HINDUSTAN
INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)

SCHOOL OF ARCHITECTURE

MASTER OF ARCHITECTURE
M.ARCH (Executive)
3 YEARS (6 Semesters)

Curriculum and Syllabus

HINDUSTAN INSTITUTE OF TECHNOLOGY & SCIENCE
SCHOOL OF ARCHITECTURE
DEGREE FOR MASTER OF ARCHITECTURE (EXECUTIVE)
(6 SEMESTER PROGRAMME)

SEMESTER I

S.No.	CODE No.	SUBJECT NAME	L	T	P	C	TCH
Theory							
01.	PAH 101	Urban and Rural Housing	3	0	0	3	3
02.	PAH102	Sustainable Development and Community Planning	3	0	0	3	3
Studio							
03.	PAR 109	Advanced Architectural Design Studio-I	0	0	9	6	9
TOTAL			**6**	**0**	**9**	**12**	**15**

SEMESTER II

S.No.	CODE No.	SUBJECT NAME	L	T	P	C	TCH
Theory							
01.	PAR 101	Contemporary Digital Practices	3	0	0	3	3
02.	PAR 102	Architectural Criticism	3	0	0	3	3
03.	PAR 203	Urban Design – Theory and Practice	3	0	0	3	3
04.	E1	Elective - I	3	0	0	3	3
TOTAL			**12**	**0**	**0**	**12**	**12**

SEMESTER III

S.No.	CODE No.	SUBJECT NAME	L	T	P	C	TCH
Theory							
01.	PAR 201	Heritage and Urban Conservation	3	0	0	3	3
02.	PAR 202	Contemporary Landscape Architecture	3	0	0	3	3
Studio							
03.	PAR 209	Advanced Architectural Design Studio-II	0	0	12	8	12
TOTAL			**6**	**0**	**12**	**14**	**18**

SEMESTER IV

S.No.	CODE No.	SUBJECT NAME	L	T	P	C	TCH
Theory							
01.	PAR 301	Smart Buildings	3	0	0	3	3
02.	PAR 302	Urban Infrastructure and Services	3	0	0	3	3
03.	PAR 303	Research Methodology in Architecture	3	0	0	3	3
04.	E2	Elective - II	3	0	0	3	3
TOTAL			**12**	**0**	**0**	**12**	**12**

SEMESTER V

S.No.	CODE No.	SUBJECT NAME	L	T	P	C	TCH
Theory							
01.	E3	Elective - III	3	0	0	3	3
Studio							
02.	PAR 304	Dissertation	0	0	8	5	8
08.	PAR 309	Advanced Architectural Design Studio-III	0	0	12	8	12
TOTAL			**3**	**0**	**20**	**16**	**23**

SEMESTER VI

S.No.	CODE No.	SUBJECT NAME	L	T	P	C	TCH
Studio							
01.	PAR 409	Thesis	0	0	21	14	28
TOTAL			**0**	**0**	**21**	**14**	**28**

TOTAL NUMBER OF CREDITS: 80

Note:

- 1.5 hours of Studio in Architectural Design / Dissertation / Thesis = 1 Credit
- 1 hour of Lecture (L) = 1 Credit
- P = Studio/ Dissertation / Thesis
- TCH = Total contact hours.

ELECTIVES

Elective No.	Semester	Code No.	Subject Name	L	T	P	C	TCH
I	II SEM	PAR 701	Urban Disaster Management	3	0	0	3	3
		PAR 702	Environmental Management	3	0	0	3	3
		PAH 703	Infrastructure Development and Project Finance	3	0	0	3	3
		PAR 703	Urban Aesthetics and Perception	3	0	0	3	3
II	IV SEM	PAR 704	Advanced Project Management	3	0	0	3	3
		PAH 704	High Rise Building and Services	3	0	0	3	3
		PAR 705	Urban Transformation and Extension	3	0	0	3	3
		PAR 706	Advanced Architectural Construction Technologies	3	0	0	3	3
III	V SEM	PAR 707	Performance Evaluation of Buildings	3	0	0	3	3
		PAR 708	Real Estate Planning and Management	3	0	0	3	3
		PAH 709	GIS Modeling in Planning	3	0	0	3	3
		PAR 709	Virtual Society	3	0	0	3	3

HINDUSTAN INSTITUTE OF TECHNOLOGY & SCIENCE
SCHOOL OF ARCHITECTURE

SYLLABUS FOR I SEMESTER M.ARCH (EXECUTIVE) COURSE

PAH 101	**URBAN AND RURAL HOUSING**	**3 Credits**	**L T P C** **3 0 0 3**
Goal	To understand the fundamentals of housing concepts, existing conditions and policies and strategies adopted by the various agencies for the development in the contemporary scenario.		

Objectives	**Outcome**
• To draw on the literature to understand the fundamentals to housing practice. • To highlight the existing housing conditions and related issues and study the various plans and policies for the development of the same. • To introduce to the students, the institutional framework for development and finance in this field	The student should be able to: • Recognize the role of central and state governments in developing the housing industry. • Comprehend the current situation of conditions of housing in India. • Identify the different housing development programmes announced in India • Be aware of the different government agencies and their approach to the improvement of the housing conditions in India. • Be able to advice on finance options for construction and be aware of the various measures taken by the government towards provision of finance to the housing industry

UNIT I HOUSING AND DEVELOPMENT **9**

Importance and Reflections of Housing on Social, Cultural and Economic Development – Role of Government and Public Agencies in Housing Development – National Housing Policy in India – Comparison of Housing Policies and Programmes of Developed and Developing Countries

UNIT II HOUSING SCENARIO IN INDIA **9**

Housing Stock and its Adequacy in Urban & Rural Settlements – Housing Quality and its Determinants – Housing Supply and Demand Assessments – External and Internal factors of influence on Housing Development – Trends in Housing Market – Five Year Plans of GOI.

UNIT III HOUSING PROGRAMMES IN INDIA **9**

Nature and Type of housing development Programmes - Sites and Services, LIG, MIG, HIG Schemes, - Rural Housing Schemes - Slum Housing Programmes - Cooperative and Private Sector Housing ,

UNIT IV INSTITUTIONAL FRAMEWORK **9**

Housing agencies for Policymaking, Programme Formulation, and Implementation, - Objectives and Functioning of agencies like TNHB, TNSCB, CMDA, Cooperatives and other Department Agencies – Support of the National and State Governments - Housing Programmes announced from time to time.

UNIT V HOUSING FINANCE **9**

Formal and Informal Systems of Finance - Financing agencies and their Terms of Lending – Direct and Indirect Incentives for Housing Development - Housing Affordability in relation with demographic, social and economic status.

TOTAL : 45

REFERENCES

1. J. Rosie Tighe and Elizabeth J. Mueller 'The Affordable Housing Reader' Routledge; 2012
2. Graham Towers, ' Introduction to Urban Housing Design' Routledge; 2005
3. Annual Report 2010-2011, Ministry of Housing & Urban Poverty Alleviation, Government of India.
4. Charles Correa, 'Housing and Urbanization: Building Solutions for People and Cities', Thames & Hudson May 2003

ADDITIONAL READING:

5. National Urban Housing and Habitat Policy – 2007, Government of India, Ministry of Housing & Urban Poverty Alleviation, New Delhi.
6. Manual under right to information act, 2005, Government of Tamil Nadu, Tamil Nadu Housing Board, Chennai.
7. Manual under right to information act, 2005, Government of Tamil Nadu, Tamil Nadu Slum Clearance Board, Chennai.
8. Manual under right to information act, 2005, Government of Tamil Nadu, Directorate of Town and Country Planning, Chennai.
9. Manual under right to information act, 2005, Government of Tamil Nadu, Corporate Housing, Chennai.

PAH 102	SUSTAINABLE DEVELOPMENT AND COMMUNITY PLANNING	3 Credits	L T P C 3 0 0 3
Goal	To impart the concepts of sustainable development in housing designs		

Objectives	**Outcome**
• To sensitize the students to the various aspects of sustainable and green housing design in the context of global warming and climate change and to address the very process and tools of design to enable architecture that is environmentally friendly and sustainable.	The students should be able to: • Articulate the various concepts and strategies of sustainable design and green practices. • Comprehend the environmental impact of materials and technologies and evaluation criteria like LEEDS, etc. • Address eco-sensitive sustainable design processes, features etc.

