ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS
M.ARCH. (REAL ESTATE DEVELOPMENT)
REGULATIONS – 2017
CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):
I. To provide students with additional knowledge and skills as in real estate market dynamics, property management and valuation.
II. To enable students to add value to real estate development by integrating the components of legal framework & the regulatory mechanism.
III. To enable students to widen the scope of their professional abilities through an integrated approach across domains demonstrated in a varying scale of projects.
IV. To enable students to develop an attitude to face challenges of the changing market scenario, take diligent decisions and make a resourceful value addition.
V. To enable students to contribute to the larger society through their future career as a real estate consultant, responsive developer / promoter of land and property, teacher and researcher.

PROGRAMME OUTCOMES (POs):
On successful completion of the programme,

1. Graduates will demonstrate skill in applying the nuances of real estate principles in practice.
2. Graduates will gain expertise at strategic planning and acquire arbitration skills.
3. Graduates will be able to bring technical expertise across domains and integrate with aspects of land, market and environment.
4. Graduates will be able to identify potentials and constraints specific to context and in its global perspective.
5. Graduate will be able to approach projects based on real time context and provide holistic development strategies.
6. Graduates will be able to analyse varied scenarios, assess existing proposals and seek alternative solutions.
7. Graduates will be able to identify and translate change across the market and stakeholders.
8. Graduates will be able to contribute further to society through holistic and responsible real estate developmental inputs and interventions.

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| YEAR 1 | SEM 1 | Introduction to Real Estate Development & Design | |
|        |       | Urban Policy and Development Control Regulation | x |
|        |       | Urban Design, Retrofitting and Adaptive Reuse | |
|        |       | Real Estate Finance | x |
|        |       | Real Estate Valuation | x |
|        |       | Real Estate Development Studio- I | x |

<p>| YEAR 1 | SEM 2 | Legal Framework for Real Estate | x |
|        |       | Construction Project Management | x |
|        |       | Emerging Trends in Housing | x |
|        |       | Real Estate Development Studio- II | x |
|        |       | Elective I | |
|        |       | Spatial Information Systems | x |
|        |       | Global Real Estate Management | x |
|        |       | Elective II | |
|        |       | Environmental Impact Assessment | x |</p>
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* Professional Training of duration minimum 4 weeks full time or 8 weeks part time to be done in a Real Estate / Project Management firm during semester vacation.

**TOTAL NO OF CREDITS:** 75
# PROFESSIONAL ELECTIVE (PE)

## PROFESSIONAL ELECTIVE (PE) - I

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### PROFESSIONAL ABILITY ENHANCEABILITY COURSE (PAEC)

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<tr>
<th>Sl.No.</th>
<th>Course Code</th>
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INTRODUCTION TO REAL ESTATE DEVELOPMENT AND DESIGN

OBJECTIVES:
• To understand land as a resource.
• To appreciate the role of team work to make a successful project
• To provide adequate inputs so as to make to the whole development as a smooth activity and ultimately be aware of the tactical aspects of marketing the completed property.

UNIT I  CONCEPTS  6
Fundamental Concepts, Techniques & Sequential events in Real Estate Development Process

UNIT II  EVENTS AND PRE PROJECT STUDIES  6
Site evaluation – Development Team assembly – Micro and Macro market study

UNIT III  DEVELOPMENT PLANNING & APPROVAL PROCESS  9
Planning objectives, Master plan & Detailed Development Plan. Front end clearances from various authorities.

UNIT IV  CURRENT TRENDS IN REAL ESTATE  9
SEZ, SPV, Joint ventures, Smart city concepts, Types & Parameters, Franchisee systems, Green building, Rating of Buildings (CARE, CRIIL, ICRA)

UNIT V  MARKETING & HANDLING OVER  15
Communication tools required for presenting the project, In house sales promotion, franchisee system, Public relations, Branding, transfer of completed project.

TOTAL: 45 PERIODS

OUTCOMES
• The student will gain knowledge about the recent trends in Real Estate.
• The student will improve the skill in applying the various principles and techniques taught in the subject
• The student attains knowledge in marketing and communication tools required for presenting the project

REFERENCES:
5. Tanya Davis, “Real estate developer’s handbook”, (2007), Atlantic pub company, Ocala, USA.

