

SCHOOL OF PLANNING AND ARCHITECTURE, VIJAYAWADA
DIRECT ADMISSIONS 2022-23

M.Arch (Sustainable Architecture) - Syllabus

ENVIRONMENTAL SCIENCE FOR ARCHITECTURE

Natural and man-made ecosystem; Complex relationships between the built and natural environments; Impact of pollution on natural and man-made environments; Strategies to transform the built environment to meet the risks of climate change; Biomimicry - the study of natural structures and processes- in helping to solve man-made problems and enabling design; Ecological principles, concepts of urban ecology and landscape urbanism; case studies; integration of Renewable Energy Systems in built environment.

CLIMATE AND BUILT ENVIRONMENT

Elements of climate; study of human comfort; site planning and influence of environmental factors; design of solar shading devices; Heat flow through building envelopes; Air movement due to natural and built form; Design strategies in different climate zones; vernacular and contemporary responses to climate through case studies; climate change and built environment; climate responsive design; analysis using appropriate software.

BUILDING MATERIALS & CONSTRUCTION

Building materials: Properties and behaviour of both natural and man-made building materials such as bricks, stones, metals, timber, glass, steel and finishing materials in contemporary buildings; Alternative building materials, building materials and thermal comfort, Understanding of parameters like U-factor, R-value, Thermal mass, Solar heat gain coefficient (SHGC), Visible light transmittance (VLT); role of Glass and steel in sustainable design for improving the building performance; smart materials.

Building Construction: structural systems and methods of construction and detailing of buildings of medium complexity using natural and manmade materials including foundation, walls, roofs, staircase, joinery and finishes; Building systems and prefabrication of building elements; Principles of Modular Coordination

BUILDING SERVICES

Solar architecture; Thermal, visual and acoustic comfort in built environments, energy efficient building - daylighting and ventilation; Natural and Mechanical ventilation in buildings; Air-conditioning systems; Sustainable building strategies; daylighting and illumination, assessment of appropriateness of various renewable Energy Systems and energy grid, design for technologies for alternative sources of energy

BUILDING PERFORMANCE AND CODE COMPLIANCE

Building performance assessment and energy simulation tools, understanding of National Building Code (NBC) and Energy Conservation Building Code (ECBC) of India, energy efficient design and construction of buildings; Building Envelope; Comfort Systems; Lighting systems; Electrical and renewable energy systems, Evaluation of overall assembly U-factor of different building and construction system for various climatic zones as per Energy Conservation Building Code (ECBC); Green buildings and rating systems, IGBC, LEED, GRIHA; Net Zero buildings.

SUSTAINABLE COMMUNITIES

Traditional and conventional knowledge systems of sustainable settlements, sustainable development, goals and strategies; introduction to Green concepts; Depleting resources and climate change; Sustainable site selection and development sustainable building materials and technologies; Low impact construction – Bio mimicry, Dimensions of sustainable, sustainable community; case studies of eco- cities/ communities.