Syllabus Centric Report- Content Specific

COURSE CONTENT

B.Arch. – I Sem

1. Introduction to Architectural Design- I

Anthropometrics: Study of anthropometrics and their relationship with the dimensions of objects of daily use.

SDG Goal Achieved:

- SDG 3 – Good Health and Well-Being,
- SDG 5 – Gender Equality
- SDG 10 – Reduced Inequality
- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production

Assignment related - Conducting regional, gender & age specific Studies on anthropometrics to develop understanding of inclusive space requirements.

2. Building Material & Construction Technology- I

Introduction to basic building materials

- Mud: Study of soil map of India, Type of soils, making mud bricks, cob, adobe, Stabilization and use for walling and terracing.
- Bricks: Kinds, types, constituents and properties of brick earth, manufacturing of various types of bricks, decorative brickwork and jail work
- Stone: Study of stone map of India, Kinds, properties, varieties and their characteristics, stone masonry.
- Sand: Sources, classification and properties Lime and Cement: Sources, classification, properties and method of manufacturing, testing, mixing and uses.

SDG Goal Achieved:

- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production

Assignment related - Preparation of various regional maps to understand and promote the use of local available materials and craftsmanship.

3. Architectural Graphics- I

Colour theory: Psychology of colour, colour mixtures, colour systems, colour organization, application of colour schemes, national and international standards on colour.

SDG Goal Achieved:

- SDG 3 – Good Health and Well-Being

Assignment related - Impact of colours and light on Well-being to avoid sick building syndrome.

4. Climatology & Environmental Studies- I

Unit 1: Introduction to Climatology

- Relationship between Architecture and Climatology; Global Warming and the Need for Climate responsive building; Building as a third skin. Climate and weather; Global weather; Seasonal changes, Factors responsible for changes.

- Climatic-Tropics, climatic zones, macro climate, elements of climate, sun, temperature, wind, precipitation, and climatologically data needed for planning of buildings.
- Human Comfort, Human heat balance and comfort; thermal comfort, heat stress, effective temperature, bioclimatic analysis, individuals' variation. Concept of Adaptive Comfort.

Unit 2: Micro climate

- Air Temperature: Factors that influence air temperature – latitude, altitude, seasons, water, trees, areas etc.; inversion of temperature, thermal diffusivity, thermal conductivity and heat transmission through building elements.
- Solar Radiation and its variations over the year.
- Wind: Study of diurnal and seasonal variations, heating and cooling, effect of topography; effect of wind on location on industrial areas, airports and other land uses and road patterns; Promoting and inhibiting air movement in and around buildings, wind eddies, size and positions; effect of wind on design and siting of buildings. Understanding Wind Rose diagrams.
- Precipitation and humidity: Water vapor, relative humidity, condensation, rain, fog, snow and architectural responses to them.

Unit 3: Introduction to environmental studies

- The Multidisciplinary nature of environmental studies, Definition, scope and importance, Need for public awareness, man, environment and ecosystem; Renewable and nonrenewable resources: Natural resources and associated problems with case studies.
- Ecosystems -Concept of an ecosystem, Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction to different ecosystems.

Unit 4: Introduction to Sustainable development

- Biodiversity and its conservation-Definition: genetic, species and ecosystem diversity. Biogeographical classification of India, Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Threats to biodiversity Conservation of biodiversity: in-situ, Ex-situ conservation of biodiversity.
- Environmental Pollution, -Definition, Causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution, nuclear hazards Solid waste Management. Role of an individual in prevention of pollution.
- Disaster Management: Floods, earthquake, cyclone and landslides.

SDG Goal Achieved:

- SDG 3 – Good Health and Well-Being
- SDG 7 – Affordable and Clean Energy
- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production
- SDG 13 – Climate Action

Assignment related - Climatic analysis is mandatory for all Architectural Design studio assignments for first to fifth year B.Arch. Programme.