URBAN POLICY AND DEVELOPMENT CONTROL REGULATION

OBJECTIVES:
• To understand the implications of the urbanisation on urban land.
• To capture the form and pattern of cities growth and market prices.
• To provide inputs for keeping tag of quality, even while trying to make profit taking note of various regulatory regimes on land and development present in the country.
• To understand the related planning theories concerned with real estate
UNIT I UNDERSTANDING URBAN GROWTH 9

UNIT II LOCATIONAL DETERMINANTS 6
Land use structure – Community & Neighborhood Dynamics - Urban Land rent & Location Theories

UNIT III QUALITY OF DEVELOPMENT 10
Urban Quality – degeneration –Urban Renewal – regeneration - Sustainable development

UNIT IV POLICIES ON PUBLIC PRIVATE HOUSING 10

UNIT V PUBLIC PRIVATE PARTICIPATION 10
System drawn and informal participation, various models of public participation, participatory plan formulation, resource mobilization, maintenance and management.

TOTAL: 45 PERIODS

OUTCOMES
• The students will acquire knowledge on the different policies framed by the National & State Government.
• The course will understand the implications of urbanisation, the advantages and a disadvantages

REFERENCES:

RE5103 URBAN DESIGN, RETROFITTING AND ADAPTIVE REUSE  L T P/S C 3 0 0 3

OBJECTIVES:
• To impress upon the professionals to look at the Real Estate from a broader perspective of urban aesthetics rather than islands of excellence / dreary development.
• To provide adequate inputs to understand the larger contextual land dynamics as an integral part of the urban fabric.
• To demonstrate the value addition to property development by adhering to urban aesthetics as a leverage for price mechanism.
• Emphasizing the need for sustainability of the existing morphology through adaptive reuse to provide alternative options in urban renewal with reference to changing market dynamics

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
Urban form as determined by the inter-play of masses, voids, building typology, scale, density, height, bulk, urban signage & graphics, organization of spaces & their articulation in the form of squares, streets, vistas & focal points. Image of the city & its components.

UNIT III PHYSICAL & NON–PHYSICAL DETERMINANTS OF URBAN FORMS
Activity & Morphology size & structure of cities, networks – TOD Models, open spaces, public realm and place making case studies of urban design characteristics co-related with their determinants, 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

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

OUTCOMES
• The students will be equipped to incorporate principles of Urban design in real estate strategies
• The students will understand the gap between Architectural Design & Urban Planning and hence the role of Urban Design in Real Estate development.
• The students would be sensitized to the significance of adaptive reuse and retrofitting with its implications in real estate

REFERENCES:

RE5104 REAL ESTATE FINANCE L T P/S C
3 0 0 3

OBJECTIVES:
• Basic analytical methods for investment and financing in properties.
• Influences of international modes of decision making.
• Understanding risks in real estate as a tool in mortgaging and investment performance.

UNIT I FUNDAMENTAL CONCEPTS
Principles, analytical methods and tools useful for making investment and finance decisions regarding individual properties (Commercial, Industrial, Residential), Bench Marking.
UNIT II CONVENTIONAL AND NON-CONVENTIONAL FINANCE
Institutional real estate decision making (pension funds, banks, life insurance companies, investment trusts, joint venture) debt financing

UNIT III RISK ANALYSIS and SECURITIZATION
Forecasting cash flows and estimating risk in real estate investments, Development of real estate securitization and structured financing including mortgage contract – Mortgage and options including calculation of various durations to evaluate risk sharing

UNIT IV FINANCIAL TOOLS

UNIT V CASE STUDIES OF FINANCING OF PROJECTS
Financial Viability, Capital Cost, Operational cost, Planning, Analysis, Costing, Income/Expenditure Statement, Balance Sheets

TOTAL: 45 PERIODS

OUTCOMES
- Students will acquire knowledge on development of real estate securitization and structured financing including mortgage contract helps to calculate the various durations to evaluate risk sharing in RED.
- Students will be able to practice the principles, analytical methods and tools are useful for making investment and finance decisions.

REFERENCES

RE5121 REAL ESTATE VALUATION

OBJECTIVES:
- To equip 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 as case study.

UNIT I FUNDAMENTAL PRINCIPLES AND CONCEPT OF VALUE
Open market value – Property and Property Market – Property as an Investment.

