



**DEPARTMENT OF ARCHITECTURE  
NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR**

G. E. Road, Raipur, 492010 C. G  
राष्ट्रीय प्रौद्योगिकी संस्थान रायपुर,  
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**Master of Technology (Urban Planning)  
Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Planning History and Theory</b>
3.	L-T-P Structure	4-0-0
4.	Credits/# of period	4
5.	<p>Course Syllabus:</p> <p><b>Unit-1: The City of the Past</b></p> <p>a. Antiquity, The middle ages to the Renaissance</p> <p>b. Transition: the classical revival (Vitruvian cult)</p> <p>c. The medieval-renaissance age- to modern times</p> <p>d. The origin and growth of Indian cities</p> <p><b>Unit-2: The Industrial City</b></p> <p>a. City conditions in pre-industrial and initial-industrial era</p> <p>b. Various concepts of social and sanitary reforms</p> <p>c. Garden city movement, The American cities, Theories of Patrick Geddes, etc.</p> <p>d. The problems of post-industrial cities</p> <p><b>Unit-3: Present City</b></p> <p>a. Shaping the cities as per present requirements</p> <p>b. Concepts of new towns, Town extensions, Urban blights, Counter magnets,</p> <p>c. Remodeling of Old towns and City cores, Rural planning, etc.</p> <p>d. Culture of cities</p> <p><b>Unit-4: Planning Theories</b></p> <p>a. Land Use Model, Concentric Zone Theory, Central Place Theory, etc.</p> <p>b. Least Cost Theory, Sector Model, Multiple Nuclei Theory, Growth Pole Theory, etc.</p> <p>c. Choice Theory, Environmental, Kuznet's Curve and New Economic Geography, etc.</p> <p><b>Unit-5: Models of Planning</b></p> <p>a. Planning Approaches (Inclusive planning, Advocacy Planning and Action Planning, etc.)</p> <p>b. Types of Thematic Cities (Sustainable Cities, Low Carbon Cities, Compact Cities, Inclusive cities, etc.)</p> <p>c. Emerging Concepts (Rationalistic and Incremental approaches, Mixed Scanning, etc.)</p>	
6.	<p>References: -</p> <p>i. Healey, P., McDougall, G., &amp; Thomas, M. J. (Eds.), (1982), Planning Theory: Prospects for the 1980s: Selected Papers from a Conference Held in Oxford, 2-4 April 1981 (Vol. 29), Pergamon</p> <p>ii. Bandyopadhyay, A., (2000), Textbook of Town Planning, Books and Allied (P) Ltd.</p> <p>iii. Gallion, A. B., Eisner, S., &amp; Stoner, A., (1963)., The urban pattern: city planning and design (p. 55), New York: Van Nostrand.</p> <p>iv. Corbusier, L. (1947), The City of Tomorrow and Its Planning: By Le Corbusier, Translated from the 8th French Edition of Urbanism, with an Introduction, by Frederick Etchells. Architectural Press.</p> <p>v. Lynch, K., Lynch, K. R., &amp; Hack, G., (1984), Site planning, MIT press.</p> <p>vi. Hall, P. (2011), Cities of Tomorrow: An intellectual History of Urban Planing and Design in Twentieth Century, Blackwell, London.</p>	