B.Arch. – II Sem

1. Architectural Design- II

- Study of human use of space and the effects that population density has on behaviour, communication, and social interaction through exercises. Impact of proxemics on architectural design Sensitization towards application of principles of climatology.
- Study of Vernacular Architecture A visit to rural organic settlement (introduction to vernacular architecture) with repetitive composition with site orientation, prevailing wind direction and the use of local building materials. Measure drawing of a small-scale building (Can be part of the Vernacular Settlement study/visit) and/or elements of Architecture of any other building of architectural importance. Scale of the building should be small for thorough understanding of Measure Drawing principles.

SDG Goal Achieved:

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- SDG 13 – Climate Action

2. Building Material & Construction Technology- II

Roofing: Different types of roofing systems- investigation of roofing systems in vernacular traditions of India. Timbers of India, Forest cover, Timber sawing and seasoning, timber products, roof tiles, and sheets, Introduction to secondary elements door, windows, railing and sunshades, staircase etc.

SDG Goal Achieved:

- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production

3. History of Architecture-II

Unit 4: Collapse of some civilizations

Causes of collapse with suitable examples; economical, environmental, social and cultural, natural disaster, overpopulation or resource depletion.

SDG Goal Achieved: SDG 11, 13 & 16

- SDG 11 – Sustainable Cities and Communities
- SDG 13 – Climate Action
- SDG 16 – Peace and Justice Strong Institution

4. Climatology & Environmental Studies- II

- Unit 1: Understanding Solar Geometry & Building Orientational principles through Physical Models and through modeling software, for.e.g. Ecotect, Revit, Google Sketchup and other solar tools. Study in relation to Sociography exercises in the Design Studio.
- Unit 2: Understanding solar radiation and its effects on various kinds of surfaces (walls, roofs, Paved surfaces). Calculation of solar radiation on building surfaces, solar charts. “Solar Heat gain coefficient” for fenestration systems. Types of Shading Devices for buildings.
- Unit 3: Opaque building elements and heat transfer through these surfaces/elements. U& R values for Building envelope elements. “Traditional and Modern” Insulation, Heat Absorbing

and Reflective materials for walls, roofs and fenestrations.

- Unit 4: Passive Architectural Design Principles in various climates. Case studies of Buildings and visits to Solar Passive structures and preparation and discussion of visit reports. Design Exercise on small scale climatically responsive house/shelter together with modeling of solar insolation and exercises on shading devices. This can also be carried out in the Corresponding Architectural Design Studio.

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B.Arch. – III Sem

1. Architectural Design-III

- Site Analysis: Climatic consideration for the design, orientation of building on site their application in elevations as functional/aesthetic solutions will also be a part of the design exercise.
- Contextual Understanding: Study of the context and elements of built and un- built spaces in an observable setting to develop the understanding of socio-cultural attributes of the physical environment, methods of construction emerging out of the way of life of the people in a given place including topographical and climatic survey.

SDG Goal Achieved:

- SDG 3 – Good Health and Well-Being
- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production
- SDG 13 – Climate Action
- SDG 15 – Life on Land

2. Theory of Design-I

Definitions of Architecture - Origin of Architecture – Architecture as a discipline – Context for architecture as satisfying human needs - Functional, aesthetic and psychological. Design methodology: Design as a multi- variety problem solving Process. Architecture as socially useful discipline The concept of measuring, function, style, type, social purpose and ideology, the relationship of architecture to the sciences, arts, economics and politics. Study of selected writing, buildings or manmade design at all levels including objects of daily use.

SDG Goal Achieved:

- SDG 3 – Good Health and Well-Being
- SDG 10 – Reduced Inequality

11. Building Services-I (Water Supply & Sanitation)

- **Unit 1:** Water supply: Sources of water supply, The Water Crises, Impurities of water and 10 15 of 70 systems of water supply, Various kinds of water meters, Water storage tanks, their capacity and location. Calculation of water consumption based on types of building occupancies. Water Balance, Domestic hot and cold-water supply systems. Solar Hot water heating systems for domestic and industrial usage, Size of pies and their joining details. Connections of different sanitary fittings like ferrule, stopcocks, bib cocks etc. Efficiency in Watering of Landscape & Crops, Drip Irrigation, Hydroponics), Stormwater drainage, Rainwater Harvesting & Groundwater Recharge.

