Model Curriculum for

Master of Planning

2020

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi 110070

www.aicte-india.org
MESSAGE

The quality of technical education depends on many factors but largely on-outcome based socially and industrially relevant curriculum, good quality motivated faculty, teaching learning process, effective industry internship and evaluation of students based on desired outcomes. Therefore, it was imperative that a Model Curriculum be prepared by best experts from academia and industry, keeping in view the latest industry trends and market requirements and be made available to all universities / board of technical education and engineering institutions in the country. AICTE constituted team of experts to prepare the model curriculum of Masters of Planning. Similar exercise is done for other UG, Diploma and PG level in engineering, MBA, PGDM, etc.

It comprises of Masters of Planning courses, having focus on fundamentals, significant discipline level courses and ample electives both from the disciplines and cross disciplines including emerging areas all within a cumulative structure of 80 credits. Professional Training/Summer Internships have been embedded to make the student understand the industry requirements and have hands on experience. These features will allow students to develop a problem-solving approach to face the challenges in the future and develop outcome based learning approach.

AICTE places on record, special thanks to Prof. Sunil Jha, Prof. Ashok Kumar, Prof. N. Sridharan, Prof Utpal Sharma and Dr. Debjani Ghosh. We are sure that this Model Curriculum will help to enhance not just the employability skills but will also enable youngsters to become job creators.

We strongly urge the institutions / universities / boards of planning in India to adopt this Model Curriculum at the earliest. This is a suggestive curriculum and the concerned university / institution / board should build on and exercise flexibility in readjustment of courses within the overall 160 credits.

(Prof. Anil D. Sahasrabudhe)
Chairman
All India Council for Technical Education
Preface

Revision of the Model Curriculum of Master of Planning was long overdue for various reasons. First, over a decade has passed since the first model curriculum for an undergraduate programme in planning was prepared. Minor revisions however were undertaken in 2012. Asking relevant experts to prepare syllabus of each subject, the Institute of Town Planners’ India played a pivotal role in the preparation of the previous model curriculum, which was used by several planning schools to kick start their own Master of planning programmes. Second, major economic and technological changes in the society have taken place since the previous revision of the model curriculum. Third, Government of India has given a big push to broad base urban and regional planning. Additionally, there has been a constant demand from the private academic institutions to revise the model curriculum in line with the prevailing social, economic and technological transformations.

New Model Curriculum for Master of Planning programme obviously has several new features in line with changing pedagogical advancements. For example, each subject is written in a standard format created by the AICTE, starting with course objectives; course content divided uniformly into four units for each subject; upto date relevant texts and references; and lastly, course outcomes i.e. what students are expected to learn from each course. New audit courses are also added with zero credits. Audit courses are expected to create rounded personalities of professional planners. More emphasis on professional and open electives has been placed in this model curriculum, aimed at offering students comparatively better choices. Only one open elective is offered in each semester starting in the fourth semester because, in planning schools, open electives are routinely offered by other departments of studies.

A Committee was set up by the All India Board of Town and Country Planning (AIB-TCP) for the preparation of the new Model Curriculum for Bachelor of Planning and Master of Planning in late 2018. Members of the Committee included the following distinguished academics:

Professor Ashok Kumar - Chairman SPA, New Delhi
Professor N. Sridharan - Member SPA, Bhopal
Professor Utpal Sharma - Member Nirma University, Ahmedabad
Dr. Debjani Ghosh - Member NIUA, New Delhi

The first meeting of the Committee was held on 13 December 2018 at the AICTE headquarters in Delhi in which the basic structure of the model curricula was decided. It was decided that the basic structure of both undergraduate and postgraduate programmes would include core courses, studios, thesis, training opportunities, and professional and open electives. It was further decided that training would be made compulsory, marked, supervised and of a comparatively longer time duration. It was further decided that studios and studio related field trips would be made compulsory and duration of the field trips should range from 10 to 15 days.

Furthermore, we decided that new model curriculum preparation exercise would be carried out through a consultative process with relevant stakeholders. In this vein of thinking, we found an opportune moment in the ITPI Congress, which was held from 4 to
5 January 2019 in Chandigarh. A workshop with the stakeholders – largely professional planners – was held on 5 January 2019 in Chandigarh and a litany of suggestions and recommendations was made, several of which have been included in the new model curriculum of both courses. The delegates suggested that the new subjects such as Public Policy, Public Finance, Urban and Regional Governance, Climate change, New Urban Agenda, and SDGs, Project Evaluation, Urban Agriculture, Village Planning, and Rural Development should be introduced. They also suggested that students should be taught mapping technologies like GIS, and should have good understanding of ‘data science’ such as ‘Urban Science’. It was also suggested that a longer time period should be allocated for professional training. They argued that students should have deeper knowledge of matters related to land, and reading of revenue records, land procurement, development and management. Equally important are matters pertaining to equity and justice alongside understanding of markets. Delegates at the Congress also suggested that students should learn about the energy needs of our cities and towns.

The Committee also examined the syllabi of SPA Bhopal and SPA New Delhi alongside the existing Model Curriculum of AICTE prepared in 2008 with minor revisions in 2012. We found that Bhopal has followed the same syllabus as the AICTE 2012. SPA Delhi has different sequencing of subjects. In the first year, the AICTE and SPA Bhopal syllabi had more design orientation while SPA New Delhi had more social science orientation. A roundtable at the Xavier University was also held on 8 November 2019 where a large number of students, faculty and professionals attended the event and gave their valuable feedback.

Several individuals and organizations have played a critical role in the preparation of the new Model Curriculum for Master of Planning. It may not be possible to thank all of them formally. We would like to express our gratitude to a large number of individuals and organizations without whose help new Model Curriculum for Master of Planning could not be prepared. First of all we would like to thank the AICTE for providing this opportunity to prepare the new Model Curriculum for Master of Planning to us. We are particularly grateful to Prof. Chetan Vaidya, then Chairperson of the All India Board of Town and Country Planning (AIB-TCP) for encouraging us not only to complete this work speedily but also innovatively. As always we are grateful to Professor D.S. Meshram, President ITPI, for guiding us throughout this exercise. Two colleagues, Professor Poonam Prakash and Professor Rabidyuti Biswas have played a pivotal role in the preparation of the new Model Curriculum for Master of Planning. The Committee is extremely grateful to both of them for their contributions. We would also like to thank our own institutions for providing us with all the support needed for the preparation of the revised and new curriculum.

Special thanks to Prof. Anil D. Sahasrabudhe, Chairman; Prof. M.P. Poonia, Vice-Chairman, Prof. Rajive Kumar, Member Secretary, AICTE and Prof. Dileep N. Malkhede, Advisor – I, Policy and Academic Planning Bureau, AICTE who all have been instrumental and encouraging throughout the process of development of this model curriculum.

