regulations

### UNIT V PUBLIC PRIVATE PARTICIPATION

10

System drawn and informal participation, various models of public participation, BOT, BOOT, BOO, ROOT, DBOT, DBFO, participatory plan formulation, resource mobilization, maintenance and management.

**TOTAL: 45 PERIODS**

### OUTCOMES

- Knowledge about the dynamics of urban growth and its impact .
- Knowledge of tools to analyse planning decisions and regulations and their implications for society.
- An understanding of urbanisation with an emphasis on responsible urban growth
- Knowledge about the different policies framed by the National & State Government and their impact urban development and real estate pricing.
- Understanding of the challenges of PPP and how it assists to meet the need and financing gap.

**REFERENCES:**

1. David T Betto, "The Voluntary city Markets, Communities & Urban Planning" (2006)
2. Frieden, Bernard & Lyne Sagalyn, "Enterpreneurial cities & marverik developers, deal amking, getting & spending", (1990) MIT. Press, U.S.A
3. John Ratcliffe; "Urban Planning & Real estate development, (2004); Taylor & Francis pub. U.K.
4. Jonathan Barnett; "Urban design as a public policy", (1974), Mc Graw hill book co; New York.
5. Robert Freestone; "Urban Planning in a changing world – the 20<sup>th</sup> century experience 2000; Taylor & Francis pub. U.K
6. Cities and Public Policy: An Urban Agenda for India by Prasanna K Moorthy (2014)

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

RE4103

**RE-ENTERPRISING THE CITY**

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

**OBJECTIVES**

- To provide inputs to understand the dynamics of urban design as an integral part of real estate development
- To impress upon the professionals to look at Real Estate from a broader perspective of urban place/space making.
- To demonstrate the value addition to property development by adhering to urban aesthetics as a leverage for price mechanism.
- To emphasise the need for sustainability of the existing morphology through adaptive reuse to provide alternative options in urban renewal with reference to changing market dynamics
- To enable exploration of City/ Place branding as a strategy to strengthen a community's sense of place.

**UNIT I INTRODUCTION TO URBAN DESIGN THEORY**

**6**

City as a three – dimensional entity, study of volumes & open spaces, a brief historic review of the development of the urban design discipline and principles. Land as a commodity and raw material

**UNIT II ELEMENTS OF URBAN DESIGN**

**7**

Urban form as determined by the inter-play of masses, voids, building typology, scale, density, height, bulk, organization of spaces & their articulation, public spaces Image of the city & its components.

**UNIT III DETERMINANTS OF URBAN FORMS & FUNCTION**

**10**

Activity & Morphology size & structure of cities, networks – TOD Models, open spaces, public realm and place making, case studies of urban design characteristics of cities in India & abroad, issues for public intervention and participation.

**UNIT IV RETROFITTING OF BUILDINGS / PROPERTIES AND ADAPTIVE REUSE**

**12**

Methods & mechanisms – Urban Renewal – Rehabilitation, Redevelopment & Conservation – Adaptive Re-use, retrofitting, Facadism, Commodification – Context and Case Studies -Indian and abroad

**UNIT V CITY AS AN ENTERPRISE****10**

Contemporary Approaches/Theories to City Building, Smart cities, Sustainable Cities & Post Pandemic Cities, Brownfield projects, mixed use strategies, Entrepreneurship and City Branding. Form based codes, (Case examples in Indian and Western context). Legal framework, policies & charters

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

- Ability to incorporate principles of Urban design in real estate strategies
- Understanding of the role and interface of Urban Design in Real Estate development.
- Understanding of the determinants of Urban form and function.
- Sensitivity towards the significance of adaptive reuse and retrofitting with its implications in real estate development.
- Understanding of how urban development is aligned with City branding efforts and practice.

**REFERENCES**

1. Cliff Moughtin, "UD-Street & Square," (2003), Architectural Press.
2. Edmund Bacon, "Design of Cities (1976), revised edition, Viking Penguin Inc, USA
3. Geoffrey Broadbent, "Emerging concepts in Urban Space Design-(1995), Jayker & Fravels.
4. Jon Lang, "Urban design" – a typology pf procedures & products 2005, Glsevier, NorthAmerica.
5. Edited by Tim Dixon, Malcolm Eames, Miriam Hunt and Simon Lannon, "Urban Retrofitting for Sustainability" 2014, Routeledge, New York.
6. Carmona, Matthew. Public places urban spaces: The dimensions of urban design. Routledge, 2021.
7. 2. Forrest, Ray, Sin Yee Koh, and Bart Wissink, eds. Cities and the super-rich: Real estate, elite practices and urban political economies. Springer, 2017.

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

**RE4104****REAL ESTATE FINANCE AND INVESTMENT****L T P/S C  
3 0 0 3****OBJECTIVES**

- To introduce the principles of investment relating to real estate including the basic principles underlying the appraisal of investments
- To enable understanding of the influences of international modes of decision making.
- To enable understanding of risks in real estate as a tool in mortgaging and investment performance.
- To facilitate acquiring of basic skills and intuition needed to evaluate a variety of real estate project costs & investments.
- To enable understanding of the various aspects of financial planning and analysis and its impact on real estate investment.

**UNIT I FUNDAMENTAL CONCEPTS****8**

Principles, Analytical methods and tools useful for making investment and financial decisions regarding real estate properties (Commercial, Industrial, Residential), Real estate Investment Concept of Time Value of Money, PV (Present Value), FV (Future Value), discounting FV to PV by Discounting Rate. Investment Decision making using financial tools like, Pay-Back -Period, Rate of Return (%) and IRR. and Bench Marking.

**UNIT II CONVENTIONAL AND NON-CONVENTIONAL FINANCE 8**

Real estate financial decision making (pension funds, banks, life insurance companies, investment trusts, joint venture, FDI) Crowd Funding, and Joint Development debt financing by Housing Finance Companies, Govt. Financial Policies (State & Central)-Impact on Real Estate

**UNIT III RISK ANALYSIS AND SECURITIZATION 7**

Various risk in real estate investments and its analysis, Primary and Secondary Markets, Concept of securitization and structured financing in India, including mortgage contract

**UNIT IV FINANCIAL TOOLS 12**

Real Estate Project Cost estimates, preparing and analysis of Project Matrix of Time-Activity Table, Project Cash flow statement, Debt Service Coverage Ratio, Debt-Equity Ratio, Sensitivity Analysis relating to the sensitivity of Market Demand and supply and understanding Project appraisal and of Project Financial viability. Techniques of Financial Appraisal.

**UNIT V CASE STUDIES OF FINANCING OF PROJECTS 10**

Financial Viability, Cost of Capital Operational cost, Financial Planning and Analysis, Estimating Various Cost, Direct and in-direct Cost. Fixed cost, Variable cost, BEP (Break Even Point, Concept of profit and Differential pricing of units, Cross subsidies, Income tax concessions or Tax holidays, Different business Entities and understanding the fundamentals of Income/Expenditure Statement, Balance Sheets, Ratio Analysis, Capital and Reserves, The role of Rating Agencies and Long term and short term market borrowings with fixed and variable Interest rate

**TOTAL: 45 PERIODS**

**OUTCOMES**

- Ability to undertake feasibility and viability appraisals of real estate investments.
- Ability to practice the principles, analytical methods and tools are useful for making investment and finance decisions.
- Knowledge on development of real estate securitization and structured financing including mortgage contract helps to calculate the various durations to evaluate risk sharing in Real Estate Development
- Awareness of real estate financial modelling, capable of analysing real estate markets and adept at assessing risk.
- Sophisticated and agile understanding of the financial tools in real estate investing landscape

**REFERENCES**

1. David Falk; "The fundamentals of Real estate finance", (2005). USA
2. Ira Nachem, "The complete guide to "Financing real estate development" 2007- Mc Graw hill companies, USA.
3. Nathan. S. Collier, "Construction finding – the process of RE development, Appraisal & finance (2007); John Wiley & Sons Inc; New Jersey.
4. Terrence M Clauritie, "Real estate finance: Theory & practice", (2005), Prentice Hall, U.S.A
5. GE Greer, "Investment analysis for R E decision", (2003), Dearborn R E education.
6. Gaurav Jain, "Real Estate Investment & Financial Analysis: The Four Essentials of Building Wealth with Realty" (2017)
7. Prasanth Das and Divyansh Sarma "Real Estate Finance in India", (2013)
8. Roger Staiger, "Foundations of Real Estate Financial Modelling"- (2018) Routledge; 2nd edition (2018)
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CO	PO					
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4	1		2			
5	2	1				
<b>AVg.</b>	2	2	2.5	3	-	-

**OBJECTIVES**

- To equip students with skills and information to build comprehensive Building Information Models (BIM) for stage wise project analysis.
- To help students work and iterate on parameters that impact design options
- To sensitise students, and enhance their potential at energy modelling.
- To let student's review and optimise the complex details in the design solution so as to avoid construction risks.
- To equip students with skills on cost optimisation with design inputs using appropriate Digital software and Media.

**UNIT I INTRODUCTION TO THE FUNDAMENTALS 10**

Key concepts of BIM - reading and manipulating the software Interface - navigating within views - selection methods - the importance of levels and grids- creating walls, doors, windows, and components - working with essential modification commands and load family. Creating floors, ceilings, and stairs - working with type and instance parameters - importing CAD drawings - understanding the project browser and type properties palettes - adding sheets - inserting views onto sheets - adding dimensions and text to the mode and plotting

**UNIT II ADVANCED MODELING –FAMILY TYPES AND TOPOSURFACE MODELLING 15**

Creating curtain walls, schedules, details, a custom family, and family types - “flex” a family with family types and work with reference planes - creating rooms and an area plan - tag components - customize existing wall styles. Create and edit a topo surface, add site and parking components - draw label contours - work with phasing - understand groups and links - work with stacked walls - and learn the basics of rendering and create a project template.