UNIT I INTRODUCTION **9**

A historical perspective- General premises and strategies for sustainable and green design- Definitions, objectives and basics- Eco-mimicry as a design tool based on ecosystem analogy- theoretical basis for a sustainable and eco friendly design

UNIT II ECO HOUSING **9**

The form of the housing : the building as an analogy- design from first principles: conserving energy; working with climate: passive solar design; optimizing resources and recycling; respect for users; respect for site and holism- photovoltaic and solar hot water systems; water usage; small scale wind systems and hydro power; Case studies- Studio project on design of eco housing : context specific

UNIT III ENVIRONMENTAL IMPACT OF BUILDING MATERIALS **9**

Measuring the impact of building materials- calculating embodied energy of different building materials and structure - recycling - processing and embodied energy- time and embodied energy- low energy building and masonry materials- life cycle analysis- Case studies and analysis

UNIT IV GREEN CONSTRUCTION AND ENVIRONMENTAL QUALITY **9**

Green building Evaluation Systems; LEED Certification; Green Globe Certification; Case studies which look at - Sustainable Sites, Water efficiency, Energy Atmosphere, Materials & Resources, Indoor Environmental quality, Innovation and Design process in green practices.

UNIT V SUSTAINABLE AND GREEN HOUSING DESIGN CASE STUDY AND SEMINAR **9**

This process will explore collaborative learning to explore, investigate and apply various parameters of sustainability for design development of projected housing / urban scenarios

TOTAL :45

REFERENCES:

1. Rhonda Phillips, Bruce Seifer Ed, 'Sustainable Communities: Creating a Durable Local Economy (Tools for Community Planning)'-Volume 2, Routledge 2013
2. Daniel Vallero and Chris Brasier; Sustainable Design- The science of sustainability and Green Engineering; Wiley; 2008
3. by Daniel K. Slone and Doris S. Goldstein, Wiley 2008
4. Dominique Gauzin- Muller; Sustainable architecture and Urbanism; Birkhauser; 2002

ADDITIONAL READING:

1. Ken Yeang; Eco design - A Manual for Ecological design, Wiley- Academy; 2006
2. Sue Roaf et all; Ecohouse: A design Guide; Elsevier Architectural Press; 2007
3. Thomas E Glavinich; Green Building Construction; Wiley; 2008

PAR 109	ADVANCED ARCHITECTURAL DESIGN STUDIO – I	6 Credits	L T P C 0 0 9 6
Goal	With a fast growing population cities are expanding at a fast pace. Architects are often confronted to design in peri-urban and urban areas with a range of functions and social amenities. A better understanding of increasing densities, social, cultural and physical infrastructure is imperative. It is therefore important that architects study the different possibilities in designing a wide range of conditions from high rise buildings, special buildings to low-rise etc, of commercial, mixed as well as residential, for different sections of society from low cost housing to sustainable practices in peri-urban areas. Emphasis will also be on ensuring efficient services. This studio would include commercial, residential and institutional and a study of the socio-economic context.		

Objectives	**Outcome**
To familiarize the student- • And broaden the knowledge of functional projects in urban and peri-urban and their structural possibilities and climatic conditions. • Imbibe a sound understanding of services, sustainability and safety requirements.	The students should be able to: • Analyse and map an urban/peri context • Evolve guidelines for urban/peri urban projects • Design appropriately to fulfill urban/peri urban needs with an understanding of socio-economic context.

DESIGN PROJECT

Students would design a range of projects from high to medium density etc. and low-rise to high rise buildings etc. in specific urban and peri-urban contexts and site. Understanding the urban function of the building, climate, technologies, detailing and social conditions is the emphasis of the studio. Students would have to evolve structural systems with a thorough understanding of regulations and safety. A broad understanding of economy is expected. A prior stage of detailed case studies – both from primary visits to existing structures as well as secondary sources from library and internet will be the basis of the design. Emphasis will be given to both concept and the detailing of the project and its services. The total built-up area of the building could be 8,000 to 10,000 sqm. Issues would involve functional organization, socio-economic conditions, services, and other infrastructure, study of urban guidelines, case studies, Image ability of the building, climatic responses, structure and typology, and multi-functional design.

Document, study and analyze an "Urban design project" – prepare land use / Density / Urban form / aesthetics strategies of the study area.

TOTAL 135

PREPARATION:

- Definition of High rise buildings and structural typologies with case studies
- Materials and technologies adopted in High-rise
- Disaster Mitigation and Safety in High-rise
- Analysis of Services required

SYLLABUS FOR II SEMESTER M.ARCH (EXECUTIVE) COURSE

PAR 101	CONTEMPORARY DIGITAL PRACTICES	3 Credits	L T P C 3 0 0 3
Goal	To impart the knowledge of creative planning and execution of visual communication and latest technical advancements in architecture		

Objectives	Outcome
• To sensitize students in digital technology and architecture • To orient the students towards contemporary process • To impart concepts of geometries and surface, media and architecture	The students should be able to: • Approach spatial & regional designs with help of diagrams, geometry and surface parameters. • Contemporary design approach with the help of theories.

UNIT I INTRODUCTION **6**

Investigation of contemporary theories of media and their influence on the perception of space and architecture. Technology and Art – Technology and Architecture – Technology as Rhetoric – Digital Technology and Architecture

UNIT II ASPECT OF DIGITAL ARCHITECTURE **9**

Aspects of Digital Architecture – Design and Computation – Difference between Digital Process and Non-Digital Process – Architecture and Cyber Space – Qualities of the new space – Issues of Aesthetics and Authorship of Design – Increased Automatism and its influence on Architectural Form and Space

UNIT III CONTEMPORARY PROCESS **12**

Overview of various Contemporary design process and it relation to computation: Diagrams – Diagrammatic Reasoning – Diagrams and Design Process – Animation and Design – Digital Hybrid Design Protocols – Concept of Emergence - Introduction to Cellular Automata and Architectural applications – Genetic algorithms and Design Computation

UNIT IV GEOMETRIES AND SURFACES **10**

Fractal Geometry and their properties – Architectural applications - Works of Zevi Hecker–- Shape Grammar - Shapes, rules and Label - Shape Grammar as analytical and synthetic tools- Combining Shape grammar and Genetic algorithm to optimise architectural solutions - Hyper Surface– Introduction to Hyper surface and concepts of Liquid architecture.

UNIT V MEDIA AND ARCHITECTURE **8**

Visions unfolding/ Media Architecture as desirable/ Films as a space for virtual architecture Architects, Asymptote, Herzog and de Meuron, Neil Denari.

TOTAL: 45

REFERENCES:

1. The Phaidon Atlas of Contemporary World Architecture, 2008
2. Dennis Sharp, Twentieth Century Architecture – A visual History, Images Publishing 2006
3. Dimitris Kottas ‘Contemporary Digital Architecture: Design and Techniques’, Links International, 2010
4. Antoine Picon, ‘Digital Culture in Architecture’ , Birkhäuser Architecture, 2010
5. Nick Dunn, ‘Digital Fabrication in Architecture’, Laurence King Publishing, 2012
6. Rivka Oxman, and Robert Oxman, ‘Theories of the Digital in Architecture’, Routledge, 2014

PAR 102	ARCHITECTURAL CRITICISM	3 Credits	L T P C 3 0 0 3
Goal	To emphasize the interdependency of architecture society and in consequence architecture as a product of larger socio-cultural issues and practices		

Objectives	**Outcome**
The term critical theory is a tautology. However, this term is used to differentiate traditional theories that understand and explain architecture as autonomous objects and hermetically sealed discipline. The objective of this course is to explain and show how architecture is enmeshed in the society and a product of larger socio-cultural issues and practices	The students should be able to: • Comprehend and express rudimentary critical discourse in design • Imbibe a basic awareness of critical thinking and the socio-cultural as well as historic context

UNIT I INTRODUCTION **6**

Relation between theory and practice. Critical Theory. Qualities and challenges of critical theory.

UNIT II POWER AND BUILT ENVIRONMENT **10**

Forms of power. Colonialism as a form of dominance. Colonialism in India. Ideas of segregation, control and surveillance in colonial towns. Discussing New Delhi as a part of imperial vision. Idea of Ghetto, surveillance and control in contemporary cities.

UNIT III ENCOUNTERING MODERNISM/MODERNITY **13**

Phenomenology and architecture. Architecture and sense of place. Fragmentation and Nihilism as conditions of modern society. Encountering the idea of functionalism- Modern Movement - Deconstruction as a critical tool in the Western Context. Architecture of Resistance. The idea of critical regionalism.
Indian Architecture and the Project of Independent India.(From Corbusier to Kahn Correa Doshi and the present context)

UNIT IV SPECTACLE AND ARCHITECTURE **10**

Society of spectacle. Critiquing learning from Las Vegas. Thematic environments. Theme parks and privatization of public spaces. Visual regime in architecture. Media and architecture.

UNIT V ISSUES IN ARCHITECTURE **6**

Gender and space. Heritage and politics of memory. Technology and Architecture.

TOTAL: 45

REFERENCES:

1. Neil Leach (ed) Rethinking Architecture, Routledge 2000
2. Paul Allan Johnson. Theory of Architecture, Routledge 2000
3. Michael Hays (ed) Architectural Theory since 1960,MIT Press, 2000
4. Anthony D. King, Colonial Urban Development, Routledge Library Edition, 2007
5. Alan Colquhoun and Kenneth Frampton, 'Collected Essays in Architectural Criticism:, Black Dog Architecture , 2008.