- **Unit 2:** Sanitation: Basic principles of sanitation and disposal of waste matter from buildings, Dry and wet carriage systems, Sanitary fittings- washbasins, WC's, bathtubs, sink, urinals, bidets, flushing cistern, traps etc. Low flow fixtures and Waterless fixtures with calculation of flow rates and water usage, Various types of joints, manholes and septic tanks. Proper location and ventilation of intercepting chambers and inspection chambers, Drainage systems- separate, combined and partially combined systems. Single stack system. One pipe and two pipe systems, Testing of house drains. Gradients used in laying drains and sewers. Self-cleaning and non-scouring velocities for drainpipes, Size of drainpipes and materials used, Innovative and Cost-Effective Sanitation concepts. E.g. EcoSAN, Rural & Distributed Sanitation Concepts.

- **Unit 3:** Concept of wastewater recycling: Methods of treating wastewater- STP's and ETP's, conventional methods, improvised methods, additives, Conserving Water- overview& Zero discharge concepts and calculations for the same, Methods of water conservation.

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B.Arch. – IV Sem

1. Architectural Design- IV

OBJECTIVE

- To develop an understanding that designing is a process not just an end product.
- To develop a holistic understanding of how socio-cultural-economic and geo climatic factors shape architecture.
- To sensitize students towards a more user centric design process of building and open spaces.
- To develop an understanding of data collection and analysis of physical and demographic factors.
- Experimentation with shapes and forms to evolve sensitivity to built volumes.

SDG Goal Achieved:

- SDG 10 – Reduced Inequality
- SDG 11 – Sustainable Cities and Communities
- SDG 13 – Climate Action
- SDG 15 – Life on Land

2. Building Services-II : Illumination & Electrical Design

Thermal, Mechanical and Electrical Energy and its generation and inter-conversion. Energy Efficiency in Electrical systems. Energy Efficient designs: Solar Photovoltaic Energy and its applications for lighting, pumping etc. Energy Efficient Appliances & BEE Ratings Power Density / Energy Performance index for various building types and for energy efficient buildings and BEE Ratings for the same. Net Zero Buildings and their case studies.

SDG Goal Achieved:

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B.Arch. – V Sem

1. BAP 301 - Design

The studio may be theme based, exploring social inclusion through architecture for people across the cross section of society. User group/s for addressing the theme/s could be architecture paradigms for aged and aging, architecture of care, child friendly architecture, social inclusion and architecture, barrier free architecture experience, quality and access, architecture for poor, etc.

SDG Goal Achieved:

- SDG 10 – Reduced Inequality
- SDG 11 – Sustainable Cities and Communities

2. BAP 305 – Sociology and Psychology in Architecture

Unit 4: Social Audit

- Social survey and Social Research – principles of social research. Scope of research, units of study, choice of research topics, sources of information
- Identifying a public place and conduct a social audit of the place from the perspective of an architect.

SDG Goal Achieved:

- SDG 5 – Gender Equality
- SDG 10 – Reduced Inequality

2. BAP 311 - Building Services III

Unit 4: Energy Efficient Air Conditioning Design

- Energy efficient air conditioning systems and technologies. Indoor Air Quality Control, usage of energy simulation software for HVAC systems, say Design Builder.
- Active and passive radiant cooling mechanism, direct and indirect evaporative cooling systems, Air/water/Ground based cooling systems, Vapour Absorption systems (VAM), Solar based air conditioning, Demand based ventilation.

SDG Goal Achieved:

- SDG 7 – Affordable and Clean Energy
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- SDG 13 – Climate Action

3. BAP 315 - Sustainable Development

Concept of Sustainable Development

- Sustainability and its dimensions, sustainable development, cradle to cradle design, waste conservation, resource conservation, energy conservation, Embodied Energy
- Understanding climate, elements constituting climate, factors affecting climate, climate change, global warming, GHG, Brundtlands Report.

