

**BIJU PATNAIK UNIVERSITY OF TECHNOLOGY, ODISHA
ROURKELA**



Curriculum and Syllabus

**2Yr. M.Arch (Habitat Design)
for the Admission Batch 2023-24**

**2Yr. M.Arch (Habitat Design)
(Admission Batch : 2023-24)**

1st Semester

FIRST SEMESTER						
Sl. No.	Category	Course Code	Course Title	L-T-P	Credit	Total periods in Semester (15 weeks)
1	PC	PCHD4101	Planning Principles In Human Habitat	3-0-0	3	45
2	PC	PCHD4102	Socio-Economic Considerations For Habitat Design	3-0-0	3	45
3	PC	PCHD4103	Habitat Design Theory	3-0-0	3	45
4	PE	PEHD5101 PEHD5102	Climatology And Solar Architecture Energy Conservation	3-0-0	3	45
5	PC	PCHD7101	Habitat Design Studio-I	0-0-9	9	135
Total Credits / Total Contact Hours in the Semester					21	315

2nd Semester

SECOND SEMESTER						
Sl. No.	Category	Course Code	Course Title	L-T-P	Credit	Total periods in Semester (15 weeks)
1	PC	PCHD4104	Sustainable Architecture And Habitat Management	3-0-0	3	45
2	PC	PCHD4201	Advanced Landscape Design	3-0-0	3	45
3	PC	PCHD4202	Land Economics and Real Estate Management	3-0-0	3	45
4	PE	PEHD5103 PEHD5104 PEHD5105	Environmental Considerations in Habitat Design Remote Sensing and GIS Housing and Community Planning	3-0-0	3	45
5	PC	PCHD7201	Habitat Design Studio-II	0-0-9	9	135
Total Credits / Total Contact Hours in the Semester					21	315

3rd Semester

THIRD SEMESTER						
Sl. No.	Category	Course Code	Course Title	L-T-P	Credit	Total periods in Semester (15 weeks)
1	PC	PCHD4203	Conservation and Renewal Of Heritage Habitat	3-0-0	3	45
2	PC	PCHD4301	Development Legislation	3-0-0	3	45
3	PC	PCHD4302	Advanced Theories Of Design	3-0-0	3	45
4	PE	PEHD5201 PEHD5202	Infrastructure Planning & Management Virtual Imaging Techniques	3-0-0	3	45
5	PC	PCHD7202	Habitat Design Studio-III	0-0-9	9	135
Total Credits / Total Contact Hours in the Semester					21	315

4th Semester

FOURTH SEMESTER						
Sl. No.	Category	Course Code	Course Title	L-T-P	Credit	Total periods in Semester (15 weeks)
1	PE	PEHD5203 PEHD5204	Project Management Architectural Journalism	3-0-0	3	45
2	PE	PEHD5301 PEHD5302	Movement and Networks Modular Co-Ordination & Prefabrication	3-0-0	3	45
3		PCHD7302	Seminar Presentation	0-0-6	6	90
4		PCHD7303	Design Dissertation (Thesis)	0-0-12	15	180
Total Credits / Total Contact Hours in the Semester					27	360

1st Semester

PCHD4101 PLANNING PRINCIPLES IN HUMAN HABITAT (3-0-0)

Concept of Urban Centre/Urban Area, Urbanization and Rural Urban interdependence; Evolution of Town Planning in India-Ancient, Post-Medieval to Contemporary period; Urban morphology and socially rooted determinants of land-use structure; Types of Urban growth; Theories of urban growth and urban structure; Industrial Revolution and its effects on Town planning; Contemporary Modern thoughts in Urban Planning; Futuristic Planning principles.

References:

1. Urban Pattern by Gallion Eisner
2. History of Urban Form by A.F. Morris
3. Land use Planning by Chapin
4. Planning Principles – Reader by AITP
5. The City in History by Lewis Mumford

PCHD4102 SOCIO-ECONOMIC CONSIDERATIONS FOR HABITAT DESIGN (3-0-0)

Concepts of culture and environment; society; community groups; Social structure and institutions; continuity and change and their impact on structure of human habitat; cities and towns, Demography, Economic base of settlements, Economic growth, Dichotomy of rich-poor in relation to development, etc., and their impact on habitat structure, Economic issues in urban growth – Trends and patterns of Indian urban growth; Real Estate setup, market and demand analysis.

Concept of traditional social values, effects of technology, change, management and characteristics and states of conflict, Struggle for space, density, overcrowding, Urban stress and gender issues, Slums and blights, Crime and spatial structure of cities.