I appreciate the dedication put by the Dr. Pradeep C. Bhaskar, Assistant Director (P&AP); Mr. Dharmesh Kumar Dewangan, Young Professional (P&AP); Mr. Rakesh Kumar Pandit Young Professional (P&AP); and other office staff of AICTE.
In the end we would like to underscore that the new Model Curriculum for Master of Planning is the outcome of critical analyses of some of the existing syllabi, contributions of the duly constituted Committee, contributions of our colleagues, and consultative events undertaken in New Delhi, Chandigarh and Bhubaneshwar. However, all omissions and commissions are the responsibility of the Committee alone.

Professor Ashok Kumar
Chairman, Model Curriculum Committee
## Committee for Model Curriculum of Master of Planning

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation and Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashok Kumar, Ph.D.</td>
<td>Chairman and Professor of Physical Planning, School of Planning and Architecture, 4 Block B, I.P. Estate, New Delhi – 110002, NCT Delhi.</td>
</tr>
<tr>
<td>N. Sridharan, Ph.D.</td>
<td>Member and Director, School of Planning and Architecture, Neelbad Road, Bhauri, Bhopal - 462030, Madhya Pradesh.</td>
</tr>
<tr>
<td>Utpal Sharma, Ph.D.</td>
<td>Member and Director, Institute of Architecture and Planning, Nirma University, Sarkhej-Gandhinagar Highway, Gota, Ahmedabad – 382481, Gujarat.</td>
</tr>
<tr>
<td>Debjani Ghosh, Ph.D.</td>
<td>Member and Associate Professor, National Institute of Urban Affairs, 1 and 2 Floor, Core 4B, India Habitat Centre, Lodhi Road, New Delhi - 110003, NCT Delhi.</td>
</tr>
</tbody>
</table>
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<table>
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<tr>
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<th>Title</th>
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<th>To</th>
</tr>
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<tbody>
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<td>1.</td>
<td>General Course Structure and Theme</td>
<td>1</td>
<td>8</td>
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<tr>
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<td>Semester Wise Structure</td>
<td>9</td>
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<td>3.</td>
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<td>22</td>
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<td>34</td>
</tr>
<tr>
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</tr>
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<td>8.</td>
<td>Appendix-II</td>
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<td>68</td>
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</table>
GENERAL COURSE STRUCTURE AND THEME
GENERAL COURSE STRUCTURE AND THEME

A. **Definition of Credit:**

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Credits</th>
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<tbody>
<tr>
<td>1 Hour Lecture (L) per week</td>
<td>1 Credit</td>
</tr>
<tr>
<td>1 Hour Tutorial (T) per week</td>
<td>1 Credit</td>
</tr>
<tr>
<td>1 Hour Practical (P) per week</td>
<td>0.5 Credit</td>
</tr>
<tr>
<td>2 Hour Practical (P) per week</td>
<td>1 Credit</td>
</tr>
</tbody>
</table>

B. **Range of Credits:** In the light of the fact that a typical Model Four Year Under Graduate Degree program in Engineering has about 160 credits, the total number of credits proposed for the two-year Master of Urban and Regional Planning is 80.

C. **Structure of Master of Planning Program:** The structure of Master of Urban and Regional Planning program shall have essentially the following categories of courses with the breakup of credits as given below:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Humanities and Social Science Courses</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Urban and Regional Planning Core Courses</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>Professional Elective Courses (Branch Specific Electives)</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Open Elective Courses (Cross Discipline Electives)</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Studios, Dissertation, and Professional Training (Practicals)</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Audit Courses (Non-credit)</td>
<td>--</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>80</td>
</tr>
</tbody>
</table>

D. **Course Code and Definition:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Definitions</th>
</tr>
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<tbody>
<tr>
<td>L</td>
<td>Lecture</td>
</tr>
<tr>
<td>T</td>
<td>Tutorial</td>
</tr>
<tr>
<td>P</td>
<td>Practical</td>
</tr>
<tr>
<td>C</td>
<td>Credits</td>
</tr>
</tbody>
</table>

E. **Course level coding scheme:** Following terminology is used for subject code: 
**MPC:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH</td>
<td>Humanities and Social Science Courses</td>
</tr>
<tr>
<td>MPC</td>
<td>Urban and Regional Planning Core Courses</td>
</tr>
<tr>
<td>MPPE</td>
<td>Professional Elective Courses (Branch Specific Electives)</td>
</tr>
<tr>
<td>MPOE</td>
<td>Open Elective Courses (Cross Discipline Electives)</td>
</tr>
<tr>
<td>MPS</td>
<td>Studio Work</td>
</tr>
<tr>
<td>MPDPT</td>
<td>Dissertation and Professional Training</td>
</tr>
<tr>
<td>MPAU</td>
<td>Audit Courses (Non-credit)</td>
</tr>
<tr>
<td>MPTH</td>
<td>Thesis</td>
</tr>
</tbody>
</table>
F. Category-wise Courses

**HUMANITIES AND SOCIAL SCIENCES COURSES [HS]**

(i) Number of Humanities and Social Science Courses: 3  
(ii) Credits: 7

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>HS101</td>
<td>Economics and Sociology</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>HS102</td>
<td>Fundamentals of Management</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>II</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>HS201</td>
<td>Introduction to Philosophy</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>III</td>
<td>2</td>
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</table>

*Total Credits* 7

**PLANNING CORE COURSES [MPC]**

(i) Number of Planning Core Courses: 11  
(ii) Credits: 31

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>MPC101</td>
<td>Planning History and Theory</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MPC103</td>
<td>Planning Techniques</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MPC105</td>
<td>Transport Planning</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MPC107</td>
<td>Housing and Environment Planning</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MPC102</td>
<td>Metropolitan Regional Planning</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>II</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>MPC104</td>
<td>Infrastructure Planning</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>II</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>MPC201</td>
<td>Urban and Regional Governance</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>II</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>MPC203</td>
<td>Risks, Disaster Mitigation and Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>III</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>MPC202</td>
<td>Planning Legislation</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>IV</td>
<td>3</td>
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<tr>
<td>10.</td>
<td>MPC204</td>
<td>Planning Practice</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>IV</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>MPC206</td>
<td>Development Finance</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>IV</td>
<td>3</td>
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</table>

*TOTAL* 31
PROFESSIONAL ELECTIVE COURSES [MPPE]

(i) Number of Professional Elective Courses: 2
(ii) Credits: 6

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>MPPE102</td>
<td>• Public Policy and Politics OR • Big Data and Data Analytics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>II</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MPPE201</td>
<td>• Real Estate Development and Management OR • Participatory and Integrated Urban Development</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>III</td>
<td>3</td>
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</table>