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**Master of Technology (Urban Planning)  
Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Planning Techniques and Process</b>
3.	L-T-P Structure	4-0-0
4.	Credits/# of period	4
5.	<p>Course Syllabus:</p> <p><b>Unit-1: Basic Terminologies</b></p> <p>a. Elements of planning, b. Character, Categories and Density Patterns in cities c. Zoning and Land Use Classification d. Central Area Redevelopment, Eminent domain, Police power</p> <p><b>Unit 2: Scope, Purpose and Contents of Various Plans</b></p> <p>a. Types of Plans (Perspective Plan, Development Plan, Structure Plan, Annual Plan, Local Area Plan, etc.) b. Specific Purpose Plans (City Development/Investment Plan, Comprehensive Mobility Plan, City Sanitation Plan, Slum Redevelopment Plan, Disaster Management Plan, etc.)</p> <p><b>Unit-3: Planning Process</b></p> <p>a. Methodologies for Preparation of City Plans</p> <p>b. Goal formation, Aims and Objectives, Identification of Site Needs and Gaps c. Visioning Exercise, Inclusive Planning, Statutory Obligations, Decentralization of Plan Process d. People's Participation, Gazette Notifications, Objections and Suggestions e. Plan Modifications, Review and Revision of Plan, Implementation of Plan</p> <p><b>Unit-4: Survey Techniques</b></p> <p>a. Data Requirement for Urban Planning, Primary and Secondary Data b. Types of Surveys and Sampling c. Questionnaire Design d. Measurement Scale and Their Application</p> <p><b>Unit-5: Analytical Methods</b></p> <p>a. Carrying Capacity, Threshold Analysis, b. Input-Output, Internal Rate of Return c. Lorenz Curve, Ginny's Coefficient, etc.</p>	
6.	<p>References: -</p> <p>i. Bandyopadhyay, A., (2000), Textbook of Town Planning, Books and Allied (P) Ltd. ii. Gallion, A. B., Eisner, S., &amp; Stoner, A., (1963), The urban pattern: city planning and design (p. 55), New York: Van Nostrand. iii. Urban and Regional Development Plan Formulation and Implementation (URDPFI) Guidelines (2014), Ministry of Housing and Urban Affairs, GoI iv. ITPI Reader and Reference Materials. v. Robert, M., (1974), A introduction to town planning techniques, Hutchinson Educational, University of California</p>	



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**Master of Technology (Urban Planning)  
Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Urban Infrastructure Planning</b>
3.	L-T-P Structure	4-0-0
4.	Credits/# of period	4
5.	<p>Course Syllabus:</p> <p><b>Unit-1: Water Supply</b></p> <ol style="list-style-type: none"> <li>a. Sources of Water Supply</li> <li>b. Water Quality, Quantity and Demand of Potable Water</li> <li>c. Collection and Conveyance</li> <li>d. Water Treatment Systems</li> </ol> <p><b>Unit-2: Sanitation</b></p> <ol style="list-style-type: none"> <li>a. Storm Water Drainage</li> <li>b. Water Harvesting System</li> <li>c. Wastewater Disposal Systems</li> <li>d. Sewage Disposal Methods</li> <li>e. Contemporary Practices</li> </ol> <p><b>Unit-3: Solid Waste Management</b></p> <ol style="list-style-type: none"> <li>a. Solid Waste Sources</li> <li>b. Solid Waste Management System</li> <li>c. Processing Methods &amp; Life Cycle Assessment</li> <li>d. Contemporary Practices</li> </ol> <p><b>Unit-4: Infrastructure Planning-I</b></p> <ol style="list-style-type: none"> <li>a. Urban Electrical Distribution System</li> <li>b. Introduction to Planning and Information and Communication Technologies</li> <li>c. Planning for Fire Protection Services</li> <li>d. Safety and Security</li> <li>e. Internet of Things and Various Futuristic Approaches</li> </ol> <p><b>Unit-5: Infrastructure Planning-II</b></p> <ol style="list-style-type: none"> <li>a. Education</li> <li>b. Health</li> <li>c. Community and recreational facilities</li> <li>d. Commercial and religious facilities</li> <li>e. Transit infrastructure</li> </ol>	
6.	<p>References: -</p> <ol style="list-style-type: none"> <li>i. Birdie, G. S., &amp; Birdie, J. S. (2013). Water Supply and Sanitary Engineering (including Environmental Engineering and Pollution control Acts).</li> <li>ii. Husain, S. K. (1974). Water supply and sanitary Engineering.</li> <li>iii. Manual of water supply &amp; treatment, 2nd edition, CPHEEO, Ministry of works and housing, New Delhi 1977</li> <li>iv. Manual on sewerage and sewerage treatment, CPHEEO – Ministry of works and housing, New Delhi, 1980.</li> <li>v. URFPFI Guidelines</li> <li>vi. Ramachandra, TV (2011) Integrated Management of Municipal Solid Waste.</li> </ol>	