ADDITIONAL READING:

1. Anil Lomba, Colonialism, 2000
2. Thomas Metcalf, An Imperial Vision: Indian Architecture and Britain's Raj Oxford, 2002
3. Guy Debord. Society of Spectacle, Zone Books, New York, 2000
4. Taschen,'Architectural Theory', 2016
5. Gevork Hartoonian, 'Architecture and Spectacle: A Critique', Routledge, 2012)
6. Harry Francis Mallgrave and Christina Contandriopoulos, 'Architectural Theory: Volume II - An Anthology from 1871 to 2005, Wiley-Blackwell, 2008
7. Lawrence Vale, Architecture, Power and National Identity, 2008

PAR 203	URBAN DESIGN - THEORY AND PRACTICE	3 Credits	L T P C 3 0 0 3
Goal	Provide an overview of the historical, professional and policy context of urban design		

Objectives	Outcome
The overview of the historical, professional and policy context of urban design will provide a framework for exploring the meaning and scope of urban design in contemporary planning and urban development. Urban design is neither project focused "Big Architecture" nor limited to urban landscape issues. Neither it operates solely as interface between planning and architecture, but is problem solving activities for spatial decision at all scales of urban planning. The need for such a discipline has arisen as a result of cultural, political, social, economic and technological changes shaping the urban forms.	The students should be able to: • Apply the basic principles of planning and its various types. • Understand the planning system and its process in India in comparison with the developed countries. • Apply urban design principles and concepts, f.e. based on the works of Masters Jean Jacobs, etc. • Comprehend the role of government agencies and their tools in enhancing the urban Environment. • Apply the different analytical techniques evolved to review the changes made in the urban design of an environment.

UNIT I PLANNING PRINCIPLES AND PROCESS **9**

Process of evolution of human settlement planning, Principles in Planning - rationality in planning, Blueprint and process mode, disjointed incremental mode of planning, Normative versus functional mode of planning

UNIT II PLANNING SYSTEM **8**

Planning system in India, Introduction to Master Plan, Structure Plan, Detailed Development Plans, City Corporate Plan and Smart Plan. Comparison of planning systems in UK and USA.

UNIT III URBAN DESIGN THEORIES, PRINCIPLES AND CONCEPTS **8**

The ethics, scale, proportion, balance, harmony, dynamics of Urban design strategies. The various Urban design concepts and ethics evolved by the Urban designers throughout the history of the evolution of Urbanization – the various critiques generated by the scholars – Jean Jacob, Corbusier, Team ten, Vitruvius, Zevi, Andrea Palladio, Walter Gropius, Christopher Alexander, Kevin Lynch, Elail Saarinen, Ila Zardi, Schumaker

UNIT IV URBAN DESIGN PRACTICES AND POLICIES **10**

Role of planning agencies such as development authorities, Urban Art commission in design of cities, Influence of city development policies. Master plan, Zoning regulation on urban design Built form and space requirements in residential, commercial, recreational, industrial land use activities. Patterns of subdivision and land development. Urban Land Policy in India - Objectives of urban land policies - Instruments of urban land policies and Government - Code for humane habitat - decision areas and design principles at various scales settlement, community and dwelling in India

UNIT V ANALYTICAL TECHNIQUES **10**

Delphi, Trade off-game, simulation models, gravity analysis, Lowry model, Threshold analysis, Multivariate analysis. Techniques of delineation of planning areas and planning regions. Land use models. Optimization and economic analysis methods in project formulation and implementation, CPM, PERT, PBBS, Goal achievement matrix, Introduction to Cost-Benefit analysis

TOTAL: 45

REFERENCES

1. The Urban Design Handbook: Techniques and Working Methods (Second Edition) – Urban Design Collective, W. W. Norton & Company 2013
2. Kim Dovey,'Urban Design Thinking: A Conceptual Toolkit', Bloomsbury Academic, 2016,
3. Bola Ayeni,'Concepts and Techniques in Urban Analysis (Routledge Library Editions: Urban Studies) (Volume 17), 2017
4. Philip R. Berke and David R Godschalk,'Urban Land Use Planning, Fifth Edition', University of Illinois Press, 2006
5. Anthony E. Boardman and David H. Greenberg, 'Cost-Benefit Analysis: Concepts and Practice 4th Edition', Cambridge University Press, 2017

SYLLABUS FOR III SEMESTER M.ARCH (EXECUTIVE) COURSE

PAR 201	HERITAGE & URBAN CONSERVATION	3 Credits	L T P C 3 0 0 3
Goal	To impart an understanding of concepts in historic preservation and conservation		

Objectives	**Outcome**
• To generate an understanding of concepts and principles of conservation and the organization processes • To study various conservation management processes through case studies.	The students should be able to: • Articulate concepts and principles of conservation • Recognize the various strategies of conservation and methodologies. • Imbibe différent relevant conservation techniques, materials and technologies etc.

UNIT I INTRODUCTION TO CONSERVATION **8**

History of Conservation – terms associated with conservation practice like rehabilitations redevelopment, revitalization, regeneration, redevelopment – role of UNESCO and other bodies, Heritage Act.

UNIT II PRINCIPLES OF CONSERVATION **8**

Basic principles of Conservation, Degrees of interventions, study of different characteristics from the world.

UNIT III MATERIALS AND TECHNIQUES IN CONSERVATION/ HERITAGE **10**

Introduction to historic structures and structural systems of India – study of traditional materials and historic structural components in India, methodologies for evaluation of heritage buildings.

UNIT IV CONSERVATION MANAGEMENT **9**

Parameters of quality management - management of historic buildings – Site level management.

UNIT V CASE STUDIES **10**

Different case studies related to conservation.

TOTAL: 45

REFERENCES

1. Chukwunyere C. Ugochukwu, Urban Neighborhood Revitalization and Heritage Conservation: The Architecture of Urban Redesign,) Edwin Mellen Press Ltd. 2006
2. James Strike, Architecture in Conservation: Managing Development at Historic Sites, Routledge, 2012
3. Kenneth Williamson, Development and Design of Heritage Sensitive Sites: Strategies for Listed Buildings and Conservation Areas 1st Edition, Routledge, 2010
4. Aylin Orbasli, Philip Grover, Architectural Conservation: Principles and PracticeJohn Wiley & Sons, 2007

PAR 202	CONTEMPORARY LANDSCAPE ARCHITECTURE	3 Credits	L T P C 3 0 0 3
Goal	To impart holistic knowledge on innovative contemporary landscape design concepts		

Objectives	**Outcome**
• To study the evolution and concepts of modern landscape design in various contexts like public spaces and topographies etc. • To study the relationship between architecture and innovative landscape design in the international and Indian context etc.	The students should be able to: • Develop an appreciation for the role of contemporary landscape design in urban design and architecture. • Imbibe a holistic understanding of urban spaces, parks and public spaces. • Recognize concepts and principles of contemporary landscape design through innovative case studies.

UNIT I THE EVOLUTION OF THE MODERN LANDSCAPE 8

Industrialization and urbanization – impacts and development of the concept of public open spaces, open space development in new towns, parks movement. Works of early landscape Architects and designers

UNIT II DEVELOPMENT OF PUBLIC OPEN SPACES 10

Open space development and its urban design and planning context, Early industrial towns and the garden city movement. Public park as a major component of urban landscape, the works of F.L.Ohmstead, and other pioneers. Open space development and Close conceptual relationship between Town Planning, Urban design and landscape architecture. Examples

UNIT III MODERN MOVEMENT 10

Changing concepts of space and the relationship of architecture to landscape. Study of selected works of modern architects and landscape architects. Postwar development in Europe. The influence of Ian Mcharg on Landscape architecture. The works of Jellicoe, Burle marx, and others.

UNIT IV CONTEMPORARY CONCEPTS AND CONCERNS 9

Advanced ideas in contemporary landscape architectural design and theory, concept of sustainable landscape development. Cultural landscapes their definition, identification, characteristic policies. Artistic sensibility in landscape architecture and land art, New development in urban Landscape design.

UNIT V INDIAN CONTEXT

8

Issues in contemporary India, Analysis and understanding of philosophies of contemporary landscape works in India, case studies.