UNIT II NATURE AND SCOPE OF VALUATION
UNIT III DETERMINATION OF VALUES  
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  

UNIT V CASE STUDY  

TOTAL: 60 PERIODS

OUTCOMES
- Students will get trained to value various kinds of property.
- The Case Study based approach would equip students to handle similar valuation projects in their professional practice.

REFERENCES

RE5111 REAL ESTATE DEVELOPMENT STUDIO - I

OBJECTIVES:
- To make students elaborate on the synergies between how one specializes development and how real estate dynamics shape and influence plotted land development.
- To apply tools, instruments and strategies for design thinking and understand the mechanisms of finance and market forces that shape and impact real estate development.
- The studio will provide students the skills to visualize and communicate concepts about a site and enable the assessment of a project for its development potential, understanding the myriad of factors that influence a project.

CONTENTS
Analysis of current market trends will be the starting point of this studio to sensitize students to the issues of land and corporate development. This will culminate in a project on Plotted Land Development where students will incorporate processes by which developers, investors, architects and urban designers and planners conceptualize various frameworks for real estate development.

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

TOTAL: 150 PERIODS

OUTCOMES
- The students will have an understanding of layout and project formulation for real estate, from the point of view of land and infrastructure development.
• To acquire skills on planning of mixed use developments.
• The students will be introduced to risk involved in real estate projects.
• The students would be equipped to perform a SWOT analysis.
• The student will acquaint themselves with the need and implementation of infrastructure.

RE5201 LEGAL FRAMEWORK FOR REAL ESTATE

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 students to legal requirements of land and its development.

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

UNIT II REGISTRATION and TRANSFER OF PROPERTY
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
Transfer of Property – Possession -rights – leases – mortgage

UNIT III CONSTRUCTION CONTRACTS
Torts.

UNIT IV TENDERS
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
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
• The students are exposed to the rules and regulation in obtaining Approval.
• The student will understand the dynamics of transfer of land and the system of registration of
title.
• The students will be sensitized to design of International contract documents & World Bank
Procedural Rules.
REFERENCES

MH5202 EMERGING TRENDS IN HOUSING L T P/S C
3 0 0 3

OBJECTIVES:
• This course will examine the redefinition of contemporary housing within the contexts of Multicultural cities due to globalisation.

UNIT I INTRODUCTION 8
Outline of housing development from its industrial beginnings in London and Paris to New York City’s Lower East Side and the 20th-century designs of Le Corbusier, Antonio Sant’Elia, and Mies van der Rohe to mention a few. Investigation of contemporary life and its influence on space and architecture-Globalization and influences on economy- Alternate housing solutions: Commune, Co Housing, Cooperatives, etc.

UNIT II SINGLE FAMILY, MULTI FAMILY HOUSING 9
Review of latest developments in single family and multi family housing by examining the works of Wiel Arets, Shigeru Ban, Ben van Berkel, Kees Christiaanse, Philippe Gazeau, Frank O. Gehry, Steven Holl, Hans Kollhoff, Morger & Degelo, , Jean Nouvel, Kas Oosterhuis, MVRDV

UNIT III HIGH DENSITY HOUSING 9
Issues and concerns- Review of the current state of high density houses - the perspectives and future developments through a study of a few international projects.

UNIT IV NEW FORMS OF LIVING AND HOUSING IN THE DIGITAL ERA 9
Hyper Housing- Multi cultural Housing- lab rooms and cyber homes- Network housing- hybrid buildings- individual sheltered residences; residence cities and bio homes for senior citizens- Works of UN Studio; FOA;; OMA

UNIT V DEFINITION OF HOUSING IN THE INDIAN CONTEXT 10
Design strategies in the context of Indian metropolitan cities through case studies

TOTAL: 45 PERIODS

OUTCOMES
• The students will acquire knowledge in the development of single and multifamily housing type designs relevant to market dynamics.
• The students will acquire knowledge in new forms of living and housing in the digital era

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
OBJECTIVES

- To introduce the students to the importance of critical inquiry as a way of gaining knowledge and adding to it through research.
- To expose the students to the various forms of research and research methodologies/processes.
- To engage this understanding in the specific field of architectural research.