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Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Remote Sensing and GIS in Urban Planning</b>
3.	L-T-P Structure	4-0-0
4.	Credits/# of period	4
5.	<p>Course Syllabus:</p> <p><b>Unit-1: Introduction</b></p> <p>a. Introduction to Remote Sensing</p> <p>b. Thermal Bands, Scales and Resolution</p> <p><b>Unit-2: Image Processing</b></p> <p>a. Image Restoration and Enhancement</p> <p>b. Image Classifications</p> <p>c. Photogrammetry</p> <p><b>Unit-3: Geographic Information Systems</b></p> <p>a. Introduction to GIS</p> <p>b. GIS Data (Vector and Raster)</p> <p>c. Use of GPS in GIS</p> <p>d. Crowdsourcing and Mobile Mapping</p> <p><b>Unit-4: Maps in GIS</b></p> <p>a. Coordinate System</p> <p>b. Projections</p> <p>c. Thematic Maps and Layers</p> <p><b>Unit-5: Applications of Remote Sensing and GIS</b></p> <p>a. Geospatial database creation such as preparation of base maps, attribute tables, etc.</p> <p>b. GIS mapping and modeling such as urban growth modeling, urban utility mapping, etc.</p> <p>c. Applications of GIS</p>	
6.	<p>References: -</p> <p>i. Gopi, S., (2007), Advanced surveying: total station, GIS and remote sensing, Pearson Education India.</p> <p>ii. Netzband, M., Stefanov, W. L., &amp; Redman, C. (Eds.), (2007), Applied remote sensing for urban planning, governance and sustainability, Springer Science &amp; Business Media.</p> <p>iii. Chou, Y. H., (1997), Exploring spatial analysis in GIS (Vol. 1), OnWord Press.</p> <p>iv. Unwin, D. J., &amp; Doornkamp, J. C., (1981), Introductory spatial analysis, London.</p> <p>v. David J Maguire et al, Spatial Analysis, and Modelling, ESRI Press</p> <p>vi. Weng, Q., (2009), Remote Sensing and GIS Integration: Theories, Methods, and Applications: Theory, Methods, and Applications, McGraw-Hill Education.</p> <p>vii. Lillesand, T., Kiefer, R. W., &amp; Chipman, J., (2014), Remote sensing and image interpretation, John Wiley &amp; Sons.</p>	



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**Master of Technology (Urban Planning)  
Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Planning Studio-I</b>
3.	L-T-P Structure	1-1-5
4.	Credits/# of period	4
5.	<b>Course Syllabus:</b> The studio is to be conducted with multiple assignments namely: a. Book Review b. City Evaluation c. Site Planning d. Local Area Development Planning, etc. The assignments are to be submitted in the format as described by the studio coordinator in time. The evaluation of the assignments is to be done through continuous assessment in the form of presentations, reviews, quizzes, etc.  For Local Area Development Planning exercise, the students may have to take a small town or a part of a bigger city to prepare the development plan of the same. For this, a study tour and excursion of the selected planning area will be conducted accompanied by concerned faculty members and a report in the shape of Preliminary Development Plan is to be submitted by the end of the semester.	



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**Master of Technology (Urban Planning)  
Semester-I**

1.	Department proposing the course	Architecture and Planning
2.	Course Title	<b>Elective-I (Environmental Planning and Disaster Management)</b>
3.	L-T-P Structure	0-2-2
4.	Credits/# of period	2
5.	<p><b>Course Syllabus:</b></p> <p><b>Unit-1: Introduction</b></p> <p>e. Introduction to environmental planning</p> <p>f. Environmental degradation (environmental concerns and challenges) and its impact on Various ecosystems</p> <p>g. Climate change and its impact on urban areas</p> <p><b>Unit-2: Environmental Policies &amp; Legislation</b></p> <p>a. Introduction and Historical Overview of Environmental Policies</p> <p>b. National environmental policies, programmes and other environmental acts, laws and notifications in India</p> <p>c. World summits to safeguard the environment like Climate Change Commission, Kyoto Protocol, etc.</p> <p><b>Unit-3: Environmental Impact Assessment and Audit</b></p> <p>a. Introduction to EIA: Purpose of EIA, Steps in EIA Process, Hierarchy in EIA,</p> <p>b. EIA Methods and Techniques</p> <p>c. Environmental Audits: Alternative evaluation, determination of environmental impact importance, weightages, Measurement of Impacts, etc.</p> <p>d. EIA reports content, basis and criteria for evaluation and evaluation procedures, etc.</p> <p><b>Unit-4: Disaster Mitigation and Management</b></p> <p>a. Types of Disasters, Disaster Management Techniques</p> <p>b. Disaster Management Agencies, their Roles and responsibilities, Integrating disaster mitigation in the spatial planning process</p> <p>c. Hazard and vulnerability assessment, Pre-disaster mitigation</p> <p>d. Safety management systems, Disaster risk reduction, etc.</p> <p><b>Unit-5: Disaster Policies and Mitigation</b></p> <p>a. Policies and Legislation at various levels</p> <p>b. Disaster Management Act, Disaster Management Plan, etc.</p> <p>c. Case studies and best practice in India and Abroad.</p>	
6.	<p>References: -</p> <p>i. Daniels, T. L. (2019). The environmental planning handbook for sustainable communities and regions. London: Routledge.</p> <p>ii. Biswas, A. K. (1987). Environmental impact assessment for developing countries. Tycooly Internat.</p> <p>iii. Canter, L. W. (1977). Environmental impact assessment. New York: McGraw-Hill.</p> <p>iv. EIA Manual, Ministry of Environment and Forests, Govt. of India</p> <p>v. National disaster management guidelines: Preparation of state disaster management plans, National disaster management authority, Government of India</p> <p>vi. Ghosh, G. K. (2006). Disaster management. A.P.H. Pub. Corp.</p>	