TOTAL: 45

REFERENCES

1. Robert Holden, New Landscape Design, Lawrence king publishing, UK, 2003.
2. Christophe Girot and Dora Imhof , 'Thinking the Contemporary Landscape , Princeton Architectural Press .2016
3. Hans Idelings, The Artificial Landscape,Nai Publishers, 2000.
4. Penelope Hill, Contemporary history of garden design, Birkhauser publisher 2004.
5. Pieluigi Nicholin,Francesco Repishti,Dictionary of today`s landscape designers, Skira Editors P.A, 2003
6. Alexander Garvin and Gayle Berens,' Urban Parks and Open Space , Urban Land Inst; First Edition, 1997

PAR 209	ADVANCED ARCHITECTURAL DESIGN STUDIO –II	8 Credits	L T P C 0 0 12 8
Goal	The cultural value of historic buildings is fast gaining a new awareness. Besides enriching the character of the city, historic buildings also attract tourists and researchers, both national and international. Conserving historic buildings and heritage is hence gaining international importance. Students are guided to conservation of historic precincts, designing of master plans, creation of additions and extensions for new needs and creative adaptive re-use of existing heritage structures, etc		

Objectives	**Outcome**
• To document heritage precincts and buildings and enumerate their historic context • To design and suggest conservation measures, extensions and adaptive reuse of derelict heritage buildings • To analyze through the design the various socio-economic, cultural capital, tourism and historic value in conservation	The students should be able to: • Evolve a methodology of documenting heritage buildings • Create an adaptive reuse project proposal along with a conceptual plan and detailed design • Enumerate the impact of the conservation project in terms of socio-economic development, tourism, and heritage value and image ability of the city

The course encourages students to evolve design strategies to adaptively re-use heritage buildings, like palaces, medieval museums, colonial buildings in disuse and disrepair, colonial era railway stations, historic institutions etc.

The design project involves a concept plan and suggestive policies to conserve, delineate avenues for tourism, adaptive re-use suggesting other new functions to utilize the building, and a study documentation of the existing heritage structures. Students will undertake extensive international and national case studies based on internet studies, library literature as well as site visits to existing historic buildings and precincts. Documentation and representation techniques using AUTOCAD and other software is encouraged as part of the process of conservation. Case studies of projects by INTACH, UNESCO and other World Heritage sites will be undertaken to provide a broader overview.

Emphasis will be given to the documentation and history of the building and analyzing its present condition and urban context. The conservation design project is based on these studies to revitalize derelict heritage structures. Emphasis on the cultural capital and heritage value in the design will be imperative. Students will be encouraged to explore several different approaches to conservation and adaptive reuse.

Adaptive reuse could involve designing museums, cultural and art centers, heritage hotels and resorts, and other institutions etc.

TOTAL 180

SYLLABUS FOR IV SEMESTER M.ARCH (EXECUTIVE) COURSE

PAR 301	SMART BUILDINGS	3 Credits	L T P C 3 0 0 3
Goal	To provide knowledge on the underlying concepts of intelligent buildings; to provide the working principles of and hands-on experience on building automation systems, office automation systems, and communication systems; and to provide basic knowledge of the construction and installation of the structured cabling system enabling integrated system connections		

Objectives	**Outcome**
• To provide practicing engineers and managers with enhanced knowledge of advanced intelligent building technologies, system configuration, system operation and control. • Evaluate the characteristics and limitations of various automation systems in buildings. • Apply the underlying principles and theory to the operation and maintenance of each system	The students should be able to: • Invent their own systems of intelligent technology that would strategically manage the criteria in a better way than the preexisting. • Look into the various conservation and control technologies and contribute to their advancement. • To impregnate design level management and improve upon the contextual role of energy management in the smartness of buildings.

UNIT I INTELLIGENT BUILDINGS 6

Concept, Definition, intelligent Architecture and structure, evaluation of intelligent buildings, IB assessment criteria – intelligent homes

UNIT II ENERGY MANAGEMENT IN DESIGN 8

Natural building design consideration - Energy efficient design strategies - Contextual factors - Longevity and process Assessment -Renewable energy sources and design- Advanced building Technologies - Smart buildings.

UNIT III ENERGY MANAGEMENT IN SERVICES 10

Energy in building design - Energy efficient and environment friendly building - Thermal phenomena - thermal comfort - Indoor Air quality - passive heating and cooling systems - Energy Analysis - Active HVAC systems -Preliminary Investigation - Energy audit - Types of energy audit - Energy flow diagram - Energy consumption/ Unit production – Identification of wastage -Priority of conservative measures - Maintenance of management programme.

UNIT IV BUILDING ENERGY CONSERVATION TECHNOLOGIES 10

Standards of energy efficiency in buildings. Trends in energy consumption. Energy audit: evaluation of energy performance of existing buildings, use of computer models, impact of people behaviour. Energy efficiency measures in buildings: approaches, materials and equipments, operating strategies, evaluation methods of energy savings. Optimum selection of energy sources. Air-to-air energy recovery.

UNIT V CONTROL SYSTEMS IN BUILDINGS 11

Introduction to automatic control systems, control issues related to energy conservation, interior air quality and thermal comfort in buildings – Ventilation. Classification of HVAC control system: selection and size of sensors, actuators and controllers. Practical HVAC control system Designing and turning controllers – Building automation systems, design for security.

TOTAL: 45

REFERENCES:

1. James Sinopoli,'Advanced Technology for Smart Buildings',Artech House, 2016
2. James Kachadorian,'Passive Solar House: The Complete Guide to Heating and Cooling Your Home' Chelsea Green Publishing; Revised and expanded second edition edition,2006
3. James M. Sinopoli, Smart Buildings Systems for Architects, Owners and Builders Publisher: Butterworth-Heinemann, 2009

PAR 302	URBAN INFRASTRUCTURE AND SERVICES	3 Credits	L T P C 3 0 0 3
Goal	To enable the students to be conversant with the infrastructure services related to housing and the latest trends in use of renewable resources for sustainable housing.		

Objectives	**Outcome**
• To expose the students to the norms and standards for designing of the infrastructure services required for housing. • To enable the students to have a sound knowledge about the current/ innovative practices in water supply, sewerage system, and solid waste management. • To expose the students to the services require for multistoried buildings	The students should be able to: • Take a critical stand on the norms and recommendations provided by the guidelines • Apply knowledge gained on implementation techniques in execution of projects • Implement innovative disposal systems for multi storied housing including recycling methods

UNIT I STANDARDS AND GUIDELINES **7**

Norms and standards for infrastructure planning, National and local guidelines, recommendations of Rakesh Mohan Committee.

UNIT II WATER SUPPLY SYSTEMS **10**

Quality and quantity requirements; sources; collection and conveyance of water; treatment methods; treatment plant location; planning distribution systems and their zoning with respect to urban structure, rain water harvesting, water recycling with special reference to Housing disposal

UNIT III WASTE WATER DISPOSAL SYSTEMS **10**

Separate and combined systems; characteristics of waste water; Industrial pollutants and their effects; waste water treatment methods; planning and location of treatment plants; disposal of municipal and industrial effluents, effects on rivers and water bodies; legal aspects. Innovative approach to optimal use of waste and separations of waste water and Grey water for disposal/ recycling.

UNIT IV SOLID WASTE MANAGEMANT SYSTEM **10**

Elements of solid wastes management; classification and properties of solid wastes; on site collection, storage, transportation and disposal of solid wastes; processing and treatment of solid wastes; various social aspects of the solid waste management, source segregation and dispersal

UNIT V SPECIAL SERVICES FOR MULTISTOREYED BUILDINGS **8**

Planning for elevators, standby electrical supply, planning for emergency escape garbage disposal system for high rise buildings, firefighting services, piped gas supply, methods for energy efficient systems in renewable and non-conventional energy resources.

TOTAL: 45

REFERENCES

1. Nelson L. Nemerow and Franklin J. Agardy,'Environmental Engineering: Water, Wastewater, Soil and Groundwater Treatment and Remediation-6th Edition', Wiley,2009
2. Terrance McGhee ,'Water Supply and Sewerage', Mcgrawhil Exclusive – 2013.
3. William A. Worrell and P. Aarne Vesilind, 'Solid Waste Engineering: A Global Perspective-3rd Edition, CL Engineering, 2016

PAR 303	RESEARCH METHODOLOGY IN ARCHITECTURE	3 Credits	L T P C 3 0 0 3
Goal	To develop a research culture among the students and study, use and understand appropriate methods in formulating problems and conduct surveys, analyse data and prepare a research report		

Objectives	**Outcome**
• To comprehend the research process and learn the method of formulating the research. • To develop the ability to collect data for research and its dissemination. • To develop the skill of analyzing the data. • To develop the efficiency of report writing amongst the students.	The students should be able to: • Undertake independent research applying the basics learned

UNIT I INTRODUCTION 9

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 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

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 – Form 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 6

Research writing in general – Components: referencing – writing the bibliography – developing the outline – presentation; etc.

UNIT V CASE STUDIES 12

Case studies illustrating how good research can be used from project inception to completion – review of research publications.