References:-

1. Indian Social Structure by M.N.Srinivas
2. Socio-Economic Indicators for Urban Planning and Development – IIPA publication
3. Socio-Economic Basis for Planning – AITP Reader.

PCHD4103 HABITAT DESIGN THEORY (3-0-0)

Components of human habitat, Dimensions of Urban Design-Grain, texture, scale, etc.

Habitat Design, Urban Design and their relation with planning and architecture, Views of habitat as extension architecture (mega architecture) and as architectural expression of planning.

Evolution of concepts of urban form and design in different cultures and in India, Utopian concepts, Concept of informal sector, concern for urban poverty and its impact on habitat,

Concepts in Urban Design and Planning, Urban Design survey, inventories, techniques/approaches to Urban Design.

Behavioral issues in Urban Design, Principles of urban spatial organization; urban scale, urban spaces, urban massing; quality of urban enclosure.

Image ability, townscape and elements of urban design, Historical examples of urban design projects.

References:

1. Urban Design: The Architecture of Towns and Cities by Paul D. Speireigen
2. Design of Cities by Edmund Bacon
3. Image of the City by Kevin Lynch
4. Townscape by Gordon Cullen Responsive Environment by Ian Bentley et al

PEHD5101 CLIMATOLOGY AND SOLAR ARCHITECTURE (3-0-0)

Role of Climate in Habitat Design-Climate responsive vernacular settlements, urban climate, dynamics of the urban heat island, meso-climatic changes caused by urban heat island, climatic and urban design, city aerodynamics, the aerodynamics of a tall building, Wise effect, Monroe phenomenon, Venturi, Cell and Row Effect, wind effects in the vicinity of tall buildings, preliminary idea about wind tunnel.

Need for solar architecture, solar geometry and shading Solar Passive architecture, Direct gain heating, water wall heating, water wall cooling, Trombe wall, greenhouse heating and cooling, roof ponds, Thermosiphoning air systems, Active solar systems, Collector systems for heating and cooling purposes, air systems, liquid systems, flat plate and parabolic reflectors, photo voltaic.

References:

1. Wind in Architectural and Environmental Design by Michelle G. Melargano
2. Architectural Aerodynamics by R.M. Anysley, W. Melbourne and B.J.Vickery.
3. Solar Heating and Cooling – Sunset Home Owners Guide.
4. Design with Climate by Victor Olgay
5. Solar Energy Fundamentals in Building Design by Bruce Anderson
6. Design for Cold Climates by Mathus.

PEHD5102 ENERGY AND HABITATION (3-0-0)

Module 1 - Concept of energy, Introduction to various forms of energy used in buildings (heat, light, sound, etc). Sources of energy, renewable sources, non-renewable sources, Electrical generators. Energy Production/convention, distribution, consumption, storage, waste and control.

Module 2 - Alternative sources of energy

Solar - [Solar photovoltaic power system, Solar thermal system], Wind, Bio-energy, Free energy from earth and water.

Introduction to Nuclear energy. Energy economics, energy management and intelligent building system

Module 3 - Evaluation of the effectiveness of energy utilization. Energy efficient building design in micro and macro level. Zero energy building.

Module 4 - Integrated energy systems for – Rural community

- Towns, suburbs and cities
- Tall buildings

References:

1. Energy Engineering and Management by William J Coad
2. MiliMajunder, Teri – Energy-Efficient Bldg in India – Thomson Press, New Delhi -2001
3. J K Nayak & others, Energy Systems Energy Group,- Isa Annal of Solar Architecture.
4. Arvind Krishnan & Others – Climate Responsive Architecture, Tata Mcgraw Hill New Delhi 2001
5. James D Ritchie - Successful Alternate Energy Methods – Structures Publishing Co. Michigan 1980
6. George Basid& Others - Energy Performance of Building – CRC Press, Florida 1984
7. Ralph M Lebens – Passive Solar Architecture in Europe – 2, Architecture Press, London 1983.
8. Bill Baker – How to beat the Energy Crisis and Still Live in Style – G P Putnarms Sons, New York 1979.

PCHD7101 HABITAT DESIGN STUDIO-I (0-0-9)

To study and understand the fabric of an existing habitat (Rural: Tribal, Coastal village or similar), to understand the forces responsible for the formation and growth of the habitat. The studio work would include study of existing area/areas with an eye on its infrastructure, ecological aspects, land and land area coverage, character of built form, transportation network, uses of built form, and study of fenestration and facade treatment. The study would have to be presented in the form of documentation to be compiled in the form of a report.