**UNIT III RENDERING AND MATERIAL APPLICATION 15**

Choosing material for buildings- Creating custom walls, floors, and roofs - keynoting - working with mass elements - enhancing rendering with lighting - producing customized materials - Using sun and shadow settings - Walkthrough technique - adding decals - working with design options and work sets - and calculating energy analysis - managing revisions

**UNIT IV BIM FOR BUILDING ENERGY SIMULATION 15**

Energy simulation for conceptual BIM models using massing- Detailed modeling using design elements- Rapid energy modeling and simulation - Conceptual Energy Analysis features to simulate performance to produce energy consumption, carbon neutrality and renewable potential reports.

**UNIT V BIM FOR COST ESTIMATING, PROJECT PHASING AND ADMINISTRATION 5**

Introduction and theoretical information on the following topics- Model based Cost Estimating - Challenges in cost estimating with BIM- Cad geometrics vs BIM element description- Visual data models - Material substitutions and value engineering- detailed estimates and take off sheets- XML and automated cost estimate- project phasing and management- 4D modeling -BIM for project lifecycles.

**TOTAL: 60 PERIODS****OUTCOMES**

- Knowledge on the implementation of BIM concepts throughout the lifecycle of a building, from planning and design, to construction and operations.
- Knowledge of optimisation, working on options and alternatives that could result in efficiency.
- Ability to use BIM for analysing energy performance and simulating details.
- Knowledge that can synchronise the real time project through simulation.
- Understanding of the complex details of generating detailed estimates that add to value engineering.

**REFERENCE**

1. Eastman, C.; Teicholz, P.; Sacks, R.; Liston, K. (2008) BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. New York: Wiley.
2. Ray Crotty;(2011) The Impact of Building Information Modelling: Transforming Construction. Spons Architecture Price Book.

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<b>AVg.</b>	2	3	3	3	-	1

**RE4111**

**REAL ESTATE DEVELOPMENT STUDIO – I**

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

**OBJECTIVES**

- To enable understanding of synergies between how one specializes development and how real estate dynamics shape and influence land development.
- To facilitate application of tools, instruments and strategies for design thinking and understand the mechanisms of Socio-Economic and Cultural Contexts, Consumer behavioural Patterns/Lifestyles that shape and impact real estate development process.
- To impart skills to visualize and communicate concepts about a site and enable the assessment of a project for its development potential.
- To create understanding of the myriad of factors that influence a project and be sensitized to the links between plotted development and sustainable environmental management.
- To create enhanced understanding of the intricate relationships between the development practices and the influence of financial market.

**CONTENT**

Trend Analysis: Analysis of societal needs /current market trends will be the starting point of this studio to sensitize students to issues of land and corporate development. The students will incorporate developmental planning parameters by which the various stakeholders-architects, planners, urban designers, developers/investors, buyers and users can conceptualize various frameworks for real estate development.

This will culminate in a project on Residential Plotted Land Development supported with Commercial, Public-Semi Public, Open space/Recreational land uses.

The deliverables for the Studio include–Site Analysis, Demand assessment, Product mix, Zoning & circulations, Housing Typology, Layout plan, Infrastructure and Landscape plans. Financial outlays profiling Marketing Plan, Project Costing, Cash flow, ROI, IRR and Feasibility Analysis Report.

**TOTAL: 150 PERIODS**

**OUTCOMES**

- Understanding of how good and inclusive design adds value to residential plotted development projects.
- Ability to investigate how responsive development is holding the key to our social, economic, and culturally equitable future.
- Knowledge of tools and skills to use real estate development to solve the challenges and positively impact communities that they design and build.
- Understanding of real estate development requires excellence in urban design, planning, sustainability and financial outline.
- An awareness of the iterative process of problem finding, solutions is fundamental to producing the most valued and valuable real estate projects.

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**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**

**OUTCOME**

- Skill to identify, decipher and interpret issues relating to architecture based on research enquiry methods.
- Knowledge of different methods of conducting research and research writing.
- 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.
2. 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.
3. Iain Borden and Katerina Ruedi, 'The Dissertation: An Architecture Student's Handbook', Edition 2, Architectural Press, 2005
4. Ranjith Kumar, 'Research Methodology- A Step by Step guide for Beginners', 4th Edition, Sage Publications, 2014.
5. John W Creswell, 'Research Design: Qualitative, Quantitative and Mixed Methods Approaches', Sage Publications, 2013.
6. JA Smith, P Flowers, M Larkin, 'Interpretative Phenomenological Analysis: Theory, Method and Research (English)', I Edition, Sage Publications, 2009.

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RE4201

**LEGAL FRAMEWORK FOR REAL ESTATE**

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

### OBJECTIVES:

- To equip students with formalities and regulatory mechanism of land ownership, transfer, lease and mortgage regulations.
- To examine the effect of Development control rules on the property market.
- To expose students to the Tender process, Construction contracts & bidding evaluation
- To introduce the students to legal requirements of land and its development
- To sensitize the students on Labour law, regulations and social security

### UNIT I REGULATORY REGIME

**9**

Laws and regulatory Framework – Understanding and appraisal of the regulatory regime Development Control TNCBR - Land use regulations – ordinances – subdivision rules – Land Acquisition – Land ceiling act, Town and country planning Act, Acts relating to environmental quality and infra structure development. Real Estate Regulatory Act (RERA) and Laws relating to approval process

### UNIT II REGISTRATION and TRANSFER OF PROPERTY

**9**

Law of Property, examining the rules relating to the transfer of land, the system of registration of title, co-ownership of land - Land title – Tenancy- Corporate Laws and Taxation for real estate development, Transfer of Property – Possession rights – leases – mortgage

### UNIT III CONSTRUCTION CONTRACTS

**9**

Indian Contracts Act – Elements of Contracts – Types of Contracts – Features – Suitability – Design of Contract Documents- International Contract document - Standard Contract Document – Law of Torts.

### UNIT IV TENDERS

**9**

Tenders – Prequalification – Bidding – Accepting – Evaluation of Tender Form – Technical – Contractual –Contract Formation and Interpretation – Potential Contractual Problems – World Bank Tender Procedures and Guidelines

### UNIT V LABOUR REGULATIONS

**9**

Labour Regulations – Social Security – Welfare Legislation – Laws relating to wages – Bonus and Industrial disputes – Labour Administration – Insurance and safety Regulations – Workmen's Compensation Act – Other Labour Laws.

**TOTAL: 45 PERIODS**

## OUTCOMES

- CO1 The students will understand the dynamics of transfer of land and the system of registration of title.
- CO2 The students will be educated on with the development control rules and its effects on property markets
- CO3 The students are exposed to the rules and regulation in obtaining approval
- CO4 The students will be sensitized to design of international contract documents & World Bank Procedural Rules
- CO5 The students will be exposed to the Labour Acts, Regulations and laws

## REFERENCES

1. Catherine Elliioth, Contract Law (2003)
2. Judith – Anne Mackenzie, “Text book on Land Law”, (2004), Oxford University Press,U.K.
3. Kendem Adward Digby, “An introduction to the history of the law of real property” (2005), thelaw book exchange Ltd. UK.
4. Kevin J Gray, “Elements of land law”, (2004), Lexis Nexis, U.K.
5. Richard Willmot Constructions Contracts – Law & Practice Oxford University Press, U.S.A.
6. V.G. Ramachandran, “Law of land acquisition & compensation, 8<sup>th</sup> edition, 2000, Eastern Book Company, Lucknow.
7. Avijit Datta, “Construction Contract Management” (2018)

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5				3		
AVg.	2	2	-	3	3	3

RE4202

**HOUSING AND LAND DYNAMICS**

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

### OBJECTIVES:

- This course introduces the student to the issues and concerns in today's housing, a crucial factor in the country's socio economy
- To expose the students to the present state of mobilisation of resources for improving the context of a good housing policy
- This course will examine the redefinition of contemporary housing within the contexts of Multicultural cities due to globalisation.
- To understand the context of housing with reference to aspects related to density and socio-economic compositions
- To sensitize the students on housing policies on affordability and inclusiveness

### UNIT I

#### **HOUSING & THE CONTEXT**

**8**

Evolution and Investigation of contemporary lifestyle, Socio-cultural facets, Society and its influence on housing- Globalization and influences on Urbanisation- Issues and concerns- Challenges and Initiatives in Community Development. Societal Demand/Need and Supply. Alternate housing solutions: community living, Commune, Co Living, Cooperatives,

### UNIT II

#### **HOUSING POLICY – AFFORDABILITY AND INCLUSIVENESS**

**9**

National Urban Housing &Habitat and Rental policy, PMAY– Housing for the poor – EWS, Slums and Squatter settlements – Rehabilitation- Public policies on land & real estate and potential markets – Redevelopment -Understanding livelihood displacement, Building technologies for sustainable development – Contribution of research organisations – SERC, NEERI, CBRI COSTFORD

**UNIT III LAND ECONOMICS AND MARKET 9**

Land Financing- Land Value Capture (LVC), Land based Fund/Finance (LBF), Land Bank, Land Management and Strategies-, Land pooling, Incentives -TDR, FSI, Tools – PUD, GUD, LASER. Land Pricing and Land Markets

**UNIT IV HOUSING TECHNOLOGY AND INFRASTRUCTURE 9**

Technological interventions – PREFAB, MIWON,3D Printing and Prototyping. Housing Estate management – Housing Co-operatives, Infrastructure and Services for largescale Projects & Housing– Road Network, Water Supply, Drainage, Sanitation, Power and Solid Waste Management, Green Infrastructure strategies

**UNIT V EMERGING TRENDS IN HOUSING 10**

High –Density Houses, Hyper, Multi-cultural Housing- lab rooms and cyber homes-Modular housing- Earth Homes, Bio homes - Concept of Gated Community, Sustainable Townships. Works of UN Studio; OMA, Works of Wiel Arets, Shigeru Ban, MVRDV and Works of Contemporary Indian Architects in the perspectives of national and international projects and future developments.