UNIT I INTRODUCTION
Basic research issues and concepts- orientation to research process- types of research: historical, qualitative, co-relational, experimental, simulation and modeling, logical argumentation, case study and mixed methods- illustration using research samples

UNIT II RESEARCH PROCESS
Elements of Research process: finding a topic- writing an introduction- stating a purpose of study identifying key research questions and hypotheses- reviewing literature- using theory-defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis- illustration using research samples

UNIT III RESEARCHING AND DATA COLLECTION
Library and archives- Internet: New information and the role of internet; finding and evaluating sources- misuse- test for reliability- ethics
Methods of data collection- From primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling- Problems encountered in collecting data from secondary sources.

UNIT IV REPORT WRITING
Research writing in general- Components: referencing- writing the bibliography - developing the outline - presentation; etc.

UNIT V CASE STUDIES
Case studies in the relevant discipline illustrating how good research can be used from project inception to completion- review of research publications.

OUTCOMES

- The student will develop the skill to identify, decipher and interpret issues relating to architecture based on research enquiry methods.
- The student will gain knowledge of different methods of conducting research and research writing.

REFERENCES
1. Iain Borden and Kaaterina Ruedi Ray ; The Dissertation: An Architecture Student’s Handbook; Architectural Press; 2006
3. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2011.
5. Ranjith Kumar; Research Methodology- A step by step guide for beginners-3rd Edition ; Sage Publications;2011
6. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; ‘The Craft of Research’, 3rd Edition; Chicago guides to writing, editing and publishing;2008

RE5211 REAL ESTATE DEVELOPMENT STUDIO - II

OBJECTIVES:
- Understanding the concepts of layout and project formulation for real estate, from the point of view of land, building and infrastructure development. Analyzing customer segmentation and product strategy
- Assessing branding in design using a benefit/cost approach
- Exploring bidding, cost control, and project scheduling
- Balancing financial analysis with project scope and aesthetics

CONTENTS

TOTAL: 150 PERIODS

OUTCOMES
This studio positions real estate development as a collaborative process where students will:
- Acquire skills on planning of mixed use developments by balancing financial analysis with project scope and aesthetics
- Use scenario planning to minimize surprises and evaluate real options in real estate development
- Acquaint themselves with uncertainty analysis and its implication on real estate development
- Specifically discuss about options and mobilization of finance
- Unbundling of Infrastructure options and affordability

MH5351 ARBITRATION AND ADVANCED PROFESSIONAL PRACTICE

OBJECTIVES:
- To provide exposure to the importance and intricacies of Arbitration as an Alternative Disputes Resolution (ADR) Mechanism.
- To learn the importance of various legislations and Acts as well as the relevance of ‘Awards’ and judgments given by courts.
- To enable the understanding of the roles and responsibilities of various professional bodies.
- To provide and exposure to the systems and proceeding of Arbitration.
UNIT I  IMPORTANCE OF ARBITRATION AS AN ALTERNATIVE DISPUTES RESOLUTION (ADR) MECHANISM  

UNIT II  APPOINTMENT OF ARBITRATORS - THEIR ROLES AND RESPONSIBILITIES, TECHNICAL TERMS AND COMMENTS  
How Arbitration proceedings are initiated - Reasons leading to Arbitration - Procedures and Communication - Composition of Arbitral Tribunal - Appointment of Arbitration and umpire - Interim Measures by Court / Arbitral Tribunal - Jurisdiction of Arbitral Tribunal - Conduct of Arbitral proceedings - Determination of Rules and procedure.

UNIT III  ARBITRAL PROCEEDINGS  
Place and language of proceedings - Claim statements and counter claim - Hearings and written proceedings - Experts and Assistance from courts - Form and contents of Arbitral Awards - Setting aside the Arbitral awards - Appeals, insolvency and Limitation - Misconduct of Arbitrator.

UNIT IV  PROJECT MANAGEMENT CONSULTANCY  
Introduction - practices and strategic issues related to construction project management - understanding of issues related to management of clients and other stakeholders involved in the delivery of a project.

UNIT V  PRACTICE AND CASE-STUDIES  
Emerging trends in Arbitration in India through Cases – Landmark awards and judgements by the various courts and judiciary - Case Studies in Project Management Consultancy.

TOTAL: 45 PERIODS

OUTCOMES:
- The student will be familiar with the various legal systems that are in force and the methods of handling disputes.
- The student will understand the role and responsibility and the ethical standards that govern an architectural practice.