Studio work may be carried out individually or in groups depending upon the complexity of the problem.

2nd Semester

PCHD4104 SUSTAINABLE ARCHITECTURE AND HABITAT MANAGEMENT (3-0-0)

Sustainable Development-various viewpoints:- Environmental Sustainability, Economic Sustainability and Social Sustainability.

Definition of Sustainable Architecture, Ecological Building-Environment, Building Fabric and Building Technology, Principles of Sustainable Design, Sustainability and embodied energy and operational energy in building, Application of Renewable Sources of energy, Eco-sensitive building materials, Waste reduction, Concept of recycling and adaptive reuse , Cost reduction techniques in buildings.

Energy conservation through sustainable lighting design, Life Cycle Concept in Building Design, Design for environment, Water and Energy Reduction, Indoor air quality and Rain Water harvesting.

References:

1. Ecology and Sustainable Development by P.S.Ramakrishnan
2. Houses: Reduce Building Costs by Laurie Baker
3. An Architecture for People: The Complete Works of Hassan Fathy by James Steele.
4. Papers on Green Architecture and Adaptive Reuse and various seminar proceedings on Sustainable and Green Architecture.

PCHD4201 ADVANCED LANDSCAPE DESIGN (3-0-0)

Hardscape and Soft scape elements in Landscape Design: Role of vegetation, windbreaks and shelterbelts; planting for wind reduction around buildings, role of vegetation for noise control, controlling air quality and pollution control; Matching plant materials to design criteria;

Landscape design for energy conservation: application of landscape elements in passive cooling, landscape design strategies for water conservation, retrofitting for solar energy,

Site microclimate mapping, microclimate modification through landscaping, guidelines for site planning for energy conservation and solar energy utilization, slope analysis and grading, drainage considerations;

Pedestrian systems, connectors and linkages, access for the handicapped.

Field identification of plants, shrubs and groundcovers suitable for tropical climates

Reference Books:.

1. Landscape design for energy conservation By Gary Robinette.
2. Tropical Gardens& Plants by Bose & Choudhury
3. Residential Landscaping by Theodore Walker.

PCHD4202 LAND ECONOMICS AND REAL ESTATE MANAGEMENT (3-0-0)

Land use planning and Urban Land Management; Basic components of Urban Land Policy; Land as a resource for urban development and management aspects; Urban Land Market: characteristics , assessment techniques, factors affecting land market; Supply and demand of land; Land related legislations; Land assembly /land pooling techniques; Land pricing and disposal techniques; Growth Management concepts; plans and tools and programmes for growth management; Real-estate market and assessment techniques; economic cycles; demand and supply, values and rental structure, Public –private participation; and real estate development agencies; Real estate laws, rent control laws.

References:

1. Urban Landuse Planning by S.Chapin& L. Keeble
2. Urban Development Management - I.T.P.I.
3. Reading Material on Land Economics – I.T.P.I.

PEHD5103 ENVIRONMENTAL CONSIDERATIONS IN HABITAT DESIGN (3-0-0)

Introduction to Ecology and environment; Land as an environmental resource; Water as an environmental resource; Global Conferences on Environmental issues and concerns. Agendas and resolutions, Land as a basic resource, Conservation of Wetlands, Desertification – Causes and implications, Air, Water and noise pollution and resultant environmental problems, Environmental Acts and Policies, Non-Conventional energy resources, Environmental economics, Environmental Impact Assessment.

References:

1. Ecology by Odum
2. Environmental Planning Reader by AITP
3. Environmental Impact Assessment Reader by ITPI
4. Survey of the Environment - Hindu Publications Earthscape by Simmonds

PEHD5104 REMOTE SENSING AND GIS (3-0-0)

Fundamentals of Remote sensing: Concept of satellite remote sensing : Types of satellites: Sun-synchronous and geostationary satellites; Platforms and sensors; Stages of remote sensing; Electromagnetic radiation (EMR); Electromagnetic Spectrum; Interaction with atmosphere; interaction with the earth surface; Remote sensing sensors and their characteristics; Spectral signature; Types of resolutions; Satellite data types and their uses; IRS satellites series, LANDSAT series, IKONOS, Quick bird and WV; Remote sensing data acquisition.