**TOTAL: 45 PERIODS**

**OUTCOMES**

- CO1 The students will be sensitized on the issues and concerns in present day housing sector
- CO2 The student will be exposed to resource mobilisations and the need for improvisations in the housing policies
- CO3 The students will acquire knowledge in the development of single and multifamily housing typedesigns relevant to market dynamics.
- CO4 The students will acquire knowledge in new forms of living and housing in the digital era
- CO5 The students will be exposed to the policies on housing affordability and inclusiveness

**REFERENCES:**

1. Jingmin ZHOU; Urban housing
2. Manuel Gausa and Jaime Salazer; Housing+ Single Family Housing; Birkhauser- Publishers for Architecture; 2005
3. Vincene Guillart; Sociopolis: Project for a city of the Future; ACTAR; 2004
4. Partrick Wakely, 2019, Housing in Developing Cities - Experience and Lessons, Routledge, Taylor and Francis Ltd.
5. Julia Williams Robinson, 2017, Complex Housing, Taylor and Francis Ltd.

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<b>AVg.</b>	1.5	3	-	3	3	3

**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 attribute data to its geographic features

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

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AVg.	2.5	3	-	-	-	-

**RE4211 REAL ESTATE DEVELOPMENT STUDIO – II L T P/S C**  
**0 0 10 10**

**OBJECTIVES:**

- Understanding the concepts of township planning and development mix from the point of view of prevailing market trends.
- Analysing customer segmentation and to provide for value –creation, improved quality of life and greater affordability.
- To understand land as a resource and commodity.
- To position real estate development as a collaborative process where sustainable design is approached through the lens of the local context of the region.
- To arrive at financial outlay, cost control that balances project scope and aesthetics

## CONTENTS

The thrust of the project studio underlines socially responsible real estate development, providing for a holistic living environment, resulting in structured and optimum land usage, and a self-sufficient microcosm, to address complex, interdisciplinary issues considering societal and environmental contexts.

The Integrated Township project, through evidence-based field analysis, would address spatial dynamics in identifying and locating land parcels in developing corridors; urban periphery; agglomerations etc. The approach to the design could result in high-density mixed-use developments, affordable, resilient and sustainable solutions. The varied connotations of a mixed use development with its supporting serviced infrastructure would be realised in a responsive real estate proposition.

Components of the project –Feasibility Studies, Locational Analysis, Site Analysis, Economic and Market Need /Demand assessment, Development mix, zoning & Circulation Network, Layout plan, Infrastructure/ Landscape/Marketing plan, Housing Typologies- Project Costing, Scheduling, Cash flow, ROI, IRR & Detailed Project Report

**TOTAL: 150 PERIODS**

## OUTCOMES

- CO1 Acquire skills on planning of mixed use developments by balancing financial analysis with project scope and aesthetics
- CO2 Use scenario planning to minimize surprises to ensure optimisation of resources and services, reduce wastage, and effective costing.
- CO3 Acquaint themselves with land dynamics, change and functionality, and mitigate and manage risks.
- CO4 Will specifically deliberate about tools and mechanisms for mobilization of finance & strategic phasing of the project.
- CO5 Unbundling of infrastructure options, affordability and inclusivity.

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<b>AVg.</b>	1	2.5	1	3	3	1

PROGRESS THROUGH KNOWLEDGE

RE4301

**VALUATION & ARBITRATION**

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

## OBJECTIVES:

- To equip the students with the techniques of valuation of properties.
- To provide the required input to create space for specialization in this area.
- To perform real estate valuation for different kinds of properties/asset classes as case study.
- To provide exposure to the importance and intricacies of Arbitration as an Alternative Disputes Resolution (ADR) Mechanism.
- To provide and sensitize students to the systems and proceeding of Arbitration.

## UNIT I FUNDAMENTAL PRINCIPLES AND CONCEPT OF VALUE

7

Open market value – Property and Property Market – Property as an Investment.

## UNIT II NATURE AND SCOPE OF VALUATION

9

Valuation function – Role and functions of Valuer – Scope – Value Theory – Process.

**UNIT III DETERMINATION OF VALUES****9**

Techniques to determine the values for loan, sale and insurance – Professional standards – report writing - Leasehold Valuation – different methods.

**UNIT IV EVALUATION OF INCOME AND PROPERTY****9**

Discounting and compound interest – Income Estimation and forecasting – debt financing – capitalization and discount rates – tax considerations – introduction to mortgage equity analysis – financial residual techniques.

**UNIT V ARBITRATION****11**

Alternate Dispute Resolution - Arbitration – Role and Process of Arbitration - Arbitration and conciliation Act 1996 its terms & Provisions - Costs involved for Arbitration - Role of Arbitrator - Independence of arbitrators – disputes – settlements – arbitral award – Time Limit – Contents of award – Costs of Proceedings.

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

- CO1 Students will get trained to value various kinds of property.  
 CO2 Students will get to know about gaining domain expertise as a valuer when it comes to valuation  
 CO3 The Case Study based approach would equip students to handle similar valuation projects in their professional practice.  
 CO4 The student will be familiar with the various legal systems that are in force and the methods of handling disputes.  
 CO5 The student will understand the role and responsibility and the ethical standards that govern an architectural & Real Estate practice.

**REFERENCES**

1. “Valuation of Immovable properties” (Under Direct Taxes) edn(2002), Grish Chand Gupta, Bharath Law House, New Delhi-83.
2. Aswanth Damodaran, Investment Valuation (2002), John Wiley & Sons, UK.
3. Howard C Gelbtuch, “Real estate valuation in global markets”, (1997), Appraisal institute.
4. Ko Wang, Real estate valuation theory, (2001) Kluwer Academic publishers, S. America.
5. Law Relating to Arbitration and A.D.R, New Edn(2002), N.K. Acharya’s Asia Law House, Hyderabad, India.
6. Prof. Madhav Deobhakta; Arbitration for Architects and Project Managers, 2011

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<b>AVg.</b>	3	2	2	3	-	1

**RE4302****SUSTAINABILITY AND RESILIENCE IN REAL ESTATE****L T P/S C  
3 0 0 3****OBJECTIVES:**

- To understand sustainable management of land in its varied dimensions
- To develop skills in incorporating systems and strategies of sustainability in the context of real estate
- To integrate climate change and its responsiveness in real estate practices
- To sensitize on the aspects of resilience in real estate asset creation
- To develop critical perspectives on the application of sustainability frameworks

**UNIT I SUSTAINABLE LAND & PROPERTY 10**  
Sustainable Development Goals (SDG'S) – Sustainable Targets – Land Use and Land Cover Changes (LUCC) – Models & Market Based Instruments (MBI) – Sustainable Land Use Investments - Environmental sustainability - Initiatives in the Built environment – Context of Green Buildings

**UNIT II SYSTEMS & STRATEGIES 8**  
Energy Efficient strategies, Carbon offset credits – Green Leases - Sustainable Finance Instruments - Green Retrofit – Investing in Green Buildings

**UNIT III CLIMATE CHANGE & ADAPTATION 10**  
Climate change & adaptation -- Environmental, Social and Governance (ESG) initiatives, opportunities & portfolio making- Task Force on Climate-related Financial Disclosures (TCFD)

**UNIT IV RESILIENCE & PROPERTY DEVELOPMENT 8**  
Resilient Land Use & Planning – Asset & Value creation through resilience - Urban Resilience through effective Public Real Estate Asset Management and Land-Based Financing - Benchmarks & Assessments – GRSEB, PRI, Green Star

**UNIT V CASE STUDY ANALYSIS 9**  
Developing Business cases, Asset creation exercises in real estate, Green real estate– case studies and best practices in India and abroad

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- CO1** The student will be equipped with sustainable management tools and strategies in a broader spectrum of land & built fabric
- CO2** The students are able to understand the strategic aspects of energy efficiency and green concept based Real Estate investments
- CO3** The students will be equipped to make environmentally conscious design & climate responsive decisions
- CO4** The students are able to understand the importance of resilience framework for property development
- CO5** The students will be able to apply principles learned through applications and case studies of business cases that give holistic approach to sustainability and green Real Estate

**REFERENCES:**

1. Sara Wilkinson, Tim Dixon, Norm Miller, Sarah Sayce, Routledge Handbook of Sustainable Real Estate, Routledge, 2018.
2. Lisa N. Hasan, Stéfanie D. Kibsey, Cary Krosinsky, Thomas Walker, Sustainable Real Estate: Multidisciplinary Approaches to an Evolving System, Springer, 2018.
3. Sara J. Wilkinson, Sarah L. Sayce, Pernille H. Christensen, Developing Property Sustainably, Routledge, 2015.
4. David Crichton, Fergus Nicol, Sue Roaf, Adapting Buildings and Cities for Climate Change 2nd Edition, Routledge, 2009.
5. Sara J. Wilkinson, Hilde Remøy, Building Urban Resilience through Change of Use (Innovation in the Built Environment) 1st Edition, 2018.
6. Pearce, A.R. & Ahn, Y.H. (2018). *Sustainable Buildings and Infrastructure: Paths to the Future*. 2<sup>nd</sup> New York, NY.: Routledge.

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<b>AVg.</b>	3	2	-	-	3	3

**OBJECTIVES**

- To provide scope for independent study, exploring specific areas of interest pertaining to Real estate design, development, legal & finance-based mechanisms & application.
- To address research gap in the contemporary/ emerging areas of Real Estate Design & Development
- To review literature/ white papers & case studies of Global and Indian economic, regulatory & project scenarios and understand their impact on the Real Estate Sector
- To do critical analysis, understand trend & market scenario and find possible solutions for the various issues.
- To gain knowledge in technical report writing.

