PRE PH.D. (ARCHITECTURE & PLANNING)

SCHOOL OF ARCHITECTURE, PLANNING & DESIGN (SOAPD)

DIT UNIVERSITY, DEHRADUN

COURSE STRUCTURE & SYLLABUS

FOR

PRE PH.D. (ARCHITECTURE & PLANNING)
COURSE WORK SESSION: 2022-23

PRE PH.D. (ARCHITECTURE & PLANNING)

Course Category	Course Code	Course Name	Periods			Credits
			L	T	P	
UC	MB901	Research Methodology	4	0	0	4
-	CPE-RPE	Research Publication and Ethics	2	0	0	2
DE		Elective-1	4	0	0	4
DE		Elective-2	4	0	0	4
DC	AR901	Seminar	0	0	2	2
						16

List of Electives

S.No	Course Code	Course Name
1	AR941	Regional Planning & Development
2	AR942	Thermal Design of Buildings
3	AR943	Disaster Management
4	AR944	Green Buildings

Note: Apart from above listed Elective courses, Research Scholar may choose any course across departments being offered at PG level and SWAYAM courses of 4 credits, if it is required/suggested by the Research Committee.

Subject Code	MB901	Subject Title	RESEARCH METHODOLOGY						
LTP	4,0,0	Credit	4	Subject Category	UC	Year	I	Semester	

Unit – I

Fundamentals of Research: Defining research, Objectives of research, types, research process, deductive and inductive reasoning; Identifying and formulating a research problem, Literature review: Search for existing literature (World Wide Web, Online data bases), Review the literature selected (Case studies, review articles and Meta-analysis), Develop a theoretical and conceptual framework, Writing up the review, Definition of variables: Concepts, indicators and variables, Types of variables, Types of measurement scales, Constructing the Hypothesis- Null(Research) and alternative, one-tailed and two-tailed testing, errors in testing. Ethical and Moral Issues in Research, Plagiarism, tools to avoid plagiarism – Intellectual Property Rights – Copy right laws – Patent rights

Unit – II

Research Design: Design of Experiments: Research Designs -Exploratory, Descriptive and Experimental, Experimental designs- Types of Experimental Designs

Unit – III

Sampling, Sampling distribution, and Data Collection: Sampling distribution, Normal and binomial distribution, Reasons for sampling, sampling technique, sampling errors. Sources of Data-Primary Data, Secondary Data, Data Collection methods

Unit – IV

Statistical Data Analysis: Descriptive and inferential statistical analysis. Testing of hypothesis with Z-test, T-test and its variants, Chi-square test, ANOVA, Correlation, Regression Analysis, Introduction to data analysis data using SPSS20.0

Unit – V

Research Report: Writing a research report- Developing an outline, Formats of Report writing, Key elements Objective, Introduction, Design or Rationale of work, Experimental Methods, Procedures, Measurements, Results, Discussion, Conclusion, Referencing and various formats for reference writing of books and research papers, Writing a Research Proposal.

Books Recommended:

1. Ganesan R, Research Methodology for Engineers, MJP Publishers, Chennai. 2011
2. C.R.Kothari, “Research Methodology”, 5th edition, New Age Publication,
3. Cooper, “Business Research Methods”, 9th edition, Tata McGraw hills publication
4. Walpole R.A., Myers R.H., Myers S.L. and Ye, King: Probability & Statistics for Engineers and Scientists, Pearson Prentice Hall, Pearson Education, Inc. 2007.
5. Anderson B.H., Dursaton, and Poole M.: Thesis and assignment writing, Wiley Eastern 1997.
6. Bordens K.S. and Abbott, B.b.: Research Design and Methods, McGraw Hill, 2008.
7. Morris R Cohen: An Introduction to logic and Scientific Method (Allied Publishers) – P 197222; 391–403

Subject Code	AR941	Subject Title	REGIONAL PLANNING & DEVELOPMENT					
LTP	4,0,0	Credit	4	Subject Category	DE	Year	I	Semester	

1. Definition, scope and content of regional planning:
2. Regional disparities in development, surplus generation of primary is influence on development. Development as defined and implied in Indian planning and related development programmes.
3. Methods and purpose of regionalization, delineation of regions in India.
4. Concept of regional growth possesses: Approaches of rostow, michman, myrdan concept of core and periphery.
5. Concept of growth centres, growth polem, services centers: agropolitan district, concept and their approaches in India and other countries.
6. Spatial growth possesses: settlement structure and distribution. Theories charistaller, Losch-rangsizerole, primary spatial innovation diffusion etc.,
7. Introduction to regional /economic industrial location theories. Changing trends in location analysis. Methods of analyzing regional industrial structure – regional cycle and multiplier analysis and economic base analysis, coefficient of localization, shift share analysis.
8. Concepts of Industrial society, social aspects of industrialization.
9. Regional imbalances and inequalities in India, policies its impact on regional imbalances and planning imperatives, industrial location policies, agricultural development policies, structural adjustment policies.
10. Population growth, distribution and regional development in India. Population distribution and resource base, migration in India, causes flows and impacts. Theories of migration and population moment, metals of measuring volumes of migration, direct and indirect measures, effects of migration on, composition of population, migration models.
11. Backward area development. In identification and development policies and approaches in India. Regional basis of decentralize and multilevel planning, decentralize planning approaches, district planning and block level planning, sector basis of decentralized planning. Decentralized resources management planning, with respect to concept of property resources, community based resource management systems, traditional knowledge and institutional systems.
12. Intuitional framework for regional planning (Center, state regional planning authorities and the issue of resource transfers in India).