Fundamentals of GIS: Basic concepts of Geographic Information System; Concept of geo-informatics; Components of GIS; GIS data formats; Types of Data structure; spatial and non-spatial; Vector and raster data structure; Data models; tabular, hierarchical, network, relational, object oriented; Errors and accuracies in GIS.

Spatial Data Input and analysis: Methods of data capture and input; Geo-referencing; Projection and datum; Coordinate transformation and re-sampling; Digitalization of maps and satellite images; Generation spatial data base; Attribute generation; Linking spatial and non-spatial data; Generation of thematic maps.

Manipulation, Analysis and Output: Data manipulation techniques; Spatial data analysis; overlay operations and proximity analysis; Data interpolation; point and line data; Network analysis and suitability analysis; Creation of data base; contours, spot heights; 3D modeling; digital elevation models (DEM), slope and aspect; Query in GIS; Data output and presentation.

References:

1. Burrough PA and Rachael A. McDonnell, Principles of Geographic Information Systems, 2nd Ed.
2. Lo CP & Yeung AKW, 2004, Concepts and Techniques of GIS, Prentice-Hall of India, New Delhi
3. Heywood I, Cornelius S, Carver S, 2000, Introduction to GIS, Addison Wesley Longman, New York
4. Liliesand T M & Keller R W 2000. Remote Sensing and Image Interpretation, John Wiley & Sons, New York
5. George Joseph 2003, Fundamentals of Remote Sensing, University Press, Hyderabad
6. Sabins, F F, 1986, Remote Sensing; Principles and Interpretation, Freeman, New York
7. Rashid S M & Mazhar A K, 1993 Dictionary of remote sensing, Manak Publishing House, Delhi
8. Fazal S & Rahman A, 2007, GIS Terminology, New Age International Publishers, New Delhi
9. Wolf, P.R., Elements of Photogrammetry, 2nd ed., Mcgraw Hill, New York, 1983.
10. Jeneson J R, Introductory Digital Image Processing A Remote Sensing Perspective, 2nd Eds. Prentice Hall, New Jersey
11. American Society of Photogrammetry, Manual of Remote Sensing, 2nd ed., Falls Church, Va., 1983.
12. Rampal K.K., 1996, Handbook of Aerial photography and interpretation, Concept publishing company, New Delhi

PEHD5105 HOUSING AND COMMUNITY PLANNING (3-0-0)

Introduction to Housing – Concepts , issues, definitions; Shelter and human needs; Housing process and sequence of development; Housing Acts and policies; National Housing Policy, Non-formal Housing; Housing options in Urban areas; Standards for housing; Housing densities; Housing Design and layout; Housing infrastructure and planning; Materials and appropriate technology for shelter. Metropolitan housing, shelter strategy for mass metro cities, strategy for slums and squatters. Innovative materials and techniques for mass housing. Housing and rehabilitation for disaster prone areas Housing techniques and finance. Mechanism of housing loans; Role of private sector in housing and effect of global capital participation in housing sector.

References:

1. Charles Abrams. Man's struggle for shelters in an urbanizing world, Vikas Fetter and Simons pvt. ltd, Mumbai
2. Babur Mumtaz and Patweikly. Urban housing strategies, Pitman publishing, London
3. GeoffrevK.Paul, Low income housing in the developing world, John Wiley and sons.
4. John F.C Turner, Housing by people, MarisonBovaros, London, 1976
5. Martin Evans, Housing, Climate and comfort.
6. Lewis Davidson Gotlieb, Environment and design in housing. The Mc.Millan Corp, New York.
7. Housing and building in hot-humid and hot dry climate/ 721.06 Brab/H
8. Low-cost housing in developing countries/ Mathur, GC/363. 509/72Mat/LN93.

PCHD7201 HABITAT DESIGN STUDIO-II (0-0-9)

To study and understand the fabric of an existing habitat preferably Rurban, fringe area, slum, small settlement and similar, To understand the forces responsible for the formation and growth of the habitat. The studio work would include study of an existing area/areas with an eye on its infrastructure, ecological aspects, land and land area coverage, character of built form, transportation network, uses of built form, and study of fenestration and façade treatment. The study would have to be presented in the form of documentation to be compiled in the form of a report. Studio work may be carried out individually or in groups depending upon the complexity of the problem.

3rd Semester

PCHD4203 CONSERVATION AND RENEWAL OF HERITAGE HABITAT (3-0-0)

Concepts and approaches to conservation; historic and inner city areas and other Natural elements, Concepts and approaches to conservation in India ;and other countries.