**CONTENT**

The dissertation provides the opportunity to the student to embark on research, to explore specific areas of interest pertaining to Real Estate Development. The scholar shall select a topic of his / her choice with the approval of the HOD and write a comprehensive report. A dissertation is a course for thesis preparation, and forms the base to preparatory research that could be further addressed in phase 2: Thesis. The process of research through review of literature/ white papers establishing the area of inquiry and setting objectives leading to profiling of stakeholders and market dynamics sets the preliminary approach. The analytical process culminates in outlining Real Estate models, interpreting new asset classes and strategic decision-making outcomes.

**TOTAL: 60 PERIODS****OUTCOMES**

- CO1** The student will be enabled to build and understand vocabulary of Real Estate Development.
- CO2** The student will be able to identify research gap in specific areas of asset creation
- CO3** Student will learn to critically analyse case studies, evaluate market scenarios and draw out inferences.
- CO4** The student will learn to analyse, interpret and explain results and structure their research /discourse for implementation in phases.
- CO5** The student will acquire acumen in technical report writing & publishing white papers.

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AVg.	2	3	2	3	-	1

**OBJECTIVES**

- To provide practical opportunities for students to understand development mechanism in the context of Special Purpose Vehicle, Special Economic Zone and Smart cities.
- To explore the potential in the Brown-field development, Regeneration strategies and its process of systematic implementation
- To equip students to understand large scale industrial developments
- To sensitize the students to asset creation through resilience, climate adaptive strategies
- To understand the flow of mobilization of resources, funding options & partnerships.

**CONTENTS:**

The studio aims at understanding large-scale developments – Green & Brownfield through research, trend, market analysis and demand assessment. Macro level profiling of Infrastructure, Network, flow of resources & locational aspects pertaining to Real Estate intervention is demonstrated through the projects on Special Economic Zones and Smart Cities. Application of Real Estate models, stake holder

analysis, tools and techniques of financing are explored in green and brownfield development projects. Optimization of Real Estate based approach to city making, addressing green and blue networks, outlining disaster management portfolio, encompass the spectrum to be explored at the studio. Real Estate potential in heritage valued properties, adaptive re-use & commodification, asset creation through resilience & climate adaptation forms the outline for extended areas to be explored

Components of the project – Feasibility Studies, Locational Analysis, Site Analysis, Economic and Market Need /Demand assessment, Development mix, zoning & Circulation Network, Master plan, Phasing, Infrastructure, Landscape & Marketing plan. Financial outlay Project Costing, Cash flow, ROI, IRR & Detailed Project Report

**TOTAL: 150 PERIODS**

**OUTCOME:**

- CO1** The student will understand the drivers of large-scale developments and its implementation through SPV
- CO2** the student will understand the Real Estate potential in redevelopment and urban renewal projects
- CO3** The student is equipped to relate to infrastructure provision & economic catalyst in an Industrial development
- CO4** The Students will be exposed to vulnerability, risk and adaptive mechanisms
- CO5** The student will be able to analyse various public and private partnership models

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

**RE4313**

**INTERNSHIP TRAINING**

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

**OBJECTIVES**

- To expose students to the realities of real estate practice through internship
- An understanding of how real estate development and project coursework ties to professional careers of interest
- To facilitate an understanding of land development, market force, and financial implications
- To enable an orientation that would include the process of development of Strategic planning, Valuation and advisory, presentation skills, involvement in office discussions, client meetings, tendering procedure and coordination with the agencies involved in the construction process.
- To Develop professional connections and identify a strategy for maintaining those connections & gain insight into a possible career path of interest while learning about the industry in which the organization resides, organizational structure, and roles and responsibilities within that structure.

**CONTENT:**

Students are placed for an internship so as to get acquainted to real time practical experience. This provides a unique opportunity for the students to gain hands- on work experience in the real estate industry, with a company in the same area as their desired career path. The Real Estate Internship Program aims to provide real world learning experience at both the private & public real estate organizations. Industry specialization areas include development activities, professional consultancy services, fund management, valuation as well as exposure to policy making/decisions in Government agencies

## OUTCOMES

- CO1** The students will gain additional skills to ensure career readiness in real estate practice
- CO2** The students will be able to articulate and coordinate application to reach professional goals
- CO3** The students will understand real time projects in its multiple dimensions
- CO4** Students learn to work on multiple projects in an office and learn all aspects relating to making real estate projects, from demand assessment, market situations, and possible product mix, presentations, financial feasibilities and supporting legal mechanism
- CO5** The student is equipped to identify career choices that may be of interest as a result of the real time professional experience

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

RE4411

THESIS PROJECT

L T P/S C  
0 0 20 20

## OBJECTIVES

- To understand the background of economic development, and rapid urbanisation and to integrate this knowledge in the real estate process and strategies.
- To demonstrate through research and analysis, the methodology involved in the identifying issues and challenges in the urbanised world and address them.
- To gain an understanding of the urban form and law, regulations and policy and their effects on urban design, architecture and real estate.
- To enable the understanding of the architectural and urban aspects of real estate development, and the context in which real estate development projects take place
- To apply reasoning informed by contextual knowledge to assess trends, financials and market needs/demands.

## CONTENT

Thesis gives an opportunity to the scholar to showcase their prowess in the genesis and conceptualization of the all-round competence in real estate design. It is a seminal work culminating into a comprehensive real estate design and development. The thesis will use literature of consultant/industry reports, existing and newly developed frameworks, and expert interviews translated into a qualitative and quantitative research.

The studio allows students to critically analyse and examine the myriad of opportunities that real estate development process offers. It enables the students to identify the most distinguishing factors that impact and help in shaping cities, communities / neighbourhoods, and individuals. Through research and critical relevance, the students discuss the major influences shaping social impact in real estate, the framework to understand the critical factors, the regulatory/statutory bodies that affect the development process, in the perspective of architecture, urban and real estate planning.

**TOTAL: 300 PERIODS**

## OUTCOMES:

- CO1** Gains understanding of the impact of urbanisation in the context of real estate practices and demonstrate the need for a sustainable development.
- CO2** Students will be adept at identifying contemporary issues/challenges to arrive at strategic recommendations using principles/methods of real estate design.
- CO3** Will gain awareness on the planning authorities and statutory/Legal bodies with regard to property development.
- CO4** Will be able to minimise risks, through a thorough understanding of the urban, social and ecological milieu.
- CO5** Acquires skills in analysing forces that drive real estate growth in the context of globalisation.

CO	PO					
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1	3				1	
2		2		3		
3			1	3		
4		2			1	
5	1					3
<b>AVg.</b>	2	2	1	3	1	3

RE4001

**CRITICAL THINKING SKILLS AND DEVELOPMENT**

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

**OBJECTIVES:**

- To equip students with the skills to apply critical thinking and argumentation to real estate problems and issues
- To develop their ability to analyse unfamiliar problems and devise problem solving strategies,
- To facilitate students in decision making process for setting-up of a new enterprise and strategies
- To help students focus on developing Skills & Knowledge Building
- To develop motivation, to reinforce entrepreneurial traits and the spirit of enterprise in real estate business and operations

**UNIT I CREATIVE CRITICAL THINKING SKILLS 9**

Concepts, Principles, Models of Thinking, Elements /Framework of Critical Thinking&, Thinking Preferences-Analysing, Assessing, & Identifying, Creative Thinking Techniques, Creativity to Innovation Process, Persuasion & Inductive Arguments, Metacognition Skills, Best Practices & Case studies in property development.

**UNIT II PROBLEM SOLVING AND REASONING 9**

Systematic Approaches to problem solving, Deconstructing Problems-Analysis & Prioritisation tools, Creative Problem-solving Process, Problem solving Framework, Analysis Models, Ideas & Techniques, Types of Reasoning (Moral, Legal, Aesthetic), Forms of Reasoning

**UNIT III STRATEGIES AND DECISION-MAKING ANALYSIS 9**

Strategies for Integrating Thinking Skills, Questioning Techniques, Strategic Planning & Scenario Planning, Mental Models & Ladders of Inference, Argument Maps for Decision-Making, Decision-Making Process-Importance of Ethics and Values, Decision Making Techniques: Grid, Pareto, and Blind Spot analysis, Impact analysis, Delphi Techniques. Future Wheels.

**UNIT IV SKILLS DEVELOPMENT 9**

Concept of metacognition, Components of Effective Communication- Conviction, confidence & enthusiasm, Barriers to Communication- Int. & Ext Barriers, Intrinsic Motivation, Perception, Power of speech Ideation: Generation, Articulation and Testing of Ideas, Opportunity Mapping, Art of Engaging and Convincing, Self & time Management, Motivation techniques.

**UNIT V ENTREPRENEURSHIP & MANAGEMENT OF REAL ESTATE 9**

Entrepreneur and Intrapreneur, Classification and types of entrepreneurs, elementary theories of entrepreneurship, risks and barriers, factors affecting the entrepreneurial growth: psychological, Cultural, Social, Economic and personality, Personal attributes of strong real estate entrepreneurs, Principles of Technology, Innovation and Entrepreneurial Management, Business Opportunity Identification .in real estate

**TOTAL: 45 PERIODS**

## OUTCOMES

- CO1 Students develop a transferable set of critical thinking skills to organise and evaluate different types of information and make coherent arguments
- CO2 Students gain independent thinking skills build confidence and will be equipped for tackling complex and unfamiliar problems
- CO3 Students learn how to make informed and reasoned decisions and construct evidence-based arguments.
- CO4 Students will learn to apply skills and domain knowledge to the specific problem they identified.
- CO5 Students acquire the ability to function dynamically and acquire the requisite knowledge and skills to plan and successfully launch their own ventures.