TOTAL: 45

REFERENCE

1. Linda Groat and David Wang; Architectural Research Methods, Wiley 2013
2. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago Guide to writing, editing and publishing, 2008
3. Lain Borden ad Kaaterina Ruedi; The Dissertation: an Architecture Student's Handbook; Architectural Press; 2000
4. Ranjith Kumar; Research Methodology–A step by step guide for beginners; Sage Publications; 2005
5. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2002

ADDITIONAL READING:

1. Ranjit Kumar , 'Research Methodology: A Step-by-Step Guide for Beginners 4th Edition', SAGE Publications Ltd, 2014Christopher Alexander; A Pattern Language, Library of Congress, 1977
2. Helmut Leitner,'Pattern Theory: Introduction and Perspectives on the Tracks of Christopher Alexander (pattern research series) (Volume 1)' , CreateSpace Independent Publishing Platform, 2015

SYLLABUS FOR V SEMESTER M.ARCH (EXECUTIVE) COURSE

<table>
<tr><td>PAR 304</td><td>DISSERTATION</td><td>5 Credits</td><td>L T P C
0 0 8 5</td></tr>
<tr><td>Goal</td><td colspan="3">Expose the student to scientific research on a particular topic</td></tr>
<tr><td colspan="2">Objectives</td><td colspan="2">Outcome</td></tr>
<tr><td colspan="2">Dissertation is a formal report written systematically on a particular topic as related to Architecture. This exercise is taken up as to widen and enrich the literature pertaining to a topic of research. It may focus upon cross section of literature of a topic with or without research hypothesis. The material written systematically may be useful in fourth semester when the same topic with literature reviewed systematically be confined as a part of thesis.</td><td colspan="2">The students should be able to:
• Undertake independent research on a particular topic and submit the results in form of a written report/analysis.</td></tr>
</table>

TOTAL: 120

PAR 309	ADVANCED ARCHITECTURAL DESIGN STUDIO –III	8 Credits	L T P C 0 0 12 8
Goal	As Indian cities continue to grow, creating urban infrastructure has become of paramount importance. The overall goal of this design semester is to introduce students to the complex tasks of designing and building urban infrastructure. This requires a study of urban design principles along with case studies from across the world.		

Objectives	**Outcome**
• To analyze and document urban infrastructure projects and policies that impact the quality of life in a city. • To evolve strategies of addressing urban infrastructure needs with respect to socio-economic conditions and mixed-use development • To imbibe a broader knowledge of urban design and infrastructure, involving both theory and practice. • To design urban infrastructure projects to suit their local context	The students should be able to : • Assess ongoing urban infrastructure projects and understand their objectives • Study and evolve policy guidelines • Integrate functional infrastructure needs to suit their local context. • Design urban infrastructure projects like MRTS, Metro, Internodal transport systems etc.

DESIGN PROJECT:

The course encourages students to study urban infrastructure like MRTS stations, Metro and its networks, Multi-nodal Transport Hubs, Airport, and other mixed functional social infrastructure. The course looks at planning guidelines, functional aspects, engineering and the urban design of these projects. The project involves an analysis and study of existing infrastructure systems in the city to better understand their functions.

The design project will undertake to evolve guidelines and design principles based on literature studies as well as case studies in the city. The design project will address the complexity of large numbers using the facility, a range of mixed use requirements, its urban and social context, image ability and its long term growth.

TOTAL 180

SYLLABUS FOR VI SEMESTER M.ARCH (EXECUTIVE) COURSE

PAR 409	**THESIS**	**14 Credits**	**L T P C** **0 0 21 14**
Goal	To test whether a student has acquired the requisite skill and competence in architecture to be awarded a Master in Architecture		
Objectives		**Outcome**	
• To make a student undertake a detailed investigation/ research on a topic of his/her choice (selective design) and come out with comprehensive design proposals/ findings.		The students should be able to: • Convert the results of investigation/research into a suitable design	

TOPICS OF STUDY **TOTAL: 420**

The main areas of study and research shall be on Urban design, Urban renewal, Urban Housing/Settlements, Sustainable and Environmental Design. However, the specific thrust shall be on architectural design and environment context.

PRESENTATION REQUIREMENTS

The Thesis Project shall be submitted in the form literature and case study report, presentation drawings, models, reports, slides and CD's as required for the project.

Periodic reviews will be conducted internally consisting of a panel and at the end of the semester there will be a viva voce conducted by the university comprising of panel with two external members.

TEXT BOOKS & REFERENCES:

As per requirement of Topic and as suggested by the supervisor of Thesis.

ELECTIVE - II SEMESTER

PAH 703	INFRASTRUCTURE DEVELOPMENT AND FINANCE	3 Credits	L T P C 3 0 0 3
Goal	Impart the concepts of infrastructure development and finance for structuring and implementation of various housing projects		

Objectives	**Outcome**
The course is aimed fundamentally to orient the students towards issues of infrastructure development and finance and to get through basics of infrastructure finance and project structuring. The main objective of this course is to introduce the concepts of infrastructure financing-how to prepare the financial plan, assess the risks, design the financing mix, and raise the funds in infrastructure projects. The course is framed to impart the concepts through the basic theory and principles of finance and then help the students to develop knowledge, skills and frameworks for analyzing and financing infrastructure projects through relevant case studies and hands on exercises in developing financial spreadsheets.	The students should be able to: • Prepare projects based on realizable cost and targets within the stipulated time. • Assure the smooth implementation of projects • Appraise project proposals from the angles of financial cost and benefit for concerned company / organization. • Apply basic analytical methods for investment decisions and finance of infrastructure. • Comprehend risks in infrastructure development and use risk as a tool in mortgaging and investment performance.

UNIT I INTRODUCTION TO FINANCE **4**

Principles of finance. Introduction to financial systems. Introduction to public financing.

UNIT II INTRODUCTION TO INFRASTRUCTURE DEVELOPMENT **9**

Overview of Infrastructure development and financing in India. Regulatory Issues and role of Government. Issues in infrastructure development and financing
Privatization of Infrastructure: Experiences

UNIT III BASICS OF INVESTMENT AND FINANCIAL DECISIONS FOR INFASTRUCTURE PROJECTS **14**

Estimating the cost of project, Means and Sources of Finance, External and internal sources of financing, Requirements of external financing, Types of debts, Leasing, Basics of income-expenditure and profit – loss, Tax and Depreciation, Cash flow projections, Present value (introduction, calculation, the net present value rule),Investment decisions (Discounted and Non-Discounted Methods),case studies and hands on exercise in developing financial spreadsheets.

UNIT IV PROJECT RISK ASSESSMENT **10**

Project risks, Theory of Conventional Techniques to handle risks, Payback, Risk Adjusted discount rate, Certainty equivalent coefficient, Sensitivity and Scenario Analysis (Case Study)
Simulation Analysis and Decision trees (Case Study)

UNIT V PROJECT STRUCTURING AND IMPLEMENTATION **8**

Understanding structuring of projects through **2-3 case studies,** Introduction to important steps of project implementation, tor, tender, contract, implementation consultant, construction firm, Monitoring, cost control, reporting.

TOTAL : 45

REFERENCES:

1. ARORA, Essentials of Cost Accounting, Vikas publishing house Pvt Ltd, 2009
2. Finance for Managers, Harvard Business Essentials , 2003
3. H.L Ahuja, Economic Environment of Business, Macro Economic Analysis, Tata Mac Grow Hill, 2001
4. D. Chandra Bose, Fundamentals of Financial Management, PHI Learning P.Ltd 2009
5. Dr. S. Gurusamy, Financial Services and Systems, The Mc Graw Hill Companies, 2009

PAR 701	URBAN DISASTER MANAGEMENT	3 Credits	L T P C 3 0 0 3
Goal	To imbibe the processes of disaster mitigation, early warning and rehabilitation and rebuilding in urban community disaster management systems		

Objectives	**Outcome**
• To understand the nature and importance of disaster management. • To gain an understanding of the tools for hazard and vulnerability assessment at the settlement level, structural mitigative measures, infrastructure and critical facilities. • To enhance understanding of different types of technological hazards, their association, risk and assessment and control measures. • To increase the knowledge of the theory and practice of community based approach to disaster management	The students should be able to: • Imbibe a holistic information base on the concept of disaster management in urban areas from early warning to assessment and recovery and rebuilding. • Acquire an awareness of various strategies for disaster mitigation, vulnerability, hazard analysis and technologies. • Comprehend the socio-economic aspects of a community based urban recovery process.

UNIT I INTRODUCTION **5**

Introduction to the concept of disaster management and mitigation.

UNIT II RISK EDUCATION **9**

Trend in urban development and challenges before urban administrators in risk reduction.

UNIT III PREVENTION OF HAZARD **13**

Natural disaster : Nature, causes, impact.Hazard and vulnerability assessment, concepts, tools and techniques. Pre-disaster mitigation and protection of lifelines and critical facilities against natural hazards.Concepts and overview of technological hazards at the city level.Major accident hazards in industries, storages and ports.