Socio-economic development, tourism infrastructure and development, and role of urban conservation;

Institutional aspects of conservation- Charters-World Heritage Legislation and Sites Conservation Acts.

Legislation, Archaeological Acts and Institutional framework for conservation in India and other countries.

Historic overview of recycling cities;

Conservation Area practice, adaptive reuse, up gradation problems in old areas, infill design.

Conservation Management, community participation, economic regeneration. Upgrading infrastructure, financing and implementation framework for redevelopment and revitalization projects;

Recent successful practices in urban conservation and regeneration in India and other countries.

Reference:

1. A Manual for Conservation By Sir Bernard Fielden
2. Conservation & Development in Historic Towns and Cities By Pamela Ward.
3. Planning for Conservation. By Kain Roger.

PCHD4301 DEVELOPMENT LEGISLATION (3-0-0)

Overview of legal tools connected with urban planning & development.

Legislation related to use and control of land, land acquisition.

Significance of land development control – objectives and legal tools, critical evaluation of Zoning, sub-division regulations, building regulations and byelaws, Development code.

Legislation on conservation of natural resources including Mining and Forestry Acts, Conservation and Management of Ancient Monuments and Archaeological sites and ruins.

Coastal Zone Regulations, Transfer of Development Rights – Concepts and related issues.

Environment Management Systems (ISO – 14001 and its planning implications, Need of ISO certified industry, Environmental and Financial implications

Benefits of ISO.

References

1. Reader on Urban Development Management- ITPI
2. NITI AAYOG Publications on Urban Development

PCHD4302 ADVANCED THEORIES OF DESIGN (3-0-0)

Design Theory and its impact on Architecture of shared spaces-the vocabulary of designing for people –centric spaces;

Behavioural issues at the level of public architecture, activity profile of people in public spaces, memory and mental mapping, public and private domain, open-endedness and prophecy, environmental perception.

Situational analysis of public architecture from macro level to micro level situations, site planning techniques, spatial organization and scale, built-environment and open space relationship, micro-level aspects like street furniture, colours, textures, surfaces, enclosures, visual details.

Analogical examples, bipolarity - old & new, utopianism, partial realization, various models of city level design- cosmic model, organic model, machine model, myths, mythology and symbolism; formality & informality in public design, interfaces in an urban context.

References

1. Emerging concepts in Urban space Design – Geoffrey Broadbent.
2. Pattern Language – C. Alexander
3. Defensible Space, Oscar Newman

PEHD5201 INFRASTRUCTURE PLANNING & MANAGEMENT (3-0-0)

Concepts of urban infrastructure, Social and physical infrastructure; Urban social infrastructure – qualitative and quantitative techniques of assessing requirements, Planning Amenities and institutions; Public and private sector role in resource mobilization and infrastructure development and related issues; Financing systems; sources of finance, leasing and contracting methods, pricing and financing ; major National and International agencies involved in infrastructure provisions; Managing infrastructure development, corporatization and related goals, decentralized and people led infrastructure provisions, social goals and equity, environmental and economic issues and assessments etc., related to physical infrastructure,

Quality control mechanisms, institutions and instruments of resource mobilization, new opportunities and initiative in infrastructure development and management, Case studies from Asian cities of successful and innovative infrastructure provisions and equitable economic development, management and maintenance schemes, Nagarapalika Bill (74th Amendment) and hierarchical structure of urban development bodies and development financial structure.

References:

1. Five Year Plans, Planning Commission, Govt. of India
2. Urban Planning in a Changing World By Taylor and Francis Group, London.
3. Group Action and Popular Participation By R.P.Mishra.
4. The India Infrastructure Report: Policy Implications for Growth of Welfare, by Rakesh M.
5. N.I.U.A. Research Study Series – 73rd and 74th Amendment of the Constitution.
6. Actioning New Partnerships for Indian Cities, Cities , Vol..20.

PEHD5202 VIRTUAL IMAGING TECHNIQUES (3-0-0)

Objectives: To sensitise the students with the latest methods of three-dimensional imaging tools for effective presentation of data, studies and proposals.

Software like Flash, Maya Rhinoceros, and similar ones may be studied, Introduction to scripting, animation and short films, Introduction to morph genesis techniques, etc. The subject could be introduced as intensive workshops with invited specialists.