## REFERENCES:

1. Thinking Skills: Critical Thinking and Problem Solving (Cambridge International Examinations) Cambridge University Press; 2nd edition -John Butterworth and Geoff Thwaites (2013)
2. Critical Thinking: Your Guide to Effective Argument, Successful Analysis and Independent Study, SAGE Publications Ltd (2017) by Tom Chatfield
3. Skill Development and Entrepreneurship in India Hardcover (2016) by Rameshwar Pandya, published by Ingram short title
4. Barber Alex, Mental Models: The Complete Guide for Logical Analysis, Problem-Solving, Powerful Strategies and Improved Decision-Making-2020
5. Strategic Decision Making: A Discovery-Led Approach to Critical Choices in Turbulent Times 1st Edition Simon Haslam , Ben Shenoy , (2018)
6. Rethinking Real Estate: A Roadmap to Technology's Impact on the World's Largest Asset Class by Dror Poleg Springer; 1st ed. 2020 edition

CO	PO					
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1	1	2				
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3		1		3		
4	3			1		
5				1		2
AVg.	2	1.5	-	2	-	2

RE4002

URBAN INFRASTRUCTURE

L T P/S C  
3 0 0 3

## OBJECTIVES

- To provide basic knowledge on the functions, dynamics, planning and management of urban infrastructure systems.
- To give understanding about the dynamics within and between urban infrastructure systems, and their relation to the built environment and economic development.
- To give knowledge about how to assess the qualities of infrastructure systems in terms of vulnerability, sustainability, equity and efficiency.
- To understand the power generation, and distribution
- To understand the water supply, drainage and solid waste management in macro scale

## UNIT I INFRASTRUCTURE PLANNING & TRANSPORTATION

12

Infrastructure Planning – Urban, Sub-urban, Peri-urban and Rural - India – Blue& Green Infrastructure Planning: Impact on Development. Building and city level, Challenges and Considerations– Urban Transport Management –Design criteria for road – Types of Road & Traffic Analysis, Emerging trends: Micro mobility &Green Corridors, Multi modal Connectivity, EV, Drone Ports etc. Urban Metabolism-Models and Process

**UNIT II POWER DISTRIBUTION****9**

Urban Energy Management. Power generation – types – Power Transmission – source and distribution networks with safety norms applicable - Substation - primary & secondary – Ring line & main unit – Power Tapping – Types of Transformer, Power grids for larger townships – Power supply Load calculation – Renewable Energy Sources: Solar farms, Wind farms, PV, CSP etc. Net Zero Approach for development.

**UNIT III WATER SUPPLY AND SANITATION****8**

Water supply systems. Quality and quantity requirements. Layout of Service lines. Sources, Collection and conveyance of water for largescale developments. Treatment methods & plant location. Planning distribution systems and their zoning with respect to urban structure. Integrated Urban Water Management

**UNIT IV DRAINAGE AND SEWERAGE SYSTEMS****8**

Factors determining layout of urban drainage and sewerage system. Sewage treatment plant location and functioning. Waste water disposal systems- separate and combined systems. Industrial pollutants and their effects & disposal. Waste water treatment methods. Planning and location of treatment plants.

**UNIT V SOLID WASTE MANAGEMENT****8**

City Level Solid Waste Management, Collection, Segregation and disposal systems. Classification and properties of solid wastes. Issues due to solid waste disposal, planning and design criteria with case studies. On site collection, storage, transportation. Processing and treatment of solid wastes. Social aspects of the solid waste management. Waste to Wealth, Recycle-Reuse-Zero Waste

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

- CO1 Understanding about the infrastructure system at micro level to macro level.
- CO2 Understanding the power generation and distribution to the macro level
- CO3 Ability to plan the water supply and drainage to the macro level
- CO4 Understanding the waste generation and conversion of waste to an usable product
- CO5 Ability to plan integrating all aspects of infrastructure for a sustainable development.

**REFERENCES**

1. N.Mani, 'Infrastructure Planning and Development in India', New Century Publication, 2012.
2. Kenneth C Clayton, 'Solid waste management: The Regional approach', Ballinger Pub. Co.,
3. Chatterjee A.K, 'Water Supply, Waste Disposal and Environmental Engineering', Khanna Publishers, 2010.
4. V.M. Ehlers, Ernest W. Steel, 'Municipal and Rural Sanitation', McGraw-Hill Inc, US.
5. AmodS.Tilak, 'Environmental Law', Snow White Publications Pvt. Ltd, 2009.
6. HPEC Government of India, 'Report on Indian Urban Infrastructure and Services', The High Powered Expert Committee for estimating the Investment Requirements for Urban Infrastructure Services, New Delhi, 2011. 'ager's Maintenance Handbook', McGraw Hills, 2007.

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

**RE4003****LANDSCAPE ECOLOGY, PLANNING AND MANAGEMENT****L T P/S C  
3 0 0 3****OBJECTIVES:**

- To introduce the students to Landscape management as an integral part of Landscape planning and design
- This course elaborates on the various techniques for assessment and valuation of natural resources and their management.
- To expand the students' knowledge on landscape within urban areas and open spaces in Urban context.

- To understand any developmental activity involves intervention in the natural processes and to minimize the impact due to this intervention.
- To provide knowledge related to the broad field of environmental disturbances, and tools that can be used in various remedies.

**UNIT I CONCEPTS OF ECOLOGICAL PLANNING 9**

Different types of life supporting services provided by the nature. General concept of urban ecological planning. Impact of urbanization and largescale development on nature Responsible Development Interventions-Eco sensitive approach. Resiliency and Biodiversity, resources planning and climate resilient urban development.

**UNIT II ECONOMICS IN LANDSCAPE 9**

Valuation of landscape services– measuring benefits and cost- tangible costs of landscape development, capital and maintenance cost - modification of natural system and environmental costs.

**UNIT III LANDSCAPE ASSESSMENT 9**

Assessing the landscape value – landscape quality – aesthetic, heritage and sensitivity values. – Landscape Perception - Evaluating natural process, pattern and elements of landscape. Classification and ranking of landscape. Basic quantitative methods of collecting and analysing, projecting and presenting data for landscape planning, visual assessment and aesthetic dimension.

**UNIT IV LANDSCAPE MANAGEMENT 9**

Landscape management at the regional scale in relation to soil conservation. Land use planning and resource management - water management, forest management, grassland and agricultural management. Management practice related to urban ecology and urban habitats such as urban forests, urban water sheds, regional parks, green belts. Ecological. Economic and administrative issues, management models.

**UNIT V SPECIAL PROJECTS APPROACH AND APPLICATIONS 9**

Restoration ecology, Coastal zone – Eco sensitive area-based projects – Reclamation. Abandoned sites- Brownfield – Remedial measures – Strategies – Solutions. Best practices and Case studies

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- CO1 The students will be exposed to landscape management as a part of planning and design
- CO2 Acquiring knowledge on assessment techniques and valuation of natural resources.
- CO3 The students will explore on landscape within urban areas and open spaces in Urban context.
- CO4 The students will be sensitized to minimize the impact due to development intervention.
- CO5 The students will be exposed to issues and concerns of environmental disturbances and remedial measures

**REFERENCES:**

1. Conrad, J. M. (1999). Resource Economics. Cambridge University Press. Field, B. C. and Field, M. K. (2006). Environmental economics. McGraw-Hill/Irwin.
2. Hanley, N., Shogren, J. F., and White, B. (1997). Environmental economics in theory and practice. Oxford university press, New York.
3. Kolstad, C. D. (2003). Environmental economics. Oxford university press.
4. Solow, R. M. (1993). An almost practical step toward sustainability. Resources policy, 19(3):162–172.
5. Varian, H. R. (2007). Intermediate microeconomics: A modern approach. W. W. Norton & Company.
6. Daly, H. E. and Farley, J. Ecological Economics: Principles and Applications. Washington, D.C.: Island Press, 2004

CO	PO					
	1	2	3	4	5	6
1	3					
2		3	1			
3				2		
4				1		2
5					3	
<b>AVg.</b>	3	3	1	1.5	3	2

**OBJECTIVES**

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

**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 organisational 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					
	1	2	3	4	5	6
1	2					
2	2					
3	2					
4			3			
5						
AVg.	2	-	3	-	-	-

**OBJECTIVES:**

- To understand the construction of society, values & emerging life style patterns.
- To understand urbanization and its impacts and socio – economic issues of employment, demand for space in human settlements.
- To acquire knowledge on the economic and market-based impacts of real estate development at national and global scenarios
- To appreciate the formal and informal mechanism in real estate resulting out of socio-economic characteristics, develop critical financial analytical skills to evaluate development opportunities.
- To gain knowledge on the principles which support sustainable and more equitable real estate development.

**UNIT I BASIC PRINCIPLES AND CONCEPTS OF SOCIOLOGY 10**  
Basic concepts in the study of the society – sociological theories - ethnic groups – social groups – social institutions – social stratification - order and change, Processes – social control - Sociology of India – Basic features of the Indian Society and culture – Social problems of the urban community. Current Effects of social –cultural factors, social value, behaviour and ethics – with their Effects on physical environment & behaviour -Social change in modern society -challenges of social transformation

**UNIT II URBAN AND INDUSTRIAL SOCIOLOGY 6**  
Urban Sociology - Urbanisation and its social aspects – rural – urban migration, Rural community and relationship with the urban community- Urban Influences on Rural life - Concept of industrial society, social aspects of industrialization. Change in lifestyle – emergence of new types of living, working & leisure

**UNIT III IMPLICATIONS OF NATIONAL AND GLOBAL ECONOMY 9**  
Neighbourhood concepts – implications & limitations in the Indian context, / Urban economic growth and the multiplier process under global integration - Critical forces that drive changes, importance of Accelerating globalization, thinking globally/act locally – success factors - case studies.