UNIT IV SAFETY STRATEGIES **8**

Safety management system: Strategies for the implementation of fire safety at the city level. Emergency planning, preparedness and response at city level.

UNIT V METHODS OF COMMUNITY BASED DISASTER MANAGEMENT **10**

Principles and methods of community based approaches for urban disaster management. Community based disaster management practice. Building community capability. Education and training on mitigation and emergency planning.

TOTAL: 45

REFERENCES:

1. Care-Bangladesh, and, Vulnerability Assessment Report, Tongi Municipality, Tongi, Bangladesh, 2000
2. Rajib Shaw ,'Community-Based Disaster Risk Reduction (Community, Environment and Disaster Risk Management)', Emerald Group Publishing Limited, 2012
3. Stronger Together: The Global Red Cross Red Crescent Response to the 2004 Indian Ocean Earthquake and Tsunami, International Federation of Red Cross and Red Crescent Society, 2013
4. Nancy Rushford and Kerry Thomas,'Disaster and Development: an Occupational Perspective', Churchill Livingstone; UK ed. Edition, 2015

PAR 702	ENVIRONMENTAL MANAGEMENT	3 Credits	L T P C 3 0 0 3
Goal	To foster awareness of environmental issues and management strategies to ensure environmental protection.		

Objectives	**Outcome**
• To expose students to aspects of Environmental Impact Assessments recognizing the impact of development. • To encourage students to engage in environmental management strategies and their socio-economic aspects in decision making policies.	The students should be able to: • Articulate the various concepts of environmental management and conservation and standards etc. • Comprehend the parameters of Environmental Impact Assessments (EIA) and its influence of planning approaches at all levels, etc.

UNIT I DEVELOPMENT CONSEQUENCES ON ENVIRONMENT 9

Components of Environment – Classification of Environmental Resources - Purpose and Objectives in Environmental Protection, Planning and Management – Consequence of Development over Urban and Rural Settlements – Environmental Concerns at Local, Regional and Global levels.

UNIT II ENVIRONMENTAL MANAGEMENT AND STANDARDS 6

Institutional and Legal Support in management of the Environment – Environmental Policies, and Protocols - Global Environmental Initiatives - Environmental Indicators - Concepts and Measures in Environmental Standards

UNIT III ENVIRONMENTAL IMPACT ASSESSMENT 9

Overview of Environmental Impact Assessment Practice in India - Types, Conceptual Approach and Phases of EIA – Impact Identification Methodologies – Prediction and Assessment of Social, Cultural and Economic Environments

UNIT IV ENVIRONMENTAL DECISION MAKING 9

Generation and Evaluation of Alternatives – Decision Methods – Mitigation and Environmental Management Plan – Public Participation in the Process of Environmental Decision Making Process

UNIT V ENVIRONMENTAL APPROACH IN PLANNING 12

Environmental Concepts – Sustainability and Environmental Carrying Capacity – Environmental Strategies in Land use, Transportation, Infrastructure Planning and Management - Legislative Requirements, Public Awareness and Community Participation – Environmental Management Options.

TOTAL 45

REFERENCES

1. Asesh Kumar Maitra, 'Urban Environment in Crisis', New Age International (P) Limited, Publishers, New Delhi, 2000
2. Peter Rogers and Kazi F. Jalal,'An Introduction to Sustainable Development', Routledge ,2007
3. John Glasson and Riki Therivel,' Introduction To Environmental Impact Assessment (Natural and Built Environment Series)', Routledge, 2012
4. Pannirselvam R and Karthikeyan, 'Environmental Impact Assessment' SPGS Publishers, Chennai, 2005
5. Rao P.K ,'Sustainable Development', Blackwell Publishers, Massachusetts, USA, 2001

PAR 703	URBAN AESTHETICS AND PERCEPTION	3 Credits	L T P C 3 0 0 3
Goal	To imbibe awareness about approach and factures influencing urban design		

Objectives	**Outcome**
• Expose the student to theoretical methods and approaches to urban design • Deepen the knowledge of the importance of landscape design, conservation and use of art in the urban context	The students should be able to: • Approach urban design under theoretical aspects, • Response to the need for conservation landscape and art in urban design

UNIT I INTRODUCTION **8**

Principles of design: unity and space, proportion and scale, balance, uniformity and contrast and their application in urban design – Definition of terms: grain and texture, urban frame, fabric and function

UNIT II LITERATURE AND WRITINGS **12**

Analysis of literary works of Camillo Sitte, Gordon Cullen, Spiro Kostof, and Kevin Lynch

UNIT III PERCEPTION OF URBAN FORM AND SPACE **12**

Introduction to perception – Social, ethnic and cultural Factors – Perception and meaning of urban spaces: form, order and time space relationships – Study of Hillier's Space Syntax – Perception surveys: objectives and techniques

UNIT IV ROLE OF LANDSCAPE IN AESTHETICS **8**

Principles of landscape design: axis, line, landform, horizontal and vertical planes, texture, and scale – Elements of landscape design: pools or fountains of water, plants, seasonal variance, stonework, fragrance, exterior lighting, statues, and lawns – Landscape urbanism as an upcoming theory

UNIT V RELATED CONTEMPORARY PRACTICES **5**

Urban conservation: history, objectives and methods of survey – Urban renewal: history, objectives and methods of survey – Urban art and expression of art forms in public space - Examples and case studies.

TOTAL: 45

REFERENCES:

1. Michael Larice (ed.), Elizabeth Macdonald (ed.), The Urban Design Reader, Routledge Urban Reader Series, 2006
2. Gordon Cullen, 'Concise Townscape', Routledge, 2015
3. Norman Booth,'Foundations of Landscape Architecture: Integrating Form and Space Using the Language of Site Design', Wiley, 2011
4. Spiro Kostof , The City Assembled: Elements of Urban Form through History; Thames & Hudgon, 2005

ADDITIONAL READING

1. Francis D. K. Ching, Architecture: Form, Space, and Order;, John Willeys and Sons, 2007
2. Bridget Vranckx, Urban Landscape Architecture; Loft Publication, 2006
3. Time Saver Standards in Urban Design
4. Kevin Lynch , Image of the City; MIT Press, 1960
5. Kevin Lynch , Good City Form; MIT Press, 1984

ELECTIVE - IV SEMESTER

PAR 704	ADVANCED PROJECT MANAGEMENT	3 Credits	L T P C 3 0 0 3
Goal	To provide professionals with sound management skills and techniques necessary for successful completion of complex projects		

Objectives	Outcome
• To understand a project, project cycle and the need for project management • To understand the role of a project manager • To understand the role of various stakeholders involved in a project and their impact on the management cycle. • To provide understanding on project scheduling and control. • To provide an understanding of aspects of law and mechanisms for resolving disputes.	The students should be able to: • Apply the basics of project and quality management for any given construction project under the given legal framework

UNIT I PROJECT MANAGEMENT **9**

Characteristics of a project, Need for project management, Project cycle (conception, planning and execution), Factors contributing to success of project, Role and responsibilities of a project manager.

UNIT II PROJECT TEAM **10**

The actors involved in a project (across scale and typologies), project team, role of individual actors and their impact on the management cycle.

UNIT III TIME AND COST MANAGEMENT **12**

Financing of projects (how various projects are financed), capital budgeting, financial risk analysis, financial control of projects, tendering and estimating, activity sequencing, duration and time planning, scheduling and control, labor costing and subcontracting

UNIT IV QUALITY MANAGEMENT **8**

Factors affecting the quality of a project, Authorities involved in quality assurance and control, material management, Equipment management, Human resource management, Safety-Factors affecting safety and safety standards.

UNIT V PROJECT MANAGEMENT LAW **6**

Regulations and laws governing project management, law of contract, the duties and liabilities of different parties in a project, negligence, claims, procurement ,risk allocation and remedies

TOTAL: 45

REFERENCE:

1. Fredric Plotnick,'CPM in Construction Management', McGraw-Hill Education, 2009
2. Chris Hendrickson and Tung Au, Project Management for Construction - Fundamental Concepts for Owners, Engineers, Architects and Builders, Prentice Hall Pittsburgh, 2000
3. Robert L. Peurifoy and Clifford J. Schexnayder ,'Construction Planning, Equipment, and Methods'McGraw-Hill Education, 2010John L. Ashford, The Management of Quality in Construction. E & F.N, Spon. New York, 1989
4. Jimmie Hinze, Construction Contracts-3rd Edition, McGraw Hill, 2010
5. Joseph T. Bockrath, Contracts, the Legal Environment for Engineers and Architects, McGraw Hiii, 2000
6. BIS rules and regulations.