Reference

1. Gindis, E. (2014). Up and Running with AutoCAD 2015: 2D & 3D Drawing and Modelling, Oxford : Elsevier.
2. Seidler, D. R. (2007). Digital Drawing for Designers: A Visual Guide to AutoCAD 2012, London: Fairchild Publications.
3. Smith, B. L. (2007). 3ds Max 2008 Architectural Visualization Beginner to Intermediate, Sarasota: 3DATS.
4. 3DS MAX- Advanced 3D modeling and animation – C & M, CADD Centre
5. Tutorials: <http://www.lynda.com/>

PCHD7202 HABITAT DESIGN STUDIO-III (3-0-0)

Studio would deal with urban problems in public architecture: plaza design, water front, transportation corridors. It would address issues of public spaces design, principles of site planning and micro site detailing.

4th Semester

PEHD5203 PROJECT MANAGEMENT (3-0-0)

Corporate Management: Systems approach to urban management, manpower planning, performance appraisal, motivation and morale.

The concept of project evaluation, identification and estimation of project impacts; desirable and undesirable project impacts.

Single criterion project evaluation, details of cost benefit analysis and its application with case studies; cost benefit analysis of public and private sector projects;

Concept of multi-network and monitoring, PERT and CPM with their application in planning projects, project monitoring under resource constraints,

Cost Benefit analysis, Identifying costs and benefits, pricing, opportunity costs, shadow prices, cash flow, payback periods, internal rate return.

References:

1. Project Planning Analysis & Review by Prasanna Chandra
2. Project Management – The Managerial Process by Gary & Lawson
3. Project Planning & Control with PERT & CPM – By Dr. P.C.Punmia and others
4. Economic Analysis of Agricultural Projects – By J. Price Gittinger
5. Project Management by K. Natarajan

PEHD5204 ARCHITECTURAL JOURNALISM (3-0-0)

Structure of Architectural Journals. Writing descriptive and analytical reports, editing write-ups, photo journalism
Book reviews, Page Composition, The Public process, Electronic Media.

References:-

The teacher shall develop his reference from various sources.

NB: The students should be exposed to the work of professional art and architecture. Various forms of architecture Review/record, progressive architecture, Japan architecture etc. and journals of RIBA, American Institute of Architects, IIA, etc. Report writing should be presented to a panel to be chaired by the teachers for discussions. Criticism and consequential changes. Students other than the author should be asked to write a report/review of the discussions.

PEHD5301 MOVEMENT AND NETWORKS (3-0-0)

Fundamentals of transport and movement, Urban Movement systems; Classification of movement systems; technological characteristics of transport modes and systems; nature of demand and supply of transport services. Land-use-transportation inter-relationships; movement planning process; Travel demand forecasting.

Sampling methods, survey techniques, designing O.D & other traffic and transportation surveys, programming and scheduling, processing of travel data, analysis and interpretation of traffic studies. Traffic and movement planning process and models, Origin Destination studies. Planning for Public movement systems; local area traffic management and planning consideration for goods transportation.

Appreciation of importance of parking in movement system, parking surveys, parking norms & standards and new approaches to parking systems. Design of transport and movement infrastructure.

Recent innovations in technologies and its probable impacts on future urban forms. Government transport policies and evaluation of transportation proposals.

References:

1. Urban Landuse Planning by S.Chapin& L. Keeble
2. Reading Material on Transportation Planning– I.T.P.I.

PEHD5302 MODULAR CO-ORDINATION & PREFABRICATION (3-0-0)

Introduction to modular practice, basic modular planning and component Module, modular number pattern introduction.

Aimed to focus on the study of use of pre-fabrication systems, systems developed by CBRI, basic modular planning and the proportioning system in Indian context.

Prefabrication; advantages, disadvantages relevance in Indian context, classification of Prefabrication systems developed CBRI, Roorkee, skeletal system, Brick panel system, R C Planks, non-structural elements, devotions in prefabrication.

Hindustan housing factory. Tapsia system and other such contemporary systems in India, development of planning Module and structural Modules for various types of buildings in India.

References:

1. Industrialized buildings: R.M.E. Diamant
2. Building digest notes of CBRI, Roorkee
3. Standard building; R. Nagarajan; Pitman Press
4. Le Modular -1 & 2; Le Corbusier
5. The reasoning architect, Garry Stevens; McGraw Hill

PCHD7302 SEMINAR PRESENTATION (0-0-6)

Each student has to present a seminar on the perception study and other design issues of any one component of an existing urban area.

PCHD7303 DESIGN DISSERTATION (THESIS) (0-0-12)

Each student is required to prepare a thesis on a topic approved by the Department. Topic should be on current research and professional design interests.