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Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Elective-I (Energy, Climate Change and Urban Development)</b>
3.	L-T-P Structure	0-2-2
4.	Credits/# of period	2
5.	<p>Course Syllabus:</p> <p><b>Unit-1: Energy Usage in Urban Areas</b></p> <p>a. Energy usage in residential, commercial, government uses / facilities, industries, etc. b. Energy usage in transport, urban physical infrastructure, etc. c. Sources of energy supply in urban areas.</p> <p><b>Unit-1: Introduction</b></p> <p>a. Energy, Climate change and Urban development interface b. Relationship between City forms, Energy consumption, and Effects on climate c. Types of Energy - usage in Urban areas</p> <p><b>Unit-2: Energy Generation and Consumption</b></p> <p>a. Energy Supply and Demand, b. Determinants of Energy demand, phenomenon of climate change, factors influencing climate change, c. Indicators and Impacts of climate change (Atmospheric Aerosol, Greenhouse Gas, Ozone Depletion, etc.)</p> <p><b>Unit-3: Energy Planning and Management</b></p> <p>a. Existing climate change, measurement scale and its prediction b. Energy efficient development c. Effects on Energy consumption through Compact city forms and Transit oriented development</p> <p><b>Unit-4: Plans, Policies and Strategies</b></p> <p>a. Policies to combat Climate Change and Energy Conservation b. Sustainable development goals, policies, and strategies c. Polluter Pay Principle and incentives measures</p> <p><b>Unit-5: Energy Related Climate Action</b></p> <p>a. Climate change mitigation and adaptation at city levels b. Role of Intergovernmental Summits and Treaties on Climate Change (IPCC, etc.) c. Case studies and best practices in India and abroad</p>	
6.	<p>References: -</p> <p>i. Wilbanks, T., Bilello, D., Schmalzer, D., &amp; Scott, M, Climate change and energy supply and use: Technical report for the U.S. department of energy in support of the national climate assessment. Washington, DC: Island Press. 2013.</p> <p>ii. Frank T. Princiotta, Global climate change - The technology challenge, Springer, 2011.</p> <p>iii. IPCC (Intergovernmental Panel on Climate Change) 1990. Climate Change: The IPCC Assessment. Cambridge University Press, Cambridge.</p> <p>iv. Sorokhtin, O.G., Chilingar, G.V. and Khilyuk, L.F. Global warming and global cooling: Evolution of climate and earth, Elsevier, 2007.</p> <p>v. Fouquet R., Handbook on energy and climate change, Edward Elgar Publishing, U.K., 2015.</p> <p>vi. Cherian A., Energy and global climate change: Bridging the sustainable development divide, Wiley Publisher, 2015.</p> <p>vii. Dash, S.K., (2007) Climate change: an Indian perspective, Cambridge University Press</p>	