**UNIT IV ECONOMIC DEVELOPMENT & ROLE OF THE GOVERNMENT 10**  
Economic definition, introduction micro and macroeconomics, principle of economic analysis and its tools, theoretical, and conceptual approaches & economics of urbanization and real estate, balanced growth and industrialization, population & migration, Problems of economic growth, development, characteristics of under – developed economics-poverty alleviations – strategies and policies Theory of income, national income (GNP, NNP), -Fiscal and monetary policy, FDI – inflation – Indian financial institutions. Economic analysis, policies use and management - long term economic plans. Significance of budget, resource allocation & mobilisation, affordability.

**UNIT V ENTREPRENEURSHIP AND INNOVATION IN REAL ESTATE 10**  
Technological change and innovations, Information Technology, and Technical Progress – start-ups; incubation centres. Entrepreneurship, Organization, and Innovation: impact on society, contribution to the economic growth of the country - - Natural Resources and the Environment: Toward Sustainable Development. - case studies

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

- CO1 The students will be sensitized to the principles and practices of real estate covering social considerations.
- CO2 The students understand how urban urbanisation impact urban land and real estate development production and viability.
- CO3 The students will understand the implications of Global and National economic policies & scenarios on the real estate Industry.
- CO4 Students will gain exposure on aspects of fiscal policy that drive Real Estate opportunities as catalysts.
- CO5 The student is equipped with knowledge on innovative tools applicable to promote balanced and profitable urban intervention.

## REFERENCES

1. Baker, Scott, Nicholas Bloom and Steven Davis (2012), "Measuring Economic Policy Uncertainty", Stanford mimeo
2. C.N. Shankar Rao - Sociology – An Introduction to Social Thought (2002).
3. Chand & Co. New Delhi Introduction to Sociology, Kitab Mahal New Delhi, Vidya Bhusan & D.R. Sachadew (2005).
4. Jens Beckert, "International Encyclopedia of economic sociology", (2006), Routledge, Oxford, U.K.
5. K.K DEWETT, Modern Economic Theory (2002), Shyamal Charitable Trust, New Delhi
6. Raghbendra Jha, "Modern Public Economics", (1997), Routledge, Oxford, U.K.

CO	PO					
	1	2	3	4	5	6
1	3					
2		3				
3					3	1
4				3		
5	1			2		
AVg.	2	3	-	2.5	3	1

RE4005

## CONTRACT LAW AND REGULATION

L T P/S C  
3 0 0 3

### OBJECTIVE

- To gain knowledge on the elements & types of contract documents requirements involved in Real Estate Development
- To understand the process of inviting bidding & evaluation of tenders.
- To examine RERA, exploring rights and obligations of the stake holders
- To understand statutory and legal requirements with reference to land & property
- To sensitize students to labour related legislation & welfare measures.

### UNIT I CONTRACTS

9

Purpose of the contract - evolution of contract law in India – Indian Contracts Act – Construction Contracts - Elements of Contracts – Types of Contracts – Features – Suitability – Design of Contract Documents- International Contract document - Standard Contract Document – negotiating contracts - win-win outcome - Law of Torts-termination of contracts – conditions of contracts

### UNIT II TENDERS

9

Tenders – method of inviting tenders – tenders notice – tender documents – 3 bid/2 bid or single bid system – qualitative and quantitative evaluation of tenders- acceptance/rejection of tenders-various forms of BOT and global tendering-E Tendering

### UNIT III RERA

9

Real Estate (Regulation and Development) Act- registration of real estate project -Projects exempted from the ambit of the Act-Application for Registration of real estate projects -functions and duties of promoter -rights and duties of allottees—penalty and fines - disputes – resolution of disputes – case-based examples

### UNIT IV TAXATION LAWS

9

Legal Requirements – Insurance and Bonding – Laws governing sale- Purchases and use of Urban and Rural land – Land revenue codes- Tax Laws – Income tax – Sales tax – Excise and customs duties and their influence on construction costs – Legal Requirements of Planning – Property Law – Agency Law – Local Government laws for Approval – Statutory Regulations

### UNIT V LABOUR LAWS & REGULATIONS

9

Labour Regulations – Social Security – Welfare Legislation – Laws relating to wages – Bonus and Industrial disputes – Labour Administration – Insurance and safety Regulations – Workmen's Compensation Act – Other Labour Laws – migrant workers – issues – act and wages.

**TOTAL: 45 PERIODS**

## OUTCOMES

- CO1 Students will understand the salient features and modalities of a contract document
- CO2 Students will gain knowledge on the process involved in preparation of a tender document
- CO3 Students are exposed to nuances of operating mechanism & the spectrum of RERA
- CO4 Student will be equipped with an understanding of taxation, legal framework & revenue codes.
- CO5 Students will be responsive to labour related issues socially and legally

## REFERENCES

1. Barlow Burke, "Law of R.E brokers", 1992, Aspen Publications.
2. James Karp, RE law, 2003, Dearborn Real estate education.
3. Catherine Ellioth, Contract Law (2003) Longmen Publications.
4. Richard Willmot Constructions Contracts – Law & Practice (2006), Oxford University Press, U.S.A.
5. Daniel F Hinkel, "Practical R Elano", 2003, Thomas Delimar Learning.

CO	PO					
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2			3			
3				3		
4	1			3		
5					2	
AVg.	1	-	3	3	2	-

RE4006

### DEVELOPMENT IMPACT ASSESSMENT

L T P/S C  
3 0 0 3

#### OBJECTIVES:

- To understand the relationship between social impacts and changes in community
- To enable the students to have an understanding of EIA review & management
- To expose the students to methods, tools and Systems in EIA
- To sensitize students Environmental Impact Assessment in largescale infrastructure projects
- To impart knowledge to students on the impact of technology & its effect on development.

#### UNIT I IMPACT ON SOCIO-ECONOMIC SYSTEMS

8

Definition of social impact assessment. Social impact assessment model and the planning process. Rationale and measurement for SIA variables. Relationship between social impacts and change in community and institutional arrangements. Individual and family level impacts. Communities in transition - neighborhood and community impacts. Selecting, testing and understanding significant social impacts. Mitigation and enhancement in social assessment.

#### UNIT II ENVIRONMENTAL IMPACT ASSESSMET & MANAGEMENT PLAN

10

Environmental Management Plan - preparation, implementation and review – Mitigation and Rehabilitation Plans – Policy and guidelines for planning and monitoring programmes – Post project audit – Ethical and Quality aspects of EIA. Environmental costing of projects.

#### UNIT III COMPONENTS AND METHODS

10

Matrices – Networks – Checklists – Connections and combinations of processes - Cost benefit analysis – Analysis of alternatives – Software packages for EIA – Expert systems in EIA. Prediction tools for EIA – Mathematical modeling for impact prediction – Assessment of impacts –air – water – soil – noise – biological — Cumulative Impact Assessment – Documentation of EIA findings – planning – organization of information and visual display materials – Report preparation. EIA methods in other countries.

#### UNIT IV ASSESSMENT OF INFRASTRUCTURE PROJECTS

10

EIA related to the following sectors - Infrastructure – construction and housing Mining – Industrial - Thermal Power - River valley and Hydroelectric – coastal projects-Nuclear Power, Hill area Development and CRZ.-EIA for coastal projects.

**UNIT V TECHNOLOGICAL IMPACT ANALYSIS****7**

Historical and social origins of technologies – development markers – positive and negative consequences- ethical issues- PROPTECH services and platforms – Lead Generation – AI – data Analytics – ICT - cloud based tech – Robotic process automation - Impact on sales process – Decision making – Asset selection process – “Butterfly effect”

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

- CO1 The students will be sensitized to communities in transition, social impacts & institutional arrangements
- CO2 The students will be exposed to EIA, its evaluation and report making and reviewing process.
- CO3 The students will acquire knowledge on need, significance and methodology of EIA
- CO4 The students will develop skills to assess infrastructure projects in the perspective of environmental impact assessment
- CO5 The students will analyse the issues, impacts based on technological interventions

**REFERENCES:**

1. Canter, L.W., Environmental Impact Assessment, McGraw Hill, New York. 1996.
2. Lawrence, D.P., Environmental Impact Assessment – Practical solutions to recurrent problems, Wiley-Interscience, New Jersey, 2003.
3. Nick Harvey, Beverley Clarke, Environmental Impact Assessment: Procedures and Practices, Oxford University Press, USA, 2012.
4. Petts, J., Handbook of Environmental Impact Assessment, Vol., I and II, Blackwell Science, London, 1999.
5. World Bank –Source book on EIA

CO	PO					
	1	2	3	4	5	6
1	2				1	
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3		2		1		
4		2	1			
5				3		
AVg.	2	2	2	2	1	-

**MH4072****PERFORMANCE EVALUATION OF BUILDINGS****L T P/S C****2 0 1 3****OBJECTIVES**

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

**UNIT I ENERGY AND THE PERFORMANCE OF BUILDING****9**

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

**UNIT II MODELLING OF THE BUILDING FORM****15**

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

Simple exercises in the above.

**UNIT III POST OCCUPANCY EVALUATION OF BUILDINGS****9**

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

**UNIT IV SEMINAR AND CASE STUDY PRESENTATION****12**

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

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

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

**REFERENCE**

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

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**RE4007****CONSTRUCTION PROJECT MANAGEMENT****L T P/S C  
2 0 1 3****OBJECTIVES:**

- To acquire adequate knowledge to work with multi-disciplinary team
- To understand key stages in the lifecycle of a construction project from inception to disposal.
- To learn the fundamentals of CPM, PERT and BIM
- To understand the cost estimation, escalation and monitoring the project cost
- Students will learn the critical success factors, sustainability, evaluation of project options, structured methodologies, and the concept of whole-life costing of projects.