International Efforts for Sustainable Development

- Role of UNFCC: Millennium Declarations, MDG's, 2005 World Summit, Overview of elements of Kyoto Protocol (including DOHA Amendments) and Paris Agreement, SDG's

Sustainable Ecosystem

- Understanding the impact of built environment on variable like livelihood, poverty, food security, ender empowerment, etc.
- Identifying the working with sustainable design features like local resource and materials, local techniques/technology, site and ecology, community and culture, health, energy (including embodied energy), etc.
- Understanding green building and its constituents, interrelationship between built and open environment, Concept of Environmental Impact Analysis (EIA), etc.
- Cost effective building Techniques, construction, etc

Practical application of aspect of sustainability in built environment

- Sustainability audit of a building from the aspect of sustainability and propose alternatives in design to make it sustainable through cost effective solutions. Proposals may be in form of drawings/reports/sketches etc.

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- SDG 17 – Partnership to achieve the Goal

B.Arch. – VI Sem

1. BAP 302 – Architectural Design

The studio may be themed base on exploring sustainable development. The concept of sustainability encompasses not just environmental variables, but also issues of livelihood, poverty, migration, food security, democracy, human rights and peace. Suggestive themes could be resource conservation, area optimization, solar passive architecture, strengthening local economy through architecture etc.

Suggestive design projects may be a mixed use/commercial etc. the size of the project may be up to 12000 square meters.

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4. BAP 316 – Introduction to Healthcare Design

Introduction to World healthcare programs, Government initiatives in India and Abroad and scope of healthcare development in the present scenario. The importance of Epidemiology study, population demographics and Public health. Introduction to Urban and rural healthcare needs. Analysis of demand and supply in developed, developing and under developed countries.

Public Health and Healthcare Facilities

- Study and analysis of healthcare demands of concerned population, projected needs and estimated healthcare requirement in future. Visits to a healthcare facility in Urban/neighbouring rural area may be conducted. Documentary of issues and healthcare related problems and need. Type of healthcare facility with respect to population density, regional parameters, land resource and other aspects.

SDG Goal Achieved:

- SDG 3 – Good Health and Well-Being

B.Arch. – VII Sem

1. BAP 405 - Women and Sustainable Development

Need for women empowerment, Gender and economic development, gender and social development, gender and environmental development, challenges and hazards of disempowered women, case studies on impact of women empowerment of social, economic, environmental indicators.

SDG Goal Achieved: SDG 1 to 17

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Assignments on Gender Inclusive Designs of public urban spaces like streets, shopping centres, metro stations, public parks etc

2. BAP 407 - Advanced Building Services

Unit 3: Waste Treatment & Management
Introduction to Waste collection, treatment and disposal. Understanding Reduce– Reuse–Recycle model. Thermal treatment Dumps and Landfills. Biological waste treatment. Waste water treatment, Waste Management and behavioural management for waste control at building and city level. Control Room Code of Safety prescribed in NBC.

SDG Goal Achieved:

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3. BAP 411 - Strategic Design Thinking

Empathize, Learn and Ask: It involves identifying the needs that make up the target audience, getting under their skin and finding out what they value, what they want and how they look at the world. Introduction to tools to view users and their behaviour and their needs in the context of their lives. Developing questionnaires, Empathy maps development, photographic studies of products with users, deep user interview etc, field observation and selecting suitable techniques to study user behaviour and reactions. Understanding of market demands and manufacturing constraints.

SDG Goal Achieved:

SDG 9 – Industry, Innovation and Infrastructure
SDG 12 – Responsible Consumption and Production
SDG 17 – Partnership to achieve the Goal

4. Emerging Phenomenon in Architecture

Potentials and Hazards of various social, cultural, economical and technological trends on built environment; Cyber Physical Systems for a contemporary city; concept of Urban Informatics; Impact of Artificial Intelligence in altering environments; Conceptual understanding of spatial analytics, understanding concept of simulation; Exploring how Big Data can impact space design; Introduction to Works of Neri Oxman (MIT Media Lab). Dynamic facades, Introduction to Automation in buildings, Impact of new materials and devices on built environment; Concept of compact cities; hazards of disconnect with nature in built environment. Design as social capital.

SDG Goal Achieved:

- SDG 9 – Industry, Innovation and Infrastructure

5. BAP 403 - BMCT

Cost effective Building structures, Bamboo Structures: Bamboo reinforced concrete, Structures like ferrocement channels, plank and joist. Brick Roof: Pyramid, Reinforced Brick Concrete, Filler Slab.