ADDITIONAL READING:

1. Sengutha,B., Guha,H., "Construction Management and Planning ", TataMcGraw Hill,2001
2. Frederick E. Gould, Construction Project Management, Went worth Institute of Technology,Vary E. Joyce, Massachusetts Institute of Technology, 2000
3. Dr. Prasanna Chandra, 'Projects: Planning, Analysis, Selection, Financing, Review, and I implementation, and Review - International Economy , 2009

PAR 705	URBAN TRANSFORMATION AND EXTENSION	3 Credits	L T P C 3 0 0 3
Goal	To provide broad knowledge on the opportunities and challenges presented by rapid growth of urban areas in developing countries		

Objectives	**Outcome**
• To comprehend the process of urbanization in developing countries. • To provide understanding on the causes and effects of urbanization. • To focus on the effect of unplanned urbanization on urban spaces, land use, infrastructure, society, economy and environment. • To understand urban planning process: strategies, tools, policies, urban management and governance	The students should be able to: • Understand the process of Urbanization and its impact in its immediate environment, comparing it with works done in developed countries. • Understand the interrelation between Urbanization, urban space utilization, land use and infrastructure requirements. • Create sustainable urbanization in context with the changing global scenario. • Understand the different planning processes and their tools in India

UNIT I URBANIZATION **10**

Defining urban, the process of urbanization, causes and effects of urbanization, Differences between characteristics of urban areas and urbanization in developing and developed countries, Historic planning principles that paved way for the recent principles (example: the principles of Howard, Mumford), emerging concepts under urban transformation, planning cultures and planning models

UNIT II URBANIZATION AND THE URBAN SPACE **8**

Urban form and architecture, urban transformation in heritage sites, landscapes, waterfronts, and public spaces

UNIT III URBANIZATION, LAND USE AND INFRASTRUCTURE **8**

Housing and squatter settlements, commercial and industrial districts, transportation and infrastructure

UNIT IV SUSTAINABLE URBANIZATION **10**

Sustainable development, social inclusion, social justice, urban poverty, gentrification, political economy of urban transformation, financial arrangements in urban transformation, sustainable transformation, green interventions, disaster management.

UNIT V PLANNING PROCESS **9**

Urban planning process, Actors involved, Planning network and network management, Strategies, Tools and policies. Urban planning process in India.

TOTAL: 45

REFERENCE:

1. Vítor Oliveira,'Urban Morphology: An Introduction to the Study of the Physical Form of Cities (The Urban Book Series)' , Springer, 2016Jenks, Compact City: Sustainable urban form in developing countries., E & FN Spon, London 2000
2. Leonhard Schenk, 'Designing Cities', Birkhäuser, 2013
3. P. Hall, Urban and regional planning. Rutledge. Taylor and Francis group. London,. 2002
4. Peter Hall and Mark Tewdwr-Jones,'Urban and Regional Planning' 2010

ADDITIONAL READING:

1. Tigran Haas,'Sustainable Urbanism and Beyond:Rethinking Cities for the Future' Rizzoli, 2012

PAH 704	HIGHRISE BUILDINGS AND SERVICES	3 Credits	L T P C 3 0 0 3
Goal	To enable the students to have knowledge and expertise in design and construction of high rise buildings		

Objectives	**Outcome**
• To expose the students to various types of structural systems employed for tall buildings. • To enable the students to acquire knowledge on the various building service systems required by tall buildings.	The students should be able to: • Consciously chose the structural system for a particular project considering the need for consideration of building service requirements and fire safety.

UNIT I INTRODUCTION TO TALL BUILDINGS 9

Classification of tall building structural system – Types – Shear frames, Interacting systems, Partial tubular systems, Tubular systems, bye laws and legislation relevant to tall buildings, comparative study

UNIT II TALL BUILDING FLOOR SYSTEMS 9

Composite steel floor systems, prestressed and post tensioned concrete floor systems – Examples.

UNIT III LATERAL LOAD RESISTING SYSTEMS 9

Braced frames and moment resisting frame systems –Examples Shear wall systems – Examples Core and outrigger systems – Advantages and Disadvantages – Examples Hybrid systems – Examples

UNIT IV SERVICES FOR TALL BUILDINGS 9

Express elevators – Sky lobbies – Local elevators, Service floors etc., - Water supply systems – Skip stage pumping – Energy conservation methods – Location and sizing of water tanks. Electrical- and communication systems, Disposal of Garbage, Multilevel Car Parking

UNIT V FIRE SAFETY AND MANAGEMENT 9

Wet risers, Sumps, Smoke detectors, Alarms, Sprinkler systems, Fire escape stairs, Fire resistant doors, Fire resistant rating of materials and Firefighting equipment etc.

TOTAL: 45

REFERENCE

1. Mehmet Halis Günel and), Hüseyin Emre Ilgin,' Tall Buildings: Structural Systems and Aerodynamic Form' , Routledge, 2014
2. 100 of the World's Tallest Buildings, 2015, by CTBUH (Council on Tall Buildings and Urban Habitat) (Author), Antony Wood (Editor)
3. Bownass David, , Building Services Design Methodology, Routledge, 2001
4. A.K. Mittal, Electrical And Mechanical Service In High Rise Building CBS Publishers, 2009

PAR 706	ADVANCED ARCHITECTURAL CONSTRUCTION TECHNOLOGIES	3 Credits	L T P C 3 0 0 3
Goal	Expose and sensitize the students to latest developments in construction sector		

Objectives	**Outcome**
• Update the students' knowledge in the field of building material and construction technologies • Create awareness in the areas of safety and building for hazardous conditions • Expose the students to the use of project documentation software's related software	The students should be able to: • Design projects in the larger context of new technologies • Be conscious of the need for consideration of hazardous conditions and their impact on design, • Provide project documentation with the help of software programmes

UNIT I CONSTRUCTION MATERIALS **8**

New construction materials and methods related to overall building industry with major emphasis on the areas of soils, concrete, brick, steel, non-ferrous metals, timber, Aluminums, Cables and plastics.

UNIT II CONSTRUCTION TECHNOLOGIES **12**

Design and construction technologies to improve human comfort, modern construction techniques. Sustainable construction.

UNIT III CONSTRUCTION SAFETY AND HAZARDOUS SAFETY **9**

Safety aspects in construction process – design consideration for different hazardous like Earthquakes, Wind, Tsunami, Fire etc.

UNIT IV ADVANCED STRUCTURES **10**

Special structures like steels, folded plates, Ferro cement etc – construction details uses and advantages.

UNIT V ADVANCED ARCHITECTURAL CONSTRUCTION DOCUMENTS **6**

Preparation of finished construction documents with the application of software.

TOTAL: 45

REFERENCES

1. Building Materials : Products, Properties and Systems 1st Edition (Paperback) Tata McGraw - Hill Education , 2011
2. B. C. Punmia, Ashok Kumar Jain, Arun Kumar Jain ,Building Construction 10 Edition, Laxmi Publications, 2009
3. Vincent Hui, Terri Meyer Boake, Understanding **Steel** Design: A Handbook of Steel in Architecture**,** Birkhauser 2012
4. Tulio Sulbaran, Jorge Capote, David Marchman , Construction Documentation Pearson Education Limited , 2012
5. Introduction to Natural and Man-Made Disasters and Their Effects on Buildings, Architectural Press, 2003

ELECTIVE - V SEMESTER

PAH 709	GIS MODELING IN PLANNING	3 Credits	L T P C 3 0 0 3
Goal	Expose the students to practical application of GIS Modeling in the urban design context		

Objectives	**Outcome**
• To train the candidate in building GIS models for Urban Design & Planning applications with hands on experience of spatial data, attribute data input and experiment with GIS analysis • To impart the knowledge of various GIS hardware & software knowledge to develop & analysis Maps & Reports for Urban Design & Regional Planning	The students should be able to: • Develop System concepts & Co-ordinate systems with standard GIS package • Develop maps and reports in Urban and Regional Planning, using GIS models • Solve Planning Problems with GIS Spatial data's • Conduct urban settlement analysis & impact studies with GIS models

UNIT I INTRODUCTION **6**

Definition, map and map analysis, automated cartography, history and development of GIS, Hardware requirement, system concepts, co-ordinate systems, standard GIS Packages.

UNIT II DATA ENTRY, STORAGE AND MAINTENANCE – IN URBAN AND REGIONAL PLANNING **12**

Types of data, spatial and non spatial data, data structure, points, lines, polygon, vector and raster, files and file organization, database, data entry, digitizer, scanner, Dbase, files and data formats, data compression.

Classification of spatial and non-spatial date – application of spatial date in urban and regional planning – objectives and functions of GIS models in urban and regional planning.

UNIT III SPATIAL DATA INPUT **8**

Defining the objectives of a GIS planning problems – Identification of required spatial data layers – coding schemes – digitisation of spatial date – editing spatial date usable for the given planning problem.