**UNIT I INTRODUCTION TO PROJECT MANAGEMENT****8**

Project management – Real Estate Project Life cycle – Selection of Professional services – Role of Project Managers.

**UNIT II FUNDAMENTALS OF CONSTRUCTION PLANNING 10**

Work Breakdown structure – Precedence relationships among activities – Estimating Activity Durations, CPM, PERT, BIM, Activity Float, Crashing and Time cost trade off – Resource requirements for work

**UNIT III COST ESTIMATION, QUALITY CONTROL AND MONITORING 12**

Cost Estimation, Methods of estimation, Estimates based on Engineers list of Quantities - The cost control problem – Forecasting for activity cost control – Control of project Cash Flows – Schedule control – Schedule & Budget Updates – Monitoring cost & Schedule information.  
 Quality & Safety Concerns in construction – work and material specifications – quality control by statistical methods – sampling and Variables – Safety.

**UNIT IV COMPUTER APPLICATIONS IN PROJECT MANAGEMENT 15**

Project Case study - Computer aided cost estimation – Applications using Softwares – Planning Activities, Resources, costs, quality, risks. Optimizing & distributing the project Plan. Tracking and managing the project, as a project Case study- Presentation of case study.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- CO1** Students will understand the function of design management and its efficient integration into project management processes.
- CO2** They will examine techniques for the design of major construction projects, taking particular account of client needs, procurement structure and adaptability.
- CO3** Students will acquire knowledge and understanding of the theories, concepts, principles, techniques, and intellectual and practical skills needed for the project management of construction projects.
- CO4** Students will acquire knowledge on the quality control and safety during construction.
- CO5** Students will understand and implement the functions of CPM, PERT and BIM

**REFERENCES:**

1. Calin M Popescu, "Project Planning, Scheduling & Control in Construction (1995), John Wiley & Sons. USA.
2. Conway K., Software Project Management, Editura Coriolis, ISBN 1576108074
3. James O' Brien, "CPM in Construction Management" (2006) Mc.Graw hill, USA.
4. Jimmie W. Hinze, "Construction planning & scheduling" (1997), Pretince hall. USA.
5. John Rodger Illingworth, (2000), "Construction methods & Planning", Taylor & Francis, U.K

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**RE 4008 MARKETING TECHNIQUES AND STRATEGIES L T P/S C  
3 0 0 3**

**OBJECTIVES:**

- To facilitate understanding of the conceptual framework of marketing and its applications in decision making under various environmental constraints.
- To understand real estate marketing strategy with particular emphasis on the practical dimension of branding and pricing mechanisms of property.
- To identify customer needs and assess their risk appetite keep the consumer informed and engaged through advertising.
- To understand the relevance of research in marketing and develop innovations in content marketing responding to societal needs.
- Students understands advances in technology and international business trends and how they are reshaping real estate marketing

**UNIT I MARKETING CONCEPTS AND TRENDS 9**

Concept, nature, scope and importance of marketing; Marketing concept and its evolution; Marketing mix; Strategic marketing planning – an overview. Market Analysis and Selection: Marketing environment (macro and micro components) - impact on marketing decisions; Market segmentation and positioning; Target Market Analysis & Value Creation.

**UNIT II BRANDING AND PRICING 9**

Branding – strategic implications, New product development and consumer adoption process. Pricing Decisions, Factors affecting price determination, Pricing policies and strategies; Case Studies. Traditional marketing process and digital marketing process - Marketing of residential property and agencies, networking and business development best practices

**UNIT III MARKETING TECHNIQUES and COMMUNICATION 9**

Distribution Channels: Nature, functions, and types- Retailing and wholesaling. Real Estate Promotion Decisions: Communication Process; Promotion mix – advertising, personal selling, sales promotion, publicity and public relations; Advertising effectiveness; Sales promotion, targeted selling and marketing -tools and techniques in real estate practices. Case Studies

**UNIT IV MARKETING RESEARCH AND ORGANISATION 9**

Marketing Research: Meaning and scope of marketing research; Marketing research process. Consumer decision making process and behaviour; consumer versus organizational buyers, Marketing Organisation and Control: Organising and controlling marketing operations

**UNIT V ISSUES AND LATEST DEVELOPMENTS 9**

Social, ethical and legal aspects of marketing; Marketing of services; International marketing; Green marketing; Cyber marketing; Relationship marketing and latest developments of marketing.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- CO1 The student will acquire in depth knowledge in various types of marketing concepts and relate best business practices to the new paradigm of marketing.
- CO2 The students will gain knowledge in expressing the Brand through Content Marketing capitalizing on the brand’s Unique Situation
- CO3 The student gain expertise in understanding organising and controlling marketing operations through promotion decisions.
- CO4 Helps develop a marketing strategy that incorporates values and objectives through marketing research.
- CO5 The course will provide students the basis for marketing activities and an exposure to the latest trends in digital marketing

**REFERENCE:**

1. Real Estate Sales & Marketing, 3rd Edition, Rosenauer & Mayfield, Thomson Southwestern.
2. The complete guide to real estate marketing - Diego de Giovanni (2019)
3. Consumer Behaviour - Leon G. Schiffman, , Peter J. Tobin Joe Wisenblit, S. Ramesh Kumar,(2018)
4. Integrated Advertising, Promotion and Marketing Communications 6th Edition (English, Paperback, Kenneth E. Clow, Donald E. Baack) (2014)
5. Social Media Marketing for Real Estate: Learn how to boost visibility and generate thousands of sales using social-media marketing. (2021)

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**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****OUTCOME**

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

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RE4009

**UNCERTAINTY AND RECOVERY MECHANISM**

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

**OBJECTIVES:**

- To Understand uncertainty and impact levels
- To Understand risks assessment and controlling risks
- To Gain knowledge on Real Estate risks, Forecasting, response and challenges
- To Acquire an understanding of recovery mechanism choices, criteria and decisions making
- To Gain knowledge on Strategic Planning dealt with uncertainty

**UNIT I UNCERTAINTY**

**9**

Uncertainty matters, definitions, types - uncertainty foreshadow- impact levels and output – investment & employment – ‘fiscal cliff’- roots of political polarisation  
Managing in extreme uncertainty- Future Uncertainty- Historic or Forecast Return Variability- Forecast Return Uncertainty - Making Decisions Under Uncertainty - Uncertainty Versus Risk

**UNIT II UNDERSTANDING RISKS**

**6**

Risk categories – risk management - risk response measures- Making Decisions Under Risk- Risk and Insurance - assessing and controlling risks and uncertainties.

**UNIT III RISK & UNCERTAINTY IN REAL ESTATE DEVELOPMENT**

**12**

Evaluating Risk in Real Estate - **Risk across projects, types and stages** - short-term shock and long-term impact of the epidemic on the real estate industry - Measuring Real Estate Risk - decisions and response measures- Forecast Return Uncertainty -- resource challenges- proactive responses – comparing current pandemic to other pandemics Tools and mechanism: mitigate and manage uncertainty

**UNIT IV RECOVERY MECHANISM**

**9**

Decision theory - Types of decisions- Choices under uncertainty- uncertainty models – decision making models – decision rules – resources allocations and applications - approaches – Alternatives - decision makers interactions - property developers and related response mechanisms - Economic recovery and policy rehabilitations

**UNIT V BEST PRACTICES AND CASESTUDIES**

**9**

Strategic Planning Under Severe Uncertainty - Examples dealt with uncertainty - role of emotions - changes derived in financial market – case studies

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- CO1** The students will know and understand the broader spectrum of uncertainty in its varied context
- CO2** The students will gain knowledge on risk management, impact, response and challenges
- CO3** The students understand how risk and uncertainty impact real estate design and development viability.
- CO4** Students will gain exposure on models and theory of choices and decisions making
- CO5** The student will be equipped with tools to manage and plan for uncertainty and risks in the realm of real estate.

## REFERENCES

1. Bloom, Nicholas, Max Floetotto, Nir Jaimovich, Itay Saporta and Stephen Terry (2012) "Really Uncertain Business Cycles".
2. Bloom, Nicholas (2009) "The Impact of Uncertainty Shocks", Econometrica.
3. Bloom, Nicholas, Steven Bond and John Van Reenen (2007) "Uncertainty and Investment Dynamics"
4. Regev, Sary; Shtub, Avraham; Ben-Haim, Yakov (2006). "Managing project risks as knowledge gaps".
5. Yakov Ben-Haim, Information-Gap Theory: Decisions Under Severe Uncertainty, Academic Press, London, 2001.
6. Raiffa, Howard (1997). Decision Analysis: Introductory Lectures on Choices Under Uncertainty. McGraw Hill.
7. Burgman, Mark, 2005, Risks and Decisions for Conservation and Environmental Management, Cambridge University Press, Cambridge.