Subject Code	AR942	Subject Title	THERMAL DESIGN OF BUILDINGS						
LTP	4,0,0	Credit	4	Subject Category	DE	Year	I	Semester	

1. Elements of climate: solar radiation, temperature, humidity, sky condition, vegetation, precipitation and wind.
2. Macro & Microclimate: Classification of tropical climates & thermal requirements.
3. Comfort: Thermal comfort factors, thermal comfort Indices-Effective temperature. Tropical Summer Index (SP-41, BIS).
4. Steady state and period heat flow, Admittance procedure
5. Mechanical Controls: Cooling by ventilation, Mechanical cooling, minimum standards for ventilation.
6. Structural controls: Thermal insulation, thermal capacity, internal blinds and curtains shading devices & their design; passive solar systems like troumbe walls, attached green house, thermal roof storage etc.
7. Ventilation and air movement; convective cooling, physiological cooling and cross ventilation.
8. Light and Lighting: Day lighting, sources, climate & light, day light factor, design variables Design sky concept, day lighting in tropics, electric lamp-s, glare in day lighting.
9. Traditional shelter forms in hot-dry climates; Nature of climate, physiological objectives, form and planning, external spaces, roofs, walls, openings, roof and wall surfaces, ventilation & air flow.
10. Design aids: (1) Forward analysis stage. The Mahoney's tables. (2) Plan development stage: Activity charts, thermal performance index of building element, Building index, Concept of O.T.T.V.

Subject Code	AR943	Subject Title	DISASTER MANAGEMENT						
LTP	4,0,0	Credit	4	Subject Category	DE	Year	I	Semester	

1. Disasters:
- Definition, factors, significance & Repercussions,
- Nature of disasters, Aggravating factors.
- Causes and effects of disasters,
- Global and regional contest.

2. General characteristics of disasters:
- Causes, interaction of disasters and Vulnerability.
- Impact of disasters.
- Nature and extent of damage.
- Urban concerns of disasters and elements at risk.

3. Disaster typology (classification of disasters):
- Natural Disasters-Major-Minor types.
- Manmade Disasters-Major types
- Other Disaster-Major-Minor types.

4. Disaster profile in India:
- Regional and seasonal aspects.
- Causes and effects of disasters
- Vulnerable areas, frequency and intensity
- Urban risks in India.

5. Disaster management:
- Lessons learnt past experiences.
- Prevention. -Predictability, forecasting and warning
- Reduction
- Preparedness- Preparedness-short term planning and long term planning, Preparing through IEC (information, Education, Communication)
- Mitigation-Aims, Structural and non-structural approaches, Adopt an area – based approach.
- Relief, Reconstruction and Rehabilitation-Rehabilitation; Social and economic aspects, as means of development planning. Urban Housing to resist to disasters including relocation. Retrofitting, repairing and significance of urban housing.

6. Space technology- Disaster management:
- GIS-Remote Sensing. Introduction, definition, scope and use in Disaster management, Issues at National, regional, and local levels.

- Urban Disaster mapping-active fault mapping.
- Vulnerability mapping
- Urban Demographic details, Micro-donation maps, soil and geology maps techniques of area mapping.
- Pre-disaster Planning-Preparedness planning-short term and long term planning. Risk assessment-a key prevention
- Urban Land Use Zoning and Zoning regulations for disaster management, Mapping of prominent disaster prone areas.
- Post disaster Planning-Relocation planning-logistic planning.

Subject Code	AR944	Subject Title	GREEN BUILDINGS						
L T P	4,0,0	Credit	4	Subject Category	DE	Year	I	Semester	

Course Contents

Unit-I: Introduction to Green Buildings

Concept, definition, history and evolution, benefits/significance of green buildings.
Study of features which make the building green. Sustainability and green buildings. Examples of green buildings in India and the world (case studies to be presented by the students).

Unit-II: Green Building Rating Systems

Introduction to various rating systems (LEED, GRIHA, CASBEE, IGBC etc)
Study of green building rating criteria of IGBC for new buildings with holistic approach to create environment friendly buildings, through architectural design, water efficiency, effective handling of waste, energy efficiency, sustainable buildings, and focus on occupant comfort & well-being.
Mandatory requirements and credit points, various levels of rating, process of certification.

Unit-III: Principles and Design Strategies

Efficient use of resources (land, water, energy and materials), waste reduction and handling.
Passive heating and cooling systems. Use of renewable energy and its generation on site, Eco-friendly building materials, Case studies on green buildings designed with passive cooling techniques (to be presented by the students).

Unit-IV: Energy Conservation Building Code

Building typologies, Energy Performance Index (EPI), mandatory and prescriptive requirements for building envelop (like fenestrations, daylighting, roof and walls), thermal comfort systems and controls, lighting, electrical and renewable energy systems.

Teaching Methodology: Faculty shall impart teaching by lecture & presentations; students shall prepare reports/presentations on Case Study and/or Green Building Ratings as an individual or group exercise.

Suggested Books

1. IGBC Green New Buildings Rating System (3.0 or latest version).
2. Energy Conservation Building Code of India (2017 or latest version).
3. Handbook of Green Building Design and Construction (ISBN 978-0-12-385128-4).