SDG Goal Achieved:

- SDG 9 – Industry, Innovation and Infrastructure
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B.Arch. –IX Sem

1. BAP 501 - Architecture Design

Site Analysis & Planning Phase: Issues and aspects (Social-economic-cultural-environmental, market, building use, land use, context, urban space, etc.), Application of theory, Application and Applicability of Statutory Norms Understanding of Site Mapping activities, building typologies, etc. Framing vision for site in context of Urban Development Critical Analysis of statutory norms and issues identified Spatial analysis and model making may be explored as a tool for analysis. Site resource systems, Micro- climate, Vegetation and Wild life, Cultural resources, Urban vegetation, planning & maintenance, Road layout and parking, Site grading and drainage, Sewerage, water supply and electricity, Surveys and overlays, Site planning goals and objectives, programme development.

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2. BAP 503 - Introduction to Advanced Construction Systems

Structural System in Seismic zones, earthquake resistance design of masonry buildings, earthquake resistance stone buildings, earthquake resistance earthen buildings, earthquake resistance wooden building; Form Active Structures, shell and folded plate, tensile structures, pneumatic structures.

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3. BAP 505 - Introduction to Landscape Architecture

Introduction to landscape architecture: Definitions, importance, need and scope. Landscape architecture and ecology. Relationship between landscaping and environmental planning, regional planning, urban planning, urban design and architecture. Natural and manmade landscape, Urban and rural landscape. Fundamental considerations involving landscape architecture. Climatic factors (temperature, humidity, rainfall. Macroclimate and microclimate. Relationship between climate and landscape and architecture) Natural Factors (rocks, soil, water, landforms, vegetation).

SDG Goal Achieved:

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4. BAP 507 - Town Planning

Understanding of concepts like Inclusive Cities, Smart Cities, Sustainable cities, Transit Oriented Development. Zonal Development Plan, Sub-Zonal Plan, Layout Plan, Local Area Plan), city development plan, structure plan, district plan, action area plan, subject plan, town planning scheme, regional plan, sub-regional plan; Sector plans and spatial plans.

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5. BAP 509 - Disaster Management

Concepts, Approaches and Theories of Disasters, Fundamentals of Disaster Management, Types of Disasters (Natural and Human Induced Disasters), Socio- Economic consequences, Post Disaster Recovery, Preparedness and Mitigation, etc. Occurrence of disaster in different climatic and geographical regions, hazard (earthquake and cyclone) map of the world and India, Disasters in India, Disaster Management Mechanism in India Research Methods in Disaster Management, Role of Remote Sensing and Geographic Information System (GIS) in Disaster Management Finance and Insurance in Disaster Management, Legal Aspects of Design Management, Role of International Agencies in Design Management Design Strategies for Disaster Prone Areas- Various types of Disasters like earthquake, cyclone, etc. to be taken up and various design strategies/ construction technology/ materials/etc. adopted in such disaster prone area may be discussed Relief, Rehabilitation, Resettlement, Reconstruction and Resilient Making communities Resilient- innovative and participatory approach to disaster management, Community safety and disaster resilience- Case study of resilient communities may be taken up for study.

SDG Goal Achieved:

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6. BAP 513 - Urban Issues

Understanding the Urban Context: Urban design terminologies and definitions, Methods of urban design surveys, documentation and representation, Cognitive mapping – contemporary and traditional, Space analysis, Determinants of urban form, Components of urban structure, Concepts of layering, Typological studies, Architectural expression

Socio-Economic Issues: Slums, urban villages, peri-urban areas, Employment, manufacturing, food production, Affordable housing, migrant housing, mixed land use, Environment & Health Issues: Clean India, pollution, Right to water, sanitation, energy, food, transport, waste, management, Public open spaces, recreation, entertainment Developmental Issues: FAR, density, bylaws, quality of life, Interior design, adaptation of existing buildings, Urban construction technology, urban mines, urban management, governance Safety Issues: Gender issues, safety and security of all, universal access, Resilience, disaster mitigation

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M.Plan. – I Sem

1. Planning Studio

City Development Plan (Group assignment)

A City is a multi-dimensional, dynamic and a futuristic space. Understanding city involves appreciating this multi direction and include them in the city making process. A job of physical planner does not merely understand the current conflict in development but to emerge out of this and to come out with a vision for the city. To arrive at this vision, a planner needs to understand the dynamics of various components of the city and how and what level interventions can be made to achieve that vision. A group of students are expected to study a city in terms its present problems and issues and project a futuristic vision in terms of scenario building.