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RE 4010

GLOBAL REAL ESTATE

L T P/S C

3 0 0 3

## OBJECTIVES

- To understand the rationale, opportunities of international real estate investing
- To analyse the macro factors that influence the performance of real estate markets across Countries
- To understand exit strategy from the cross border investments
- To understand the risks involved in the cross border investments
- To understand the international property markets and various countries governmental policies on real estate

### UNIT I GLOBAL REAL ESTATE MARKETS

9

Rationales for Cross Border RE Investing - Facilitators of Real Estate Globalization: public markets, professionalization -Types of Global Real Estate Investors and Developers -Understanding Global Linkages -Rewards of International RE Investing -Risks and Costs of Cross-border Investing: transaction and information costs, political risk, transparency, currency risk, liquidity, reputation

### UNIT II INVESTMENT FORMATS

9

Developer equity/ Types of Debt Private Equity: Comingled and Direct Different Types of Direct Development Strategies; Rationales Operational and Execution Issues

### UNIT III PROJECT LEVEL ANALYSIS

9

Opportunities and Constraints in Emerging Markets - Property rights and registration - Approvals/ Permits Pro-formas - Due diligence - Structures for Development Finance - Risk Return Analysis –Exit Strategies

### UNIT IV BALANCING RISKS AND REWARDS

9

Comparing domestic and international returns - Cross-border: Compensation for Transaction costs, Tax Liabilities, Currency Risk, Transparency, JV costs

**UNIT V PROPERTY MARKET FUNDAMENTALS****9**

Opening up New Markets Demand analysis for different types of RE - Property Market: Cyclical Rationales Capital Markets Supply constraints real side: land, infrastructure, finance Government Policies: Subsidies, Taxation, Regulation Risk Analysis

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

- CO1** Students will be equipped to critically analyses market specific factors that impact RE investment performance (property rights, taxes, transparency, planning procedures)
- CO2** Students will gain expertise on qualitative aspects of identifying and achieving successful projects.
- CO3** Expose students to the world of cross-border real estate development and investment with a focus on emerging market economies.
- CO4** Students will gain expertise on buying and selling across the world.
- CO5** Students will gain expertise in international property markets and policies

**REFERENCES**

1. Brown, G. & Matysiak, G., (2000) Real Estate Investment, FT/Prentice Hall.
2. Edwards V and Ellision L, (2003) Corporate Property Management: Aligning Real Estate with Business Strategy, Blackwell
3. Haynes B and Nunnington N, (2009) Corporate Real Estate Asset Management: Strategy and Implementation, EG Books
4. Hoesli, M., Lekander, J. and Witkiewicz, W., (2004) International evidence on real estate as a portfolio diversifier, Journal of Real Estate Research, Vol. 26, pp. 161-206
5. Sirmans C. F. and Worzala E. (2003), International Direct Real Estate Investment: A Review of the Literature, Urban Studies, Vol. 40, Nos 5–6, 1081–1114

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**RE 4011****FACILITY MANAGEMENT****L T P/S C****3 0 0 3****OBJECTIVE**

- To enable development of capability to plan for and manage various aspects of building so as to give user satisfaction and safety.
- To understand the key strategies and preparatory action plan for facilities
- To formulate the legislative and regulatory framework for facility management.
- To analyse the operational services and maintenance management
- Students will acquire the workspace management and training

**UNIT I FACILITY MANAGEMENT****9**

Introduction - origins of FM - Definitions of facilities management - the essential competencies - The development of standards for facilities management - Facility Manager - The 'client side' & The 'supply side' - Principle duties of a facility manager - Decision-making processes from building infrastructure to fleet services.

**UNIT II STRATEGY AND PLAN DELIVERY AND REVIEW****10**

Strategy - Preparatory action — Space and services policies and plans. Planning - Briefing - Plan testing – Communication - Accommodation and facilities plan content - Benefits of accommodation planning - Delivery of services - Sourcing services - Outsourcing procedures - Managing in-house service provision – Market imbalances and fluctuations - Measuring performance and review - Scorecard approach to performance measurement – Benchmarking - Workplace productivity - Process review

**UNIT III OPERATIONAL AND MAINTENANCE MANAGEMENT****10**

Operational management - Customer care and service - Procuring services – Specifications and service level agreements - Finance and facilities - Health and safety - Business continuity planning. Maintenance management - Types of maintenance - Condition Assessments-Managing delivery - Risk assessments, safety and maintenance - Building operating and maintenance manual

**UNIT IV WORKSPACE MANAGEMENT & TRAINING****9**

Space and service management - Design of the workspace - Workspace remodelling to optimise performance - Workplace effectiveness - Workplace security - Power security - Education and training - Core competencies in facilities management training - Reaching the right candidates -Reaching the wider business community - Leadership - Change management - Organizational culture, structure and capability.

**UNIT V CONSTRUCTION PHASE & HANDING OVER****7**

Preplan – concurrent stages of construction - Types of facility management options. Functionality of Building Automation systems. Wear and tear of technical installations. Recording operating costs, safety concepts, energy supply and waste management. Service tenders and contracts. – post project management strategy

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

- CO1** Familiarity about facilities programming in planning a building
- CO2** Understanding of the relation between facilities planning and facilities management and their importance, especially in the context of service-oriented spaces and building types.
- CO3** Ability to assess the risk and ensure safety and proper maintenance of the facilities
- CO4** Understanding the workspace management, organizational culture and structure an capability
- CO5** Understanding the importance of facilities management during construction

**REFERENCES:**

1. Corporate Property Management – aligning real estate with business strategy, Edwards V. and Ellison L., Blackwell Publishing, 2004
2. Facilities Change Management, Finch E., Wiley Blackwell, 2012
3. Facilities Management – Innovation and Performance, Alexander K., Atkin B., Brocher J. and Haugen T., Spon Press, 2004
4. Facilities Management Handbook (Fourth Edition), Booty F., Butterworth Heinemann, 2006
5. The strategic role of facilities management in business performance, 2nd edition, 2011, RICS guidance note

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**MH4075****THEORY OF ARCHITECTURAL EDUCATION****L T P/S C  
3 0 0 3****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****OUTCOME**

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

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## 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 Wallwork , 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.

**AX4092**

**DISASTER MANAGEMENT**

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

### **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. Nishitha Rai, Singh AK, “Disaster Management in India: Perspectives, issues and strategies “NewRoyal book Company, 2007.
3. Sahni, Pardeep Et. Al. ,” Disaster Mitigation Experiences And Reflections”, Prentice Hall Of India, New Delhi, 2001.

**AX4093**

**CONSTITUTION OF INDIA**

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

**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: Zila Pachayat. Elected officials and their roles, CEO Zila Pachayat: 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.

**AX4094**

**நற்றமிழ் இலக்கியம்**

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## **UNIT I சங்க இலக்கியம்**

**6**

1. தமிழின் துவக்க நூல் தொல்காப்பியம்  
– எழுத்து, சொல், பொருள்
2. அகநானூறு (82)  
- இயற்கை இன்னிசை அரங்கம்

3. குறிஞ்சிப் பாட்டின் மலர்க்காட்சி
4. புறநானூறு (95,195)
- போரை நிறுத்திய ஓளவையார்

**UNIT II அறநெறித் தமிழ் 6**

1. அறநெறி வகுத்த திருவள்ளுவர்
  - அறம் வலியுறுத்தல், அன்புடைமை, ஒப்புரவறிதல், ஈகை, புகழ்
2. பிற அறநூல்கள் - இலக்கிய மருந்து
  - ஏலாதி, சிறுபஞ்சமூலம், திரிகடுகம், ஆசாரக்கோவை (தூய்மையை வலியுறுத்தும் நூல்)

**UNIT III இரட்டைக் காப்பியங்கள் 6**

1. கண்ணகியின் புரட்சி
  - சிலப்பதிகார வழக்குரை காதை
  - சமூகசேவை இலக்கியம் மணிமேகலை
  - சிறைக்கோட்டம் அறக்கோட்டமாகிய காதை

**UNIT IV அருள்நெறித் தமிழ் 6**

1. சிறுபாணாற்றுப்படை
  - பாரி முல்லைக்குத் தேர் கொடுத்தது, பேகன் மயிலுக்குப் போர்வை கொடுத்தது, அதியமான் ஓளவைக்கு நெல்லிக்கனி கொடுத்தது, அரசர் பண்புகள்
2. நற்றிணை
  - அன்னைக்குரிய புன்னை சிறப்பு
3. திருமந்திரம் (617, 618)
  - இயமம் நியமம் விதிகள்
4. தர்மச்சாலையை நிறுவிய வள்ளலார்
5. புறநானூறு
  - சிறுவனே வள்ளலானான்
6. அகநானூறு (4) - வண்டு
  - நற்றிணை (11) - நண்டு
  - கலித்தொகை (11) - யானை, புறா
  - ஐந்திணை 50 (27) - மான்
  - ஆகியவை பற்றிய செய்திகள்

**UNIT V நவீன தமிழ் இலக்கியம் 6**

1. உரைநடைத் தமிழ்,
  - தமிழின் முதல் புதினம்,
  - தமிழின் முதல் சிறுகதை,
  - கட்டுரை இலக்கியம்,
  - பயண இலக்கியம்,
  - நாடகம்,
2. நாட்டு விடுதலை போராட்டமும் தமிழ் இலக்கியமும்,

3. சமுதாய விடுதலையும் தமிழ் இலக்கியமும்,
4. பெண் விடுதலையும் விளிம்பு நிலையினரின் மேம்பாட்டில் தமிழ் இலக்கியமும்,
5. அறிவியல் தமிழ்,
6. இணையத்தில் தமிழ்,
7. சுற்றுச்சூழல் மேம்பாட்டில் தமிழ் இலக்கியம்.

**TOTAL : 30 PERIODS**

**தமிழ் இலக்கிய வெளியீடுகள் / புத்தகங்கள்**

1. தமிழ் இணைய கல்விக்கழகம் (Tamil Virtual University)- [www.tamilvu.org](http://www.tamilvu.org)
2. தமிழ் விக்கிப்பீடியா (Tamil Wikipedia)-<https://ta.wikipedia.org>
3. தர்மபுர ஆதீன வெளியீடு
4. வாழ்வியல் களஞ்சியம் - தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்
5. தமிழ்கலைக் களஞ்சியம் - தமிழ் வளர்ச்சித் துறை (thamilvalarchithurai.com)
6. அறிவியல் களஞ்சியம் - தமிழ்ப் பல்கலைக்கழகம், தஞ்சாவூர்