REFERENCES:
5. Prof. MadhavDeobhakta; Arbitration for Architects and Project Managers, 2011.
UNIT I  INTRODUCTION TO PROJECT MANAGEMENT     8
Project management - Project Life cycle – Selection of Professional services – Role of Project
Managers

UNIT II   FUNDAMENTALS OF CONSTRUCTION PLANNING     12
Work Breakdown structure – Precedence relationships among activities – Estimating Activity
 Durations, CPM, PERT, Activity Float, Crashing and Time cost tradeoff – Resource requirements for
work

UNIT III  COST ESTIMATION, CONTROL AND MONITORING     10
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.

UNIT IV  QUALITY CONTROL & SAFETY DURING CONSTRUCTION     7
Quality & Safety Concerns in construction – Organising for Quality & Safety – work and material
specifications -Total quality control – quality control by statistical methods – statistical quality control
by sampling and Variables – Safety.

UNIT V  COMPUTER APPLICATIONS IN PROJECT MANAGEMENT     8
Project Case study - Computer aided cost estimation – Applications in Softwares – Planning
Activities, Resources, costs, quality, risks. Optimizing & Distribute the project Plan. Tracking and
managing the project, as a project Case study.

TOTAL: 45 PERIODS

OUTCOMES:
• Students will understand the function of design management and its efficient integration into
project management processes.
• They will examine techniques for the design of major construction projects, taking particular
account of client needs, procurement structure and adaptability.
• 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.

REFERENCES:
Sons. USA.

RE5311  REAL ESTATE DEVELOPMENT STUDIO - III     L  T  P/S  C
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OBJECTIVES
• To provide practical opportunities in an academic setting for students to sharpen their
understanding of the development mechanism, in particular the Special Purpose Vehicle,
Special Economic Zones and Smart Cities.
• To analyse the various issues in urbanization and finding a possible solutions at a City Scale.
CONTENTS:
1. Understanding concepts of SPV, SEZ and SMART Cities – design, application of tools and techniques, proposals and promotion strategies
2. Optimization of concepts in urban design, architecture and the built environment as part of the larger economic and environmental issues relating to urbanism and city making.
3. Emphasis on the following thrust areas: infrastructure, sustainability and disaster management

TOTAL: 150 PERIODS

OUTCOME:
1. Develop an understanding of the development processes, as well as sensitivity to political and environmental issues relating to urbanism and city development/growth.
2. Acquire skills on planning of Industrial Projects using SPVs.
3. Explore the interrelationship between real estate, design, and, real estate market performance, ownership structures, private and public joint venture, as well as the efficacy of public financing.
4. Acquire skills for generating/comparing project profiles.
5. Be able to generate/compare project profiles and will be equipped to handle consultancy modalities/projects.

RE5312 PROJECT PHASE I - DISSERTATION

OBJECTIVES
- To provide scope for independent study, exploring specific areas of interest pertaining to Real Estate Development.
- To do case studies of Global Economic Scenarios and understand their impact on the real estate sector.
- To do critical analysis in the area of research and find possible solutions for the various issues.

CONTENT
The dissertation provides scope for independent study opportunity 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.

TOTAL: 90 PERIODS

OUTCOMES
- The student will acquire knowledge in technical report writing.
- Student will learn to critically evaluate the study done.
- The student will learn to analyse, interpret and explain results and structure their research discourse for implementation in phases.

RE5411 PROFESSIONAL TRANING

OBJECTIVES
- To expose students to the realities of real estate practice through Practical Training
- 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.
CONTENT:
Students are placed into an internship / 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 of both the private & public real estate organizations. Industry specialization areas include development activities, professional consultancy services, fund management as well as policy exposure in Government agencies.

OUTCOMES
- 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 etc...

RE5412 PROJECT PHASE II - THESIS

OBJECTIVES
- To showcase his / her prowess in the genesis and conceptualization of the all-round competence in real estate design.
- To integrate the implementation process to be demonstrated in the ultimate analysis.

CONTENT
Thesis gives an opportunity to the scholar to showcase his / her prowess in the genesis and conceptualization of the all-round competence in real estate design. It is a normal seminal work culminating into a comprehensive real estate design and development. The integration of the implementation process shall be demonstrated in the ultimate analysis.