**Total Credits** 6

OPEN ELECTIVE COURSES [MPOE]

(i) Number of Open Elective Courses: 2
(ii) Credits: 6

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>MPOE102</td>
<td>• Water Security and Planning OR • Universally Accessible Built Environments</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>II</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MPOE202</td>
<td>• Urban and Regional Planning in India OR • Urban Information Systems and Spatial Analysis</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>IV</td>
<td>3</td>
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</table>

**Total Credits** 6
STUDIOS, DISSERTATION, PROFESSIONAL TRAINING AND THESIS [MPS]

(i) Number of Courses: 5
(ii) Credits: 30

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>MPS101</td>
<td>Area Planning Studio</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>I</td>
<td>6</td>
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<tr>
<td>2.</td>
<td>MPS102</td>
<td>Urban Planning Studio</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>II</td>
<td>6</td>
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<tr>
<td>3.</td>
<td>MPS201</td>
<td>Dissertation and Professional Training</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>III</td>
<td>6</td>
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<tr>
<td>4.</td>
<td>MPS203</td>
<td>Regional Planning Studio</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>III</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>MPS202</td>
<td>Thesis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>IV</td>
<td>6</td>
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</tbody>
</table>

Total Credits 30

AUDIT COURSES

(i) Number of Open Elective Courses: 2
(ii) Credits: 0

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>AU102</td>
<td>Sports and Yoga</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>II</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>AU202</td>
<td>Indian Constitution</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>IV</td>
<td>0</td>
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</tbody>
</table>

Total Credits 0

Note: These are mandatory non-credit courses.

G. Mandatory Visits, Workshops, Expert Lectures:
   a. It is mandatory to arrange one industrial visit every semester.
   b. It is mandatory to conduct a one-week workshop during the winter break after fifth semester on professional or industry or entrepreneurial orientation.
   c. It is mandatory to organize at least one expert lecture per semester for each branch by inviting resource persons from domain specific industry.

H. Evaluation Scheme (Suggestive only)

   a. **For Theory Courses:** The weightage of Internal Assessment is 50 per cent and for End Semester Examinations is 50 per cent. The student has to obtain at least 40 per cent marks individually both in Internal Assessment and End Semester Examinations to pass.

   b. **For Practical Courses:** The weightage of Internal Assessment is 60 per cent and for End Semester Examinations is 40 per cent. The student has to obtain at least 40 per cent marks individually both in Internal Assessment and End Semester Examinations to pass.
c. For Dissertation & Professional Training, Thesis, Seminar, etc.:
Evaluation is based on work done, quality of report, performance in viva-voce, presentation, etc.

Note: Internal Assessment may be based on the student’s performance in mid semester tests (two best out of three), quizzes, assignments, class performance, attendance, viva-voce in practical, lab records, etc.

I. Mapping of Marks to Grades
Each course (Theory/Studio) is to be assigned 100 marks, irrespective of the number of credits, and the mapping of marks to grades may be done as per the following table:

<table>
<thead>
<tr>
<th>Range of Marks</th>
<th>Assigned Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-100</td>
<td>AA/A+</td>
</tr>
<tr>
<td>81-90</td>
<td>AB/A</td>
</tr>
<tr>
<td>71-80</td>
<td>BB/B+</td>
</tr>
<tr>
<td>61-70</td>
<td>BC/B</td>
</tr>
<tr>
<td>51-60</td>
<td>CC/C+</td>
</tr>
<tr>
<td>46-50</td>
<td>CD/C</td>
</tr>
<tr>
<td>40-45</td>
<td>DD/D</td>
</tr>
<tr>
<td>&lt; 40</td>
<td>FF/F (Fail due to less marks)</td>
</tr>
<tr>
<td></td>
<td>FR (Fail due to shortage of attendance and therefore, to repeat the course)</td>
</tr>
</tbody>
</table>

*****
SEMESTER WISE STRUCTURE
## SEMESTER I

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MPC101</td>
<td>Planning History and Theory</td>
<td>3</td>
<td>0</td>
<td>0</td>
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^Mandatory (Non Credit) Audit Course

Following courses may be taken under ‘Professional Elective-I’:
1. Public Policy and Politics
2. Big Data and Data Analytics

Following course may be taken under ‘Open Elective-I’:
1. Water Security and Planning
2. Universally Accessible Built Environments

## SEMESTER III

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Following courses may be taken under ‘Professional Elective-II’:
1. Real Estate Development and Management
2. Participatory and Integrated Urban Development
**Note:** Students will undergo professional training in a department approved organization on a project for 2 months. This will be supervised training by a senior professional from the organization. Satisfactory completion of training will be mandatory for the award of a degree. Out of six credits, two credits will be awarded after evaluation by the faculty for successful completion of training as reflected in MPS201.

### SEMESTER IV

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^Mandatory (Non-Credit) Audit Course

Following course may be taken under ‘Open Elective-II’:
1. Urban and Regional Planning in India
2. Urban Information Systems and Spatial Analysis
SEMESTER – I
**SEMESTER I**

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**Course Objective:** Planning History covers ancient and medieval cities in India and Mughal and colonial built environments in the country. In Planning History course, the following objectives are followed:

- To critically understand economic, political, cultural, social and other forces shaping built environments in history.
- To examine the significance of histories as they inform the present planning of settlements.

As far as Planning Theory is concerned, the chief goal is not to replace conventional theories with non-conventional ones, but identify under what conditions any set of theoretical propositions hold. Hence, identifying conditions which determine development and planning outcomes is crucial. One assumption that underlies this pedagogical approach is that it encourages unconventional thinking, and reflection in action—and not planning prescriptions based on pre-conceived ideas. Following are the course objectives of Planning Theory:

- To learn to have a general, and substantive command of the spectrum of past and present perspectives regarding planning theory.
- To learn to write clearly and concisely about abstract planning concepts.

**Course Contents:**

**Unit 1: Ancient and Medieval Cities in India**
Urbanization in the Medieval period including a study of cities like Varanasi, Mohenjo-Daro, Harappa, Dholavira and Lothal; Chola dynasty sponsored famous towns like Thanjavur, Nagapattinam, Kanchipuram and Madurai; Why India could not become urbanized during the medieval period?

**Unit 2: Mughal and Colonial Built Environment**
Mughals and Vijayanagara Kingdoms built grand cities like Shahjahanabad in the north and Hampi – the capital of Vijayanagara Kingdom in the south; Mughal towns and cities; City and regional planning during the British Raj involving cantonments, model towns, capital towns like New Delhi; Regional planning efforts involving development of port cities such as Bombay, Madras, Calcutta, etc.; Construction of railways, and road networks; The Portuguese port towns of Cochin, Cannanore, Goa, Daman and Diu. Contributions of scholars like Sir Patrick Geddes to Indian planning; Governance and planning legislation during the British period include a study of improvement trusts, municipalities, etc.
Unit 3: Urban Theories
Concentric Zone Theory, Sector Theory, and Multiple Nuclei Theory with a focus on the contributions of Robert E. Park, Louis Wirth, etc.; Land Use and Land Value Theory of William Alonso; From the world city to the global city.