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Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Elective-II: Housing and Community Planning</b>
3.	L-T-P Structure	0-2-2
4.	Credits/# of period	2
5.	<p>Course Syllabus:</p> <p><b>Unit-1: Introduction</b></p> <p>a. Definition, Terminologies and Understanding of Housing.</p> <p>b. Introduction to Housing Typology and Classification (as per income, ownership, urban form, etc.)</p> <p>c. Physical, Social and Economic Aspects of Housing, Role of Different Players: User; Producer and Policymaking</p> <p>d. Concept of community housing</p> <p><b>Unit-2: Housing situation and scenarios</b></p> <p>a. Timeline of housing evolution in India and the global context</p> <p>b. Tools and techniques in housing quantitative assessment.</p> <p>c. Housing economics (concept of demand and supply, real estate)</p> <p>d. Housing delivery mechanism (Core housing, site and services schemes etc.)</p> <p><b>Unit-3: Housing Finance and Special Housing</b></p> <p>a. Housing Finance and the role of financial institutes</p> <p>b. NPV/IRR, Sinking Funds</p> <p>c. Special housing (Rental housing, Housing for Singles, Old Aged, Rehabilitation Housing, etc)</p> <p><b>Unit-4: Affordable and Informal Housing</b></p> <p>a. Informal housing origin, typologies and solutions</p> <p>b. Slums its characteristics, and slum redevelopment models</p> <p>c. Affordable housing its characteristics and determinants.</p> <p><b>Unit-5: Housing Policy and Legislation</b></p> <p>a. Housing Agendas (National Housing Policy, Slum Rehabilitation, etc.)</p> <p>b. Government housing schemes PMAY, IAY, RAY etc</p> <p>c. Legislation related to Housing, Reforms in housing</p>	
6.	<p>References: -</p> <p>i. Bandyopadhyay A. (2010) Textbook of Town Planning, Kolkata, India.</p> <p>ii. Jain, A. K. (2009). Urban Housing and slums. Global Media</p> <p>iii. Shah, U. C. (2015). Lectures on planning legislation. Suvidha Law house Indore, India</p> <p>iv. Jain, A.K. (2019). Housing for all , design construction and management., Khanna Publishing</p>	





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Semester-I**

1.	Department	Architecture and Planning
2.	Course Title	<b>Elective-II (Special Area Planning)</b>
3.	L-T-P Structure	0-2-2
4.	Credits/# of period	2
5.	<p>Course Syllabus:</p> <p><b>Unit-1: Planning for Mining Towns</b></p> <p>a. Associated issues</p> <p>b. Planning Strategies</p> <p>c. Special considerations for Mining Towns</p> <p>d. Aspects of planning</p> <p><b>Unit-2: Inner City Developments</b></p> <p>a. Evolution and Historical Background</p> <p>b. Associated issues</p> <p>c. Alternative strategies for Redevelopment and Regeneration</p> <p>d. Aspects of revival</p> <p><b>Unit-3: Industrial City Development</b></p> <p>a. Associated issues</p> <p>b. Planning Strategies</p> <p>c. Land use structures</p> <p>d. Aspects of planning</p> <p><b>Unit-4: Heritage/Religious/Tourism Cities</b></p> <p>a. Associated issues</p> <p>b. Planning Strategies</p> <p>c. Land use structures</p> <p>d. Aspects of preservation, conservation and promotion</p> <p><b>Unit-5: Tribal Settlements</b></p> <p>a. Culture of settlements</p> <p>b. Associated issues</p> <p>c. Planning Strategies</p> <p>d. Aspects of restoration and promotion</p>	
6.	<p>References: -</p> <p>i. Siddhartha, K., &amp; Mukherjee, S., (2000), Cities Urbanisation, and Urban Systems, Kisalaya Publications.</p> <p>ii. Lo, C. P., &amp; Yeung, A. K. (2007), Concepts and techniques of geographic information systems (2eds), Upper Saddle River (NJ), Prentice-Hall, Inc.</p> <p>iii. PHI Learning Private Limited, Planning Techniques for AITP</p> <p>iv. Reader on Institute of Town Planners India,</p> <p>v. URDPFI Guidelines Volume 1, Ministry of Urban Affairs and Employment Govt. of India, New Delhi</p> <p>vi. Bailey, T. C., &amp; Gatrell, A. C., (1995), Interactive spatial data analysis (Vol. 413), Essex: Longman Scientific &amp; Technical.</p>	