OUTCOMES:
- Students would be able to integrate various contemporary/ advanced issues and techniques into the real estate development process.
- Students would be able to identify and go in depth into specific and appropriate aspects relating to the real estate sector and reflect this in the thesis project.

TOTAL: 300 PERIODS

ELECTIVES

RE5071 SPATIAL INFORMATION SYSTEMS

OBJECTIVES:
- Expose the students with concepts of cartography as major components of input and output related to cartography.
- To provide exposure to data models and data structures in GIS and to introduce various Raster and Vector Analysis capabilities.
- To expose the concept of quality and design of cartographic outputs in open GIS environment.
UNIT I  FUNDAMENTALS OF CARTOGRAPHY AND GIS  9

UNIT II  GIS DATA MODELS AND DATA INPUT  9

UNIT III  RASTER AND VECTOR DATA ANALYSIS  9

UNIT V  DATA OUTPUT AND WEB BASED GIS  9

TOTAL: 45 PERIODS

OUTCOMES:
On completion of this course, the student shall
• Acquire knowledge about cartographic principles, spatial data models and spatial analysis.
• Understand the cartographic outputs in open GIS environment.

REFERENCES:

RE5001  GLOBAL REAL ESTATE MANAGEMENT  L T P/S C 3 0 0 3

OBJECTIVES
• To understand the rationale, opportunities and risks of international real estate investing
• To analyse the macro factors that influence the performance of real estate markets across countries
UNIT I GLOBAL REAL ESTATE MARKETS

UNIT II INVESTMENT FORMATS
Developer equity/ Types of Debt Private Equity: Commingled and Direct Different Types of Direct Development Strategies; Rationales Operational and Execution Issues

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

UNIT V PROPERTY MARKET FUNDAMENTALS
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
• Students will be equipped to critically analyse market specific factors that impact RE investment performance (property rights, taxes, transparency, planning procedures)
• Students will gain expertise on qualitative aspects of identifying and achieving successful projects.
• Expose students to the world of cross-border real estate development and investment with a focus on emerging market economies.

REFERENCES

EA5192 ENVIRONMENTAL IMPACT ASSESSMENT

OBJECTIVES:
• To expose the students to the need, methodology, documentation and usefulness of environmental impact assessment and to develop the skill to prepare environmental management plan.
UNIT I  INTRODUCTION  07

UNIT II  COMPONENTS AND METHODS  10

UNIT III  IMPACT ON SOCIO-ECONOMIC SYSTEMS  08

UNIT IV  ENVIRONMENTAL MANAGEMENT PLAN  10

UNIT V  SECTORAL EIA  10

TOTAL: 45 PERIODS

OUTCOMES:
• The students gain an understanding about the significance of environmental impact assessment.
• The students can develop the skills to prepare environmental management plan.

REFERENCES:
5. World Bank –Source book on EIA.

MH5221  PERFORMANCE EVALUATION OF BUILDINGS  L T P/S C
2 0 2 3

OBJECTIVES
• To investigate the simulation and audit techniques for assessing the energy performance, environmental response and impact of built form.
UNIT I  INTRODUCTION TO BUILDING PERFORMANCE EVALUATION  6
Emerging role of performance evaluation in building design and master planning-
Performance audit and rating systems- GRIHA, LEED IGBC and BREAM Comparative
analysis of green rating systems – Architectural Computation and performance audit-
Introduction to Building performance simulation tools

UNIT II  ENVIRONMENTAL ASSESSMENT METHODS AND MODELING FOR
PASSIVE SYSTEMS  15
Modeling and experimental techniques for building assessment/ evaluation and design –
Basics of thermal comfort, solar shading/access/ control, day lighting, acoustics, air
movement etc. – issues and opportunities with current assessment modes/ evaluation tools-
Evaluation and assessment based on Building type/ function and program – Building
performance with respect to function, program, micro climate, urban planning, envelope
design, material – Computer studio and simulation-Mathematical models of heat and mass
transfer phenomena through building components: transfer function methods and numerical
methods – Models of radiative and convective heat transfer phenomena within buildings.

UNIT III  POST OCCUPANCY EVALUATION OF BUILDINGS  15
Purpose and components of Post occupancy evaluation (POE), Building performance bench
marks, Occupant satisfaction, Indoor air quality, PPD & PMV analysis, Techniques and
methods for post occupancy evaluation, Assessing existing buildings based on their energy
and water usage.