Unit 4: Theories of Planning
Rational Planning Model; Advocacy Planning Model; Political Economy Model; Equity Planning Model; Radical Planning model; Collaborative Planning Theory.

Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
- To demonstrate appreciation and knowledge of histories of planning.
- To explain and analyse abstract theoretical formulations.

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Course Objective: This course intends to impart knowledge about preparation of maps and undertake data collection and analysis for plan preparation.

Course Contents:

Unit 1: Scales and Preparation of Maps
Maps as a representation of reality, Elements of Maps; Graphical, linear and areal scales, Notations involving basic discipline of maps; Measurement of areas; Learning to prepare base maps; Contents of base maps at various scales; Choice of appropriate scales for region and settlement level plans, town development plans, zonal development plans, layout plans.
Unit 2: Data for Planning and Socio-Economic Surveys
Data requirements for urban and regional planning; Sources of primary and secondary data; Quantitative and Qualitative methods of data collection, Validity and reliability of data, Questionnaire design, measurement scales and their applications, sampling techniques, types of socioeconomic surveys; Self-surveys, interviews, mailed questionnaires and observer participation, focus groups etc.

Unit 3: Physical Surveys
Techniques of conducting surveys for land use, building use, density, structural condition of buildings, heights of buildings, land utilization and physical features of land; Data requirements for various types of regional plans; Techniques for conducting regional surveys.

Unit 4: Analysis and Presentation of Data
Land suitability analysis, Land use classification, coding and analysis; residential and non-residential density patterns and their analyses; population and economic analysis. Tabulation of data, graphical presentation of data; Preparing pie diagrams, histograms, bar charts, normal, semi-log and double log graphs and their uses; colour, black and white presentation techniques; Understanding the discipline of illustrations and tables. Colour, black and white presentation techniques; Basic discipline of presenting illustrations; Presentation of spatial data, analysis and proposals.

Text Books and References:  

Course Outcomes: Upon the completion of this course, the students would be able:  
- To create base maps and present planning information on maps.  
- To analyse the types of data required for planning and methods of data collection.  
- To demonstrate an understanding about data analysis and to be able to examine data for understanding the existing situation in a settlement.

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Course Objective:
• To familiarize students with different transport systems, and also principles, practices and policies of transportation planning.
• To learn the basic concepts of planning and designing transport facilities and traffic management tools for human settlements.

Course Contents:
Unit 1: Transport System
Types and characteristics of transport systems; Determinants of transport demand; Planning norms and standards; Principles of transport infrastructure planning and design of roads and intersections, street infrastructure elements; Pedestrian and cyclist infrastructure; Parking facilities; and Principles of traffic management.

Unit 2: Land use – Transport Integration
Land use transport integration: definitions and concepts, land use transport cycle, importance of accessibility; Factors affecting land use-transport integration, and tools for land use-transport integration; Key elements of integration; Integrating land use and transport in the planning process; Institutional integration and legal mechanisms for integration.

Unit 3: Traffic Impact on Land Development
Principles of traffic impact analysis, land development attributes, traffic generation rates of different land use; Land development impact on traffic congestion on road segments, intersections and parking, impact on public transportation, pedestrian traffic and safety.

Unit 4: Transport Planning Policies and Projects
Transport planning policies of central and state governments; Transit Oriented Development: Definition, concepts and key components; Principles of TOD, planning norms and standards of TOD, pre-requisites of TOD, financing of TOD projects, role of stakeholders; Golden Quadrilateral project, corridor development projects, expressway projects; Metro rail networks projects of urban and regional significance.

Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
• To plan for the conduct of field survey, examine and analyse data and information collected through various field surveys, perform analysis.
• To make presentations of traffic and transportation data in relation to human settlements and to identify the issues related to traffic and transportation planning.
Course Objective: The first part of this course provides an understanding about the nature of housing problems, and various programmes and policies initiated to deal with these problems in Indian cities and villages. The second part focuses on the significance of physical environment and its various parameters as they relate to plan preparation and implementation processes.

Course Contents:

Unit 1: Problem of Housing
Significance of housing in economic and social development; Basic Terms in housing, understanding concepts of Housing need, demand, supply and shortage; Housing data analysis from Census; Housing typologies; Housing development process; Nature of housing problem in urban and rural India, Public health issues in housing; Housing for the poor, houselessness in India, old housing,

Unit 2: Housing Policy and Finance
Evolution of housing policy in India, Role of the government and private sector in housing; housing programmes for the poor and night shelters; Examples of housing projects, Introduction to housing finance; Affordability and Cost of housing; Role of Financing organisation. Critical Review of Current housing programmes

Unit 3: Ecosystem, Urban Ecosystem and Quantitative Ecology
Eco-system and their relevance to environment, Impact of advanced agriculture-methods, urbanization and industrialization on nature; Pollution, types, sources, remedies; Urban ecosystem approach, evolution and significance; Introduction to quantitative ecology, Identification of ecological parameters for planning at different levels, Site planning, Settlement planning, Regional planning. Data needs, formats for data collection Types of analysis required to evolve ecological parameters; Environmental impact assessment, Methods and their appraisal, preparation and analysis of resource inventories and resource matrices.

Unit 4: Resource Planning and Management
Finiteness of resources, examples of transfer from one resource to another in history in different parts of world; Development, utilization and conservation of resources, resource planning, integrated resource planning approach; Resource regions, their problems and potentials; Resource management, traditional and contemporary approaches. Resource development in India, some selected areas (energy, water, manpower, etc.); and Government’s 8 missions under the National Action Plan on Climate Change.

Text Books and References:

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To investigate and analyse the nature of housing problem in India.
- To examine the housing policy and programmes in India.
- To analyse the eco-system and resources and their importance for planning.
- To appraise the environment parameters for consideration while planning.

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**Course Objective:** Area planning studio intends to develop an ability in students to apply the concepts learnt in theory subjects to day to day planning practice. Through field visit, the students would understand comprehensive, interrelatedness and long-term nature of planning in a settlement.

**Course Contents:** This course provides basic introduction to GIS and Statistics to be applied to relevant exercises. Developing an appreciation of components of a settlement and develop an ability to read a city or small settlement. Second part of the studio will require the students to prepare a development plan for a neighbourhood or village for rural and urban areas based on a field visit. As planning endeavour is a team work, it is expected in this studio, the students make a beginning to learn to work in collaborative environments.