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2. MUP 107 - Housing and Environmental Planning

Environment and Development: Changing Perspectives in Man-Environment Relationship with Focus on Issues of Population, Urbanization, Resource Depletion and Pollution. Concept of Ecology; Fundamentals of Ecosystem—Its Structure and Function. Environmental Degradation (Environmental Concerns and Challenges) and Its Impact on Various Ecosystems. Concept of Sustainable Development and EIA.

SDG Goal Achieved:

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3. MUP 107: Infrastructure and Mobility Planning

Unit 1: Role of Infrastructure in Development
Elements of Infrastructure (physical, social, utilities and services); Basic definitions, concepts, significance and importance; Data required for provision and planning of urban networks and services; Resource analysis, provision of infrastructure, and land requirements; Principles of resource distribution in space; Types, hierarchical distribution of facilities, Access to facilities, provision and location criteria, Norms and standards, etc. Familiarizing to CPHEEO Manual and Guidance.

Unit 2: Planning and Management of Water, Sanitation and Storm Water
Water – sources of water, treatment and storage, transportation and distribution, quality, networks, distribution losses, water harvesting, recycling and reuse, norms and standards of provision, institutional arrangements, planning provisions and management issues; Sanitation – points of generation, collection, treatment, disposal, norms and standards, grey water disposal, DEWATS, institutional arrangements, planning provisions and management issues. Storm water – rainfall data interpretation, points of water stagnation, system of natural drains, surface topography and soil characteristics, ground water replenishment, storm water collection and disposal, norms and standards, institutional arrangements, planning provisions and management issues.

Unit 3: Planning and Management of Municipal Wastes, Power and Fire
Municipal and other wastes – generation, typology, quantity, collection, storage, transportation, treatment, disposal, recycling and reuse, wealth from waste, norms and standards, institutional arrangements, planning provisions and management issues. Power – Sources of power procurement, distribution networks, demand assessment, norms and standards, planning provisions and management issues. Fire – History of fire hazards, vulnerable locations, methods of firefighting, norms and standards, planning provisions and management issues.

Unit 4: City Development and Mobility Infrastructure Planning Management and Design
Role of transport, types of transport systems, evolution of transport modes, transport problems and mobility issues; Urban form and Transport patterns, land use – transport cycle, concept of accessibility; Hierarchy, capacity and geometric design elements of roads and intersections; Basic principles of Transport infrastructure design; Traffic and transportation surveys and studies, traffic and travel characteristics; Urban transport planning process – stages, study area, zoning, data base, concept of trip generation Transport, environment and safety issues; principles and approaches of traffic management, transport system management.

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- SDG 15 – Life on Land
- SDG 16 – Peace and Justice Strong Institution
- SDG 17 – Partnership to achieve the Goal

4. MUP 111 - Women and Habitat

Unit 1: Gender and Urban Planning
Defining Habitat; Understanding Habitat from Women's perspective; Concept of Inclusive Planning; Importance of gender sensitive urban planning; Different needs of women and men; different roles of women in a society.

Unit 2: Gender related concepts
Linking SDG no. 5, 11 and Urban Planning; Concepts of Women Empowerment through Urban Planning, Gender Sensitive, Gender Impact Assessment, Gender Mainstreaming, Gender budgeting, Gender auditing.

Unit 3: Gender related issues
Key Issues - Access to livelihood and employment, Access to Municipal Services (Water, Sanitation, Solid Waste Management), Access to Urban Spaces (Land, Housing, Finance), Access to social services (healthcare, food, education), Safety/security, design for Mobility, Accessibility, Housing , public spaces; Acknowledging Issues like care giving as an unpaid job, women in different socio economic conditions using the resources in urban areas differently, work areas are only work areas and doesn't facilitate women in fulfilling her other obligations , Impact of climate change and environmental disasters on Women.