UNIT IV  ADVANCE BUILDING SIMULATION AND ENERGY MODELLING  15
Integration of simulation tools with BIM, RAPID ENERGY MODELLING - Modelling and
performance simulation of existing buildings – residential-institutional- design of a new
residential building using energy simulation tools

UNIT V  SEMINAR AND CASE STUDY PRESENTATION  9
Case study presentation of students on performance evaluation of a building identified by
them and approved by the course faculty – Seminar on topics approved by the course faculty.

TOTAL: 60 PERIODS

OUTCOMES
• The students will gain knowledge on environmental assessment methods, audit and simulation
  techniques.
• Will add value to architectural design processes and equip students with energy modeling skills.

REFERENCES
   Series. “ESRU Manual U 96/1, University of Strathclyde, Energy Systems Research
   Unit, Glasgow, 1996.
5. https://www.designbuilder.co.uk

RE5002 REAL ESTATE MARKETING

OBJECTIVES:
- To facilitate understanding of the conceptual framework of marketing and its applications in decision making under various environmental constraints.
- To understand the real estate business with particular emphasis on the sales and marketing aspects of property life cycle
- To identify customer needs and assess their risk appetite

UNIT I INTRODUCTION TO MARKETING
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 and their impact on marketing decisions; Market segmentation and positioning; Buyer behavior; consumer versus organizational buyers; Consumer decision making process. Branding & franchising

UNIT II BRANDING AND PRICING

The traditional marketing process and consumer behaviour - Marketing of residential property and agencies-Consumer behavior.

UNIT III DISTRIBUTION CHANNELS

UNIT IV MARKETING RESEARCH
Marketing Research: Meaning and scope of marketing research; Marketing research process. Marketing Organisation and Control: Organising and controlling marketing operations

UNIT V ISSUES AND DEVELOPMENTS IN MARKETING
Social, ethical and legal aspects of marketing; Marketing of services; International marketing; Green marketing; Cyber marketing; Relationship marketing and other developments of marketing.

TOTAL: 45 PERIODS

OUTCOMES:
- The student will acquire in depth knowledge in various types of marketing
- The student gain expertise in organising and controlling marketing operations

REFERENCE:
RE5003  CAPITAL MARKETS AND REAL ESTATE  L T P/S C
3 0 0 3

OBJECTIVES
- To understand the implications of the Capital Markets on the Real Estate Sector
- To use the case study based approach to examine investment strategies.
- To sensitise on the concepts of development of real estate investment trusts (REIT)

UNIT I  Globalization of capital markets – impact on real estate finance and investment – institutional investors

UNIT II  Capital theory and trade-offs over time – financial markets and economic efficiency – discounting – present value – compound interest arithmetic


UNIT IV  Capital asset pricing theory – Asset allocation strategies – risk diversification – multi asset portfolios – benefits of capital market integration

UNIT V  Development of real estate investment trusts (REIT) industry – development of market for real estate debt securities.

TOTAL: 45 PERIODS

OUTCOMES
- To give an understanding of the real estate market which is driven by Capital Intensive Economy.
- To emphasise the concept of real estate investment trusts (REIT) industry & development of market for real estate debt securities.

RE5004  REAL ESTATE ECONOMICS  L T P/S C
3 0 0 3

OBJECTIVES:
- Understanding the social values and life styles.
- Urbanization and socio – economic issues of employment, demand for space in human settlements.
- Appreciating the formal and informal mechanism in real estate resulting out of socio economic characteristics.

UNIT I  BASIC PRINCIPLES AND CONCEPTS OF REAL ESTATE ECONOMICS  10

UNIT II  IMPLICATIONS OF NATIONAL AND GLOBAL ECONOMY  6
Rural community and relationship with the urban community. Neighbourhood concepts – implications & limitations in the Indian context.
UNIT III  ECONOMIC DEVELOPMENT & ROLE OF THE GOVERNMENT  10
Theory of income, employment, money, national income (GNP, NNP), Fiscal policy – inflation –
Indian financial institutions. Problems of economic growth, development, characteristics of under-
developed economics, balanced growth and industrialization, population problems, technological
change and innovations, long term economic plans, economics of urbanization and real estate.