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To develop data collection and analytical skills through field surveys and analysis for the purposes of plan preparation.
- To apply theoretical concepts to the real world situations.
- To develop sensitivity to group dynamics and working in teams.
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**Course Objective:** To learn the nature of sociological and economic forces, and how they shape human settlements.

**Course Contents:**

**Unit 1: Culture and the City**
Learning how culture and the city are folded into each other and how they shape each other; Man and environment relationship; Traditional patterns and trends of change in the Indian society; Concept of social structure and agency, culture and social institutions; Relations between social structures and spatial structures; Social aspects of housing and social problems in slums.

**Unit 2: Economic Resources**
Defining economic resources, typology of goods, production economics, processes, laws, products and costs; Economies of scale including external economies; Valuation and typology of markets; and other macro-economic concepts.

**Unit 3: Economic Analysis**
Basics of economic analysis; Economic principles and land uses; Relationship between economic rent, land use patterns and land values.

**Unit 4: Land and Real Estate Markets**
Understanding the institution of the private property; Development of land and real estate and property markets; Financial balance sheet of land development; Private ownership and social control over land.

**Text Books and References:**


**Course Outcomes:** Upon the completion of this course, the students would be able:

- To express basic understanding of sociological processes generally as they relate to urban and regional planning.
- To develop basic understanding of some of the key economic concepts and their application in planning.
- To analyse the working real estate markets and evaluate the nature of these markets.
SEMESTER – II
Course Objective: The first objective of this course is to understand various aspects and dimensions of large and growing cities generally. The second objective is to understand the processes of planning and development of metropolitan cities and regions in India along with comprehending relevant development plans. The third objective is to understand the processes leading to the peripheralization of metropolitan cities.

Course Contents:

Unit 1: Metropolitan Cities, Agglomerations and Regions
Defining cities, metropolitan cities, mega cities, metropolitan agglomerations, conurbations, and metropolitan regions; Physical, economic and political structures of metropolitan regions; and Globalisation and extended metropolitan region; desakota model, and territoriality of rural-urban interactions.

Unit 2: Metropolitan Regional Planning
Theories about the evolution of metropolitan regions; Techniques for the delineation metropolitan regions; Approaches to preparing metropolitan regional plans; Organizations involved in the planning of metropolitan regions; Implementation of regional plans in India.

Unit 3: Peripheralization of Metropolitan Regions
Nature and causes of development in the peripheral areas of metropolitan regions; Actors involved in the development in the peripheral areas; Role of the private sector in the development of peripheral areas.

Unit 4: Peripheral Development and Physical Environment
Environmental assets in peripheral areas of metropolitan regions and their uses; Condition and status of forests, water bodies, etc.

Text Books and References:

**Course Outcomes:** Upon the completion of this course, the students would be able:
To analyse the nature, form and planning of metropolitan cities and regions in India.

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**Course Objective:**
- To provide basic knowledge about physical and social infrastructure and requirements of various infrastructure for a settlement.
- To study planning and policy issues for urban and regional infrastructure.

**Course Contents:**

**Unit 1: Water Supply System**
Water supply systems and networks, and network mapping; Water sources, quality and quantity requirements, and water requirement for various land uses; Factors affecting water demand; Storage facilities and distribution systems; Rain water harvesting systems and locational criteria, implications on land use and density of water harvesting system; Innovative Methods and successful urban water supply system practices; Water programmes and policies.

**Unit 2: Sanitation and Sewerage System and Storm Water Drainage**
General considerations and principle of sanitation and sewerage systems; Sewage disposal and treatment methods; Characteristics of waste water, industrial pollutants and their affects; Open defecation; Manual scavenging; Innovative approaches of sewage disposal in urban areas and low cost appropriate technologies for sanitation; Strom water drainage networks, and network mapping; Estimations of sewer generation and network requirements; Elements of Solid Waste Management, Classification and Characteristics of Solid Wastes; Methods for Solid waste Collection, Storage, transportation and disposal; Processing and Treatment of Solid Wastes; Land Filling methods of Solid Waste Management.

**Unit 3: Social Infrastructure**
Social infrastructure typologies; Planning norms and space standards for education, health, recreation and socio-cultural facilities; Amenities for urban and rural settlements; Significance of education and health infrastructure in planning; Locating education and health facilities; Understanding scalogram and other techniques.
Unit 4: Policies, Programmes and Projects
Understanding prevalent policies, projects and missions, for example, JnNURM, AMRUT, HRIDAY, Smart Cities Mission, etc.; Norms and standards for different types of infrastructure; Nature and content of infrastructure in development plans at different geographical levels; Making assessment of infrastructure requirements in plans.

Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
- To identify the problems and issues related to infrastructure provision in a settlement.
- To appraise planning guidelines to tackle these problems, and extent of infrastructure required for the future planning of settlements.
- To design and make recommendations for meeting the future needs infrastructure for a human settlement.

Course Objective:
- To understand contents, substance and characteristics of various types of development plans for predominantly urban settlements.
- To comprehend processes of plan preparation and analyses techniques for the identification of issues and potentials for an urban settlement.
- To evolve development policies, development control rules and regulations, land use plan and devise implementation mechanisms for a selected urban area.

Course Contents: This studio is focused on the preparation of master development plan. Students are expected to not only prepare the master development plan for a city or city-region but also analyse debates around strengths and limitations of the ides of a master development plan. Data collection, analysis and plan proposals need to be framed in a collaborative and participatory manner.

Text Books and References:

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To analyse the existing policy and planning literature on urban development plans, and to examine field survey data and information.
- To plan and design different future scenarios, priorities of development, action areas, phasing and monitoring, and to propose governance structures for the implementation of the plan.
- To produce spatial policies, and to make planning proposals along with a land use plan for a selected urban settlement.

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Any one course from following options can be opted under ‘Professional Elective I’:
1. Public Policy and Politics
2. Big Data & Data Analytics.

**Refer Appendix I on Professional Electives.**

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Any one course from following options can be opted under ‘Open Elective-I’
1. Water Security and Planning
2. Universally Accessible Built Environments

**For syllabus, Refer Appendix II on Open Electives.**
**Course Objective:** To familiarize the students with concepts, processes and current issues related to management. The emphasis would be placed on issues and challenges related to spatial planning sectors.

**UNIT 1: Basic Issues in Management**
Meaning, functions and principles of management; Levels of management, management skills, evolution of management; Planning: Meaning, nature, importance and steps of planning, types of plans; Management by Objectives; Decision making: meaning, types, process, and models; Organization: Meaning, characteristics and importance, types of organization structure with a focus on spatial planning organisations.

**UNIT 2: Directing and Controlling**
Directing: Meaning, importance and principles; Organization culture; Corporate social responsibility; Motivation: Motives, characteristics, motivation theories; Leadership styles and approaches; Control Process: Nature, need, methods, tools and techniques.

**UNIT 3: Organizational Studies**
Organizational behavior: meaning, nature and relevance; Historical evolution of studies related to organisational behaviour; Opportunities and challenges of organisational behaviour in spatial planning of tourism sector; Determinants of individual and group behavior; Individual and group psychology.

**UNIT 4: Personality Development**
Personality: Determinants, theories and relevance in organisational behaviour; Perception: Process and factors affecting perceptions and relevance in organisational behaviour; Attitudes: Nature, components, functions; Group dynamics: Types, group development, and determinants of group behavior.

**Text Books and References:**

**Course Outcomes:** Upon the completion of this course, the students would be able:
To express knowledge about the basics concepts of general management.
Course Objective:

- To make the students understand the importance of sound health and fitness principles as they relate to better health.
- To expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health and fitness.
- To create a safe, progressive, methodical and efficient activity based plan to enhance improvement and minimize risk of injury.
- To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health.

Course Contents:

- **Introduction to Physical Education**
  - Meaning & definition of Physical Education
  - Aims & Objectives of Physical Education
  - Changing trends in Physical Education

- **Olympic Movement**
  - Ancient & Modern Olympics (Summer & Winter)
  - Olympic Symbols, Ideals, Objectives & Values
  - Awards and Honours in the field of Sports in India (Dronacharya Award, Arjuna Award, Dhayanchand Award, Rajiv Gandhi Khel Ratna Award etc.)

- **Physical Fitness, Wellness & Lifestyle**
  - Meaning & Importance of Physical Fitness & Wellness
  - Components of Physical fitness
  - Components of Health related fitness
  - Components of wellness
  - Preventing Health Threats through Lifestyle Change
  - Concept of Positive Lifestyle

- **Fundamentals of Anatomy & Physiology in Physical Education, Sports and Yoga**
  - Define Anatomy, Physiology & Its Importance

---

Course Code: AU102
Course Title: Sports and Yoga
No. of Credits: 0 (L: 2; T: 0; P: 0)
Internal Assessment: 0 Marks
End Semester Assessment: 0 Marks
Total Assessment Marks: 0 Marks


- **Kinesiology, Biomechanics & Sports**
  - Meaning & Importance of Kinesiology & Biomechanics in Physical Edu. & Sports
  - Newton's Law of Motion & its application in sports.
  - Friction and its effects in Sports.

- **Postures**
  - Meaning and Concept of Postures.
  - Causes of Bad Posture.
  - Advantages & disadvantages of weight training.
  - Concept & advantages of Correct Posture.
  - Common Postural Deformities – Knock Knee; Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scoliosis.
  - Corrective Measures for Postural Deformities

- **Yoga**
  - Meaning & Importance of Yoga
  - Elements of Yoga
  - Introduction - Asanas, Pranayama, Meditation & Yogic Kriyas
  - Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankasana)
  - Relaxation Techniques for improving concentration - Yog-nidra

- **Yoga & Lifestyle**
  - Asanas as preventive measures.
  - Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana.
  - Back Pain: Tadasana, Ardh Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana.

- **Training and Planning in Sports**
  - Meaning of Training
  - Warming up and limbering down
  - Skill, Technique & Style
  - Meaning and Objectives of Planning.
- Tournament – Knock-Out, League/Round Robin & Combination.

- **Psychology & Sports**
  - Definition & Importance of Psychology in Physical Edu. & Sports
  - Define & Differentiate Between Growth & Development
  - Adolescent Problems & Their Management
  - Emotion: Concept, Type & Controlling of emotions
  - Meaning, Concept & Types of Aggressions in Sports.
  - Psychological benefits of exercise.
  - Anxiety & Fear and its effects on Sports Performance.
  - Motivation, its type & techniques.
  - Understanding Stress & Coping Strategies.

- **Doping**
  - Meaning and Concept of Doping
  - Prohibited Substances & Methods
  - Side Effects of Prohibited Substances

- **Sports Medicine**
  - First Aid – Definition, Aims & Objectives.
  - Sports injuries: Classification, Causes & Prevention.
  - Management of Injuries: Soft Tissue Injuries and Bone & Joint Injuries

- **Sports / Games**
  Following subtopics related to any one Game/Sport of choice of student out of:
  - Athletics, Badminton, Basketball, Chess, Cricket, Kabaddi, Lawn Tennis,
  - Swimming, Table Tennis, Volleyball, Yoga etc.
  - History of the Game/Sport.
  - Latest General Rules of the Game/Sport
  - Specifications of Play Fields and Related Sports Equipment.
  - Important Tournaments and Venues.
  - Sports Personalities.
  - Proper Sports Gear and its Importance.

**Text Books/References:**
1. Modern Trends and Physical Education by Prof. Ajmer Singh.
3. Health and Physical Education – NCERT (11th and 12th Classes)

**Course Outcomes:** On successful completion of the course the students will be able to:
1. Practice Physical activities and Hatha Yoga focusing on yoga for strength, flexibility, and relaxation.
2. Learn techniques for increasing concentration and decreasing anxiety which leads to stronger academic performance.
3. Learn breathing exercises and healthy fitness activities
4. Understand basic skills associated with yoga and physical activities including strength and flexibility, balance and coordination.
5. Perform yoga movements in various combination and forms.
6. Assess current personal fitness levels.
7. Identify opportunities for participation in yoga and sports activities.
8. Develop understanding of health-related fitness components: cardiorespiratory endurance, flexibility and body composition etc.
9. Improve personal fitness through participation in sports and yogic activities.
10. Develop understanding of psychological problems associated with the age and lifestyle.
11. Demonstrate an understanding of sound nutritional practices as related to health and physical performance.
12. Assess yoga activities in terms of fitness value.
13. Identify and apply injury prevention principles related to yoga and physical fitness activities.
14. Understand and correctly apply biomechanical and physiological principles elated to exercise and training.

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SEMESTER – III
SEMESTER III

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<th>Course Code:</th>
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<tr>
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**Course Objective:** Governance plays a crucial role in framing planning policies and their effective implementation. Therefore, the primary objective of the course on Urban and Regional Governance is to introduce to the students how cities and regions in India are governed with a particular focus on land the built environment.

**Course Contents:**

**Unit 1: Evolution of Urban and Regional Governance**
Comprehending governance; History of governance of urban and regional after 1947; Organizations involved in planning, development and management of urban and rural areas; Present status of urban and regional governance in India.

**Unit 2: Devolution of Local Government**
Need for decentralization and devolution of powers from state governments to local government; District Planning Committees and Metropolitan Planning Committees; Current position of implementation of 73rd and 74th amendment acts.

**Unit 3: Coproduction: Role of the Third Sector**
Shift from government to governance; Context of governance for greater involvement of the private sector; Ideas of good governance; Public private partnerships; Role of global players such as the World Bank, IMF, Asian Development Bank, the private sector, INGOs, NGOs, CBOs.

**Unit 4: Land Administration and Management**
Models of land assembly in India - Bulk land acquisition, land reconstitution, etc; Land administration and management; Understanding maps of land records; Methods of keeping land records in urban and rural areas.

**Text Books and References:**


**Course Outcomes:** Upon the completion of this course, the students would be able:

- To explain the evolution of the idea of governance.
- To analyse the role of the third sector, and to develop knowledge of constitutional amendments as they impact urban and regional governance.
- To demonstrate knowledge about the basics of land administration and management.

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<th>Course Code</th>
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<td>Course Title</td>
<td>Risk, Disaster Mitigation and Management</td>
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<tr>
<td>No. of Credits</td>
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</table>

**Course Objective:**

- To understand the basic concepts of disaster management as these relate to urban and regional planning.
- To understand processes and mechanisms of disaster management, disaster risk mitigation, and post disaster measures.
- To expose students to relevant planning polices and guidelines for reduction of disaster risks.

**Course Contents:**
Unit 1: Basic Concepts of Disaster Management
Disaster: Definitions, concepts, types and perceptions; Recent initiatives at national and state level; Kyoto Framework of disaster mitigation and management; Paris agreements; Disaster management policy at the national and state levels; Disaster management statutes at national and state levels.

Unit 2: Disaster Management Mechanisms
Disaster management mechanisms at national, state and district levels; Select global practices; Disaster and development; Development plans and disaster management plans; Roles played in disaster management by INGOs, NGOs, CBOs and armed forces; and Community Based Disaster Preparedness.

Unit 3: Disaster Risk Mitigation
Natural Disasters: cyclones, floods, earthquakes, landslides etc.; Disaster as a physical phenomenon, causes and consequences of mitigation and management practices; Risks’ mitigation strategies in development plans inclusive of industrial, chemical and biological disasters; Land use planning, building bye laws and disaster safe construction practices.

Unit 4: Disaster Preparedness and Post Disaster Management
Forecasting and early warning systems for various types of disasters; Role of communication and information technologies in disaster management; Disaster education and awareness; Case studies on natural disasters; Climate change and its implications in disaster mitigation; Post-disaster management including rehabilitation and reconstruction of disaster affected areas; Safe hill area development guidelines and coastal zone regulations for safe habitation.

Text Books and References:

Course Outcomes: After completion of this course the students would be able:
- To show an understanding of the concepts and principles of disaster risk mitigation and planning.
- To demonstrate knowledge of preparing plans for area prone to disaster risks in order to reduce vulnerabilities.

*****
1. **Dissertation**

**Course Objective:** The purpose of dissertation is to introduce to students, the research methods and to develop competencies for critically examining topics of their interest and present them. This will be a preparatory stage for the terminal or thesis project.

**Course Contents:**

**Unit 1: Conducting Literature Review**
Preliminary literature review for identification of research gaps; Selection of topic, thesis statement, developing the thesis; developing research questions; detail literature reviews to understand the current state of knowledge around a particular topic.

**Unit 2: Developing an Argument**
What is an argument, argument structure and identification, validity and strength of arguments, common fallacies of reasoning, use and abuse of language in reasoning, principles of fair play in argumentation, respecting opposing positions, understanding different modes of persuasion; emotional, moral and rational.

**Unit 3: Report Writing**
Report writing, Type; characteristics of writing technical reports. Format of Reports: Preface, acknowledgements, contents, indexing, key word indexing, introduction, body terminal section, appendices, references; Writing style - introductory, developmental, transitional and concluding paragraphs, linguistic unity, coherence and cohesion, descriptive, narrative, expository and argumentative writing. Proofreading and editing.

**Unit 4 Developing a Research Design**
Formulation of objectives, research methods relevant for individual topic, development of research methodology elaborating methods of primary data collection.

**Text Books and References:**

**Course Outcomes:** After taking this course, the students would be able:
- To develop general ideas about the selection of their topics for thesis projects.
- To develop capabilities for framing research questions, structure of research, research strategy.
- To demonstrate abilities for critical analysis of the existing literature on related research topics.

*****
2. Professional Training

Course Objective: To gain hands on experience in a planning organization so that students become future ready after they obtained the postgraduate degree. The main objective of professional training is to expose the students to live planning and development project and working environment in a planning agency.

Course Contents: Each student shall undertake training in a planning or related office for two months. Students will undergo professional training in a department approved organization on a project for 2 months. This will be supervised training by a senior professional from the organization. Satisfactory completion of training will be mandatory for the award of a degree. Out of six credits, two credits will be awarded for successful completion of training as reflected in MPS201.

Text Books and References:

Course Outcomes: After undertaking professional training, the students would be able:
- To show capabilities of working on live planning and development projects.
- To demonstrate knowledge of work environments in different planning organizations.

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<tr>
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<tr>
<td>Course Title</td>
<td>Regional Planning Studio</td>
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<tr>
<td>No. of Credits</td>
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Course Objective: The primary objective of regional planning studio is to learn about approaches and methodologies for the preparation of a regional, sub-regional, district or block development plan comprising of few urban and several rural settlements.

Course Contents: Central to regional planning are two prominent ideas of integrated and balanced regional development. A regional plan is a spatial plan rather than sectoral plan and regional planning is directed at development efforts towards optimal utilization of region’s resources benefitting people and physical environments to the maximum extent possible. Economic growth may be an overriding objective of regional planning, but equally important are environmental concerns and quality of life issues in a region. All economic, environmental and social issues are intertwined and of equal significance. There are many forces that shape any region or sub-region extending around the core and the stirring growth and developments, directly or indirectly linked to political and economic developments taking place in the regions or sub-regions. Developments in the external and internal environment can have a positive or negative impact on the region,
thus, priority should be given to policies and strategies that ensure a region's integrated and sustainable development.

**Text Books and References:**

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To demonstrate understanding of the concept of region, types of regions, forms of regional plans, and their significance.
- To develop knowledge about various approaches, techniques, and technologies involved in the preparation of a regional plan using regional planning spatial approach.
- To develop abilities and skills to prepare a regional plan for a selected region by identifying the key drivers of development and their planning implications on one another, and to demonstrate comprehension of various approaches, techniques and technologies learned during the semester.

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Following courses may be taken under ‘Professional Elective-II’:
1. Real Estate Development and Management
2. Participatory and Integrated Urban Development

**Refer Appendix I on Professional Electives.**

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<tr>
<th>Course Code:</th>
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<tr>
<td>Course Title</td>
<td>Introduction to Philosophy</td>
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<tr>
<td>No. of Credits</td>
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<td>Total Assessment Marks</td>
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</table>

**Course Objective:** Major concern of philosophy is the study of ideas central to the ways we think and live. The value of many of our key concepts is often hidden from us. We take the ways we make sense of ourselves and the world for granted. We forget why truth matters or acting decently is a minimal requirement for treating others justly.
Course Description:

Unit 1: Our Place in the World
Is there a real world, or is everything a figment of our imagination? Do we have free will, or do our brains simply respond mechanically to stimuli? What, if anything, distinguishes right from wrong? Philosophers relentlessly pursue the fundamental questions of life, and their techniques apply to problems in any discipline or endeavour. They establish standards of evidence, provide rational methods of resolving conflicts, and create techniques for evaluating ideas and arguments.

Unit 2: Logic and Ethics
This course is a survey of several major areas of Indian and Western analytic philosophy: metaphysics and epistemology, ethics, philosophy of mind, philosophy of language, philosophy of religion, and philosophy of science.

Unit 3: Knowledge Production and Use
Students explore such concepts as the nature of the world and how we have access to knowledge of the world; moral behavior and the nature of good and evil; the relationship between minds and bodies; the relationship between our thoughts and the external world; and how we should employ logical analysis and empirical observations to evaluate arguments.

Unit 4: Study of Great Thinkers
For each topic, students consider positions of historical thinkers such as Plato, Descartes, and Hume, as well as those of contemporary philosophers such as M.K. Gandhi, B.R. Ambedkar, Amartya Sen, John Rawls and Hilary Putnam. Students reflect upon philosophical issues through debates, discussions, and formal critical essays in order to develop the analytical skills necessary for effectively evaluating arguments and thinking independently.

Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
- To summarise the nature of various forms of reasoning.
- To show knowledge of her thoughts in a logical and clear fashion.
- To construct good arguments, and to identify fallacies.
- To explain knowledge about the key philosophical thinkers.

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SEMESTER – IV
## SEMESTER IV

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<th>Course Code:</th>
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<td>Course Title:</td>
<td>Planning Legislation</td>
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</table>

**Course Objective:** The primary objective of this course is to expose the students to urban and regional planning statutes as planning statutes foundationally impact planning practice.

**Course Contents:**

**Unit 1: Concept of Law**
Sources of law (custom, legislation and precedent); meaning of the term of law, legislation, ordinance, bill, act, regulations and bye-laws; significance of law and its relationship to urban planning; benefits of statutory backing for planning schemes.

**Unit 2: Indian Constitution**
Concepts and contents of Indian Constitution; Rights and their implication on planning; Fundamental provisions regarding property rights; evolution of planning legislation and overview of legal tools connected with urban planning and development; model town planning laws.

**Unit 3: Statutory Framework for Planning and Development Law**
Evolution of town planning legislation, town planning laws, town planning as a state subject, 73rd and 74th amendment and its implications for planning law, current amendments in planning and development laws.

**Unit 4: Planning law and its interface with other laws affecting development**
Current laws related to environment, heritage, housing, real estate, property law and their interaction with planning law; PPP and contract laws; Any other Acts relevant at a particular time, for example, special investment region acts model community participation law.

**Text Books and References:**
**Course Outcomes:** Upon the completion of this course, the students would be able:

- To demonstrate knowledge about sources of law and basic terminologies in law.
- To explain implications of relevant articles of constitution on town planning.
- To show understanding about statutory nature of town and country planning.
- To express familiarity with environment and heritage laws and their interface with town planning.

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<table>
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<tr>
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<td>Course Title</td>
<td>Planning Practice</td>
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**Course Objective:** The main objective of this course is to familiarise the students with the nature of planning practice in the Indian context and develop an understanding of responsibility of planning professionals and inculcate ethical behaviour in planners. Students will also get familiar with requirements of setting up a planning practice.

**Course Contents:**

**Unit 1: Nature of Planning Practice**
Planning as a profession and Role of a Planner, Definition of profession, planning as a profession, role of planner in the society, different roles of planner in practice; Nature of planning practice in general and in Indian context, global context and planning practice; Legal framework for planning in India, planning and development organisations, current planning practices, study of selected projects.

**Unit 2: Ethical Planning Practice and Planning Engagement**
Human values and moral reasoning, Planning practice and ethical dilemmas, resolution of ethical dilemmas, code of professional conduct, Concept of reflective and deliberative practice, Study of decision making, role of different interest groups, deliberation and negotiation large planning project or policy modification requiring approvals.

**Unit 3: Planning Practice Cases**
This unit would focus on developing a critical reasoning and communication skills through study planning cases including planning permissions, court cases, and attending public meetings etc., application of concepts of previous unit through study of planning practice, documentation of cases.

**Unit 4: Professional Engagement and Office Administration**
Tenders, Contracts, Formulation of Project Proposals., Professional fees for different types of planning practice, setting up of planning firms, official correspondence, office management practices.
Text Books and References:

Course Outcomes: After completing this course, the students would be able:
- To analyse and evaluate technically a planning proposal.
- To develop the ability to recognize an ethical dilemma.
- To show knowledge about processes of ethical decision making.
- To make documents involving scope of work and fees for a planning project.

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<td>Course Title</td>
<td>Development Finance</td>
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Course Objective: Development plans and policies get implemented through planning and development projects. Funding of these projects is critical for the implementation of plans and policies. It is in this context that this course will introduce concepts of development finance, revenue, and municipal finance. This course intends to develop a logical reasoning ability in analysing the innovative methods of financing for urban infrastructure.

Course Contents:

**Unit 1: Overview of Development Finance**
Understanding development finance: approaches, concepts, credit ratings; Role of municipalities and panchayats, development authorities, infrastructure and industrial development corporations, special economic zones and special purpose vehicles.

**Unit 2: State and Municipal Finance**
Central Finance Commission and state finance commissions: constitution, powers and functions; consolidated fund of central and state; Financing municipalities and panchayats and financial categorisation of sources of revenue; Reforms in municipal and panchayat finances, rationalisation of user charges, and streamlining of tax administration.
Unit 3: Public Private Partnership (PPP)
Partnerships and alliances: concepts, need, preconditions for partnerships; Advantages of collaboration; Methods of promoting public private partnerships; Policies, statutes, regulations and administrative procedures for forging partnerships; Role of government as partner, regulator and enforcer of laws; Principles of PPP: contractual framework, selection of service provider, payment mechanism, monitoring and evaluation, risk and