UNIT IV ATTRIBUTE DATE INPUT **6**

Role of attribute data in defining geographic features – adding attribute data file – topology generation – joining attribute data to its geographic features.

UNIT V SPATIAL ANALYSIS USING GIS **13**

Performing overlay functions – manipulating attribute data – GIS modeling – map and report generation – case problems on regional analysis, impact assessment study, project formulation and land suitability analysis.

TOTAL: 45

REFERENCES

1. Julia Jaklitsch,'Integration of 3D GIS into urban service processes: Research and Implementation', 2014
2. Ian Heywood and Sarah Cornelius,' An Introduction to Geographical Information Systems', Pearson, 2012
3. Klosterman RE. "Micro Computer packages for planning analysis", Americal Planning Association Journal, Autrenn, 1990
4. ERSI (1992) Understanding GIS, "The ARCI INFO methods", ERSI, USA
5. Niklaus Kämpfer ,'Monitoring Atmospheric Water Vapour: Ground-Based Remote Sensing and In-situ Methods (ISSI Scientific Report Series)', springer, 2013
6. C. Dana Tomlin,'GIS and Cartographic Modeling', Esri Press,2012

PAR 707	PERFORMANCE EVALUATION OF BUILDINGS	3 Credits	L T P C 3 0 0 3
Goal	Expose the student to the basics of modeling and simulation with respect to buildings		

Objectives	**Outcome**
• Introduction to modeling and simulation and their application in various fields of design and building construction process	The students should be able to: • Conduct modeling and simulations in the areas of thermal comfort/performance, energy efficiency, etc.

UNIT I SIMULATIONS AND DESIGN OF BUILDINGS **10**

Principles of modeling and simulation – Classification and validation of simulation models – Analysis of input data and outputs – Object oriented simulation (OOS) – Simulation languages – Application of discrete event simulation in construction operations including earthmoving operations – building construction operations, and tunneling operations.

UNIT II THERMAL BUILDING SIMULATION **10**

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 – Application to equipment – based modeling of HVAC systems: first principle models and correlation – based models – System – based modeling of HVAC systems – Validation of computer models.

UNIT III PERFORMANCE OF BUILDING ENVELOPE **15**

Modeling of dynamic building envelope thermal performance – Thermal bridges – Modeling – Advanced glazing and evaluation of window performance – Active building envelope components for heat and moisture control – Experimental techniques for performance evaluation of the building envelope.

UNIT IV ENERGY MANAGEMENT IN BUILDINGS **6**

Energy – related standards – codes – by-laws – Methods of assessment of the actual energy performance. Conventional – Innovative measurement – Analysis techniques – Energy-Oriented Renovation or Replacement of building sub-systems (e.g. HVAC and Lighting systems) – Prediction of energy – cost savings using commercially available software packages .

UNIT V ANALYSIS COMPLIENCE **4**

Verification of compliance with standards – Life cycle analysis

TOTAL: 45

REFERENCE:

1. Energy Audit of Building Systems – Moneef Krarti (Ph.D) – CRC Press 2000
2. Joseph Clarke,'Energy Simulation in Building Design', Routledge,2001
3. Kjell Anderson,'Design Energy Simulation for Architects', Routledge, 2014
4. Timothy L. Hemsath and Kaveh Alagheh Bandhosseini ,'Energy Modeling in Architectural Design, Routledge,2015

PAR 708	REAL ESTATE PLANNING AND MANAGEMENT	3 Credits	L T P C 3 0 0 3
Goal	To enable the students to understand the concept of real estate management and provide exposure, at an advanced level to the wide range of issues that reflect the principle areas of specialization in real estate profession		

Objectives	**Outcome**
• To give an overview of the real estate development and market potential • Stimulating an awareness of the issues involved in international real estate • Developing analytical and methodological skills that are critical for management decision making and problem solving roles • To gain knowledge about the leverage that real estate could provide in the overall development process.	The students should be able to: • Assemble and manage a project team. • Manage properties and provide advice on strategic planning of real estate investment.

UNIT I REAL ESTATE DEVELOPMENT **8**

Fundamental concepts and techniques, recognizing institutional and entrepreneurial elements issues encountered in various phases of development like site evaluation and land procurement, Leasehold and freehold property, development team assembly, market potential and demand estimation study and development scheme, construction and project management, project marketing

UNIT II DEVELOPEMNT AND PROJECT FINANCING **10**

Project feasibility, best use option, development financing, asset disposal and redevelopment options, analysis of development sites and case studies, integrated case study on a specific development project which requires reviewing and analysis and resolving the problems or strategic issues

UNIT III URBAN POLICY AND REAL ESTATE MARKET **10**

Impact of government regulations and public policies on real estate markets, include urban land rate and location theories, land use structures, community and neighborhood dynamics, degeneration and renewal in urban dynamics, private public participation, government policies on public and private housing and urban fiscal policy including property taxation, local government finance

UNIT IV CORPORATE REAL ESTATE ASSET MANAGEMENT **7**

Strategic plans to align real estate needs with corporate business plans, performance measurement techniques to identify assets acquisition or disposal, methods for enhancing values through alternative uses efficient space utilization or improving user's satisfaction

UNIT V COMMERCIAL REAL ESTATE APPRAISAL **10**

Determination of the capitalization rates across different types of properties, appraisal of freehold and leasehold interest; critical analysis of valuation approaches adopted for securitized real estate; asset pricing model; investment flexibility and future redevelopment opportunities

TOTAL: 45

REFERENCES

1. Barrons real estate handbook fifth editions, Hauppauge, NY, Barron, 2001
2. Deborah L. Brett and Adrienne Schmitz,' Real Estate Market Analysis: Methods and Case Studies, Urban Land Institute,2015
3. Walt Huber and Levin Messick , 'Real Estate Appraisal Principles and Procedures' , educational textbook company ,2011
4. Mike E. Miles and Laurence M. Netherton, 'Real Estate Development - 5th Edition: Principles and Process', Urban Land Institute, 2015
5. Gerald R Cortesi, Mastering Real Estate Principles, Dearborn Trade Publishing, New York, USA2001,
6. Filmore W Galaty, Modern Real Estate Practice, Dearborn Trade Publishing, New York, USA, 2002
7. Tanya Davis, Real Estate Developers handbook, Atlantic publication company, Ocala, USA, 2007

ADDITIONAL READING

1. Mike .E. Miles, "Real estate development – Principles & Process 3rd Edition, Urban Land Institute, ULI – Washington DC, 2000
2. Richard B Peiser & Anne B. Frej, "Professional real estate development" – The ULI guide to the business, Urban Land Institute U.S.A. ,2003
3. Nathan. S. Collier, "Construction finding – the process of RE development, Appraisal & finance, John Wiley & Sons Inc; New Jersey, 2007
4. Barry Haynes and Nick Nunnington ,'Corporate Real Estate Asset Management 1st Edition', Estates Gazette, 2010

PAR 709	VIRTUAL SOCIETY	3 Credits	L T P C 3 0 0 3
Goal	Imbibe awareness about the presence of virtuality and its consequences		

Objectives	**Outcome**
• Expose the students to sociological and psychological aspects of social visualization with regard to identity • Create awareness about changes in perception of fashion, education, etc. through virtual facilities	The students should be able to: • Understand issues arising with virtual development.

UNIT I CULTURAL BASIS **6**

Social visualization through readings, drawn from sociology / Psychology and interface design.

UNIT II ISSUES OF REPRESENTATIONS IDENTITY AND EXPRESSION **12**

Meaning through association - subjective - transitory - cross cultural meanings ascribed to an object / Cultural phenomena in virtual objects: nature of identity in an immaterial and intangible environment / Issues of identity deception

UNIT III COMMODIFICATION, COMMERCE AND FASHION **6**

Globalization, e-com and marketing- Fashion, identity and marketing- Machines as part of fashion - Role of Fashion and status in the virtual world.

UNIT IV COMMUNICATION AND PEDAGOGY **12**

Virtual education and issues of Commodification/ virtual classrooms/ universities Virtual organizational existence / Society of Audience / online social world / Chat rooms / news groups and mailing lists

UNIT V CITY AND ONLINE WORLD **9**

City as a metaphor for online world/ city as a hub of information/ place of strange fears/crime and doubtful morality/surveillance and security

TOTAL: 45

REFERENCES:

1. Laurence Scott,'The Four-Dimensional Human: Ways of Being in the Digital World', W. W. Norton & Company,2016
2. Cameron H. Malin and Terry Gudaitis,'Deception in the Digital Age: Exploiting and Defending Human Targets through Computer-Mediated Communications', Academic Press 2015
3. Derek S. Reveron ,'Cyberspace and National Security: Threats, Opportunities, and Power in a Virtual World', Georgetown University Press 2012
4. Grant David McCracken,'Culture and Consumption II: Markets, Meaning, and Brand Management ' Indiana University Press ,2005