UNIT IV  URBAN AND INDUSTRIAL SOCIOLOGY  9
Urbanisation and its social aspects – rural – urban migration, Concept of industrial society, social
aspects of industrialization.

UNIT V  ENTREPRENEURSHIP AND INNOVATION IN REAL ESTATE  10
Information Technology, and Technical Progress - Entrepreneurship, Organization, and Innovation -
Natural Resources and the Environment: Toward Sustainable Development.

TOTAL: 45 PERIODS

OUTCOMES:
• The students will understand the implications of Global and National economic situations on the
  real estate industry.
• Students will gain exposure on aspects of FDI in the Real Estate Field
• Students will gain knowledge on aspects of Inflation, Monetary Policy, Fiscal Policy helps to
  understand the economy in Real Estate Development

REFERENCES
2. Chand & Co. New DelhiIntroduction to Sociology, Kitab Mahal New Delhi, Vidya Bhusan &
   U.K.

RE5005  ECOLOGY AND LANDSCAPE  L  T  P/S  C
3  0  0  3

OBJECTIVES:
• To understand the Fundamentals of Ecology and Ecological process.
• To develop skills in EIA & Application of the techniques to large scale developments.
• Reclamation & restoration of derelict areas conservation and preservation of fragile and eco-
sensitive areas.

UNIT I  9
communities – limiting factors – ecosystem inertia and resilience

UNIT II  9
Landscape Planning & Developmental Projects – Impact of human activities – Introduction to EIA –
Application of the techniques to large scale developments

UNIT III  9
Landscape planning and Recreation - National parks – protective designations – bio-diversity –
biosphere reserves – concepts of eco-tourism – sustainable tourism.
UNIT IV
Landscape assessment techniques – Basic quantitative methods of collecting, analyzing – projecting and presenting data – landscape planning – visual assessment – aesthetic dimension

UNIT V

OUTCOMES:
- The student will be equipped with landscape assessment techniques to deal with landscape planning for large scale projects.
- The students will be able to apply principles learned through case studies of reclamation, restoration and conservation of fragile areas.

REFERENCES:

MH5281 BUILDING INFORMATION MODELING

OBJECTIVE
- To equip students with skills and information to build comprehensive Building Information Models (BIM) using appropriate Digital software and Media.

UNIT I INTRODUCTION TO THE FUNDAMENTALS
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
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 toposurface, 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 II  RENDERING AND MATERIAL APPLICATION  20
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 worksets - and calculating energy analysis - managing revisions

UNIT IV  BIM FOR BUILDING ENERGY SIMULATION  30
Energy simulation for conceptual BIM models using massing- Detailed modeling using design elements- Rapid energy modeling and simulation with Autodesk® Revit® Conceptual Energy Analysis features to simulate performance from within Revit Architecture - Use Autodesk® Green Building Studio® 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.

OUTCOMES
- This is a project-based course where students gain knowledge on the implementation of BIM concepts throughout the lifecycle of a building, from planning and design, to construction and operations.
- The students will learn about how to use BIM for building energy performance simulation, construction administration

REFERENCES

MH5071  WEB DESIGN AND PORTFOLIO PRODUCTION  L T P/S C
UNIT I  INTRODUCTION TO WEB DESIGN  15
Basics of web design – Introduction to software used for web design – ADOBE IMAGE READY, DREAMWEAVER, FLASH etc.

UNIT II  STATIC PAGES  15
Slice – URL in ADOBE IMAGEREADY. Creation and Editing of site map – layer, tables, frameset, - CSS style – Forms – tools like insert, roll over etc., in DREAMWEAVER

UNIT III  ANIMATION IN FLASH  15
Introduction to MACROMEDIA FLASH, importing other file formats to Flash- saving and exporting Flash files, Frame by frame animation – Motion Tweening – Shape Tweening

UNIT IV  INTRODUCTION TO SCRIPTING  15
Using Timeline – Frames –Key frames- Creating and using Symbols- Simple scripting in flash – Publishing SWF files
UNIT V  DEVELOPING A WEB SITE

Using the skills and concepts learnt with the ADOBE IMAGEREADY, DREAMWEAVER, FLASH softwares, students will develop their portfolio in the form of web pages. These pages have to be uploaded in free public domains.

REFERENCES