Unit 4: Governance and Institutionalizing Gender Sensitive Urban Planning
Women in Local Governance in the context of 74th CAA; Gender Sensitive Decision making in Planning; Men define urban (statutory definition of urban area); elements of Draft National Policy for Women (2016) by MoWCD; Institutional mechanisms for gender equality in urban planning.

SDG Goal Achieved:

- SDG 1 – No Poverty
- SDG 2 – Zero Hunger
- SDG 3 – Good Health and Well-Being
- SDG 4 – Quality Education
- SDG 5 – Gender Equality
- SDG 6 – Clean Water and Sanitation
- SDG 7 – Affordable and Clean Energy
- SDG 8 – Decent Work and Economic Growth
- SDG 9 – Industry, Innovation and Infrastructure
- SDG 10 – Reduced Inequality
- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production
- SDG 13 – Climate Action
- SDG 14 – Life Below Water
- SDG 15 – Life on Land
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M.Plan. – II Sem

1. MUP 102 - Planning Studio

The studio exercise focuses on the planning, development and design aspect (in line with the other core and elective courses offered in the semester). The exercise may pertain to a large city or emerging metropolitan cities and range from preparation of sustainable development plans to sector specific themes pertaining to tourism, SEZs, etc. The studio exercise enables students to develop an approach/ framework for the task; it is field based as a database is generated that is analyzed and the plan and strategies are formulated.

Initial study involves understanding of the exercise through theories, study of similar case studies, awareness of relevant norms and standards through extensive literature search. Students are required to prepare a comprehensive list of required data and identify probable sources before making a field visit to the case study town/city.

Students are encouraged to translate learning from the core and elective subjects to the studio exercise. Students are expected to analyze the data collected and come out with proposals and recommendations for planned development of the city. The entire exercise is also documented in the form of a technical report.

Another assignment may be a short and intensive exercise. It may pertain to topical issues i.e. property tax reforms, informal sector, development of railway land, etc. The study may based on primary / secondary surveys and students are expected to analyze the information and arrive at recommendations.

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2. MUP 106 - Sustainable Development

Unit 1: Introduction to Sustainable Development

- Sustainable Development- Definitions, Concepts and Parameters; Ecology
- City Approach; Kyoto Protocol, Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change; Indian Network of Climate Change

Assessment, Global Environment Facility, and Clean Development Mechanism; UNHABITAT policies, Sustainable Development Goals, New Urban Agenda, Sustainable Cities Programme (UNEP and UN-Habitat), Localizing Agenda 21 (UN-Habitat).

Unit 2: Principle of Sustainable planning
Concept of sustainable planning, Three pillars of sustainability and its implication in planning process; Environmental preservation; commerce and liveability; Walkability and Connectivity; Integration of diverse community features; Strong sense of place. Natural drainage and water bodies; Application of Ecological Principles in Sustainability; Carrying Capacity Based Planning- Concept, Parameters and Indicator Measures; Models and Case Studies in Urban and Regional Development.

Unit 3: Climate Change and its impact
Basic concepts and definitions of Climate Change; Urban Heat Islands; Climatic Change and Human History; Impacts of Climate Change; Climate as Forcing Variable, Location Attributes, Sensitivity and Vulnerability of Different Sectors; Extreme events and their effects.

Unit 4: Urban Environmental Management
Urban Environmental Management and Planning; Human activities and energy in Cities; Contribution to GHGs; Environmental Impact and Strategic Environmental Assessment for Urban Areas; Ecological Footprint Analysis of Cities; Sustainable Lifestyle Assessment. Low carbon urban development strategies- concept of 3-Rs: "Recycle-Reuse and Recovery"; Low carbon transport modes and mobility options; Land Capability and Suitability Analysis; Compact City Concept; Use of Non-Conventional Energy Sources; Urban Water Treatment, Recycling and Harvesting; Pollution Control Measures for Industrial Wastes, Hazardous Wastes, Biomedical Wastes, Domestic Waste Water, Air Pollutants and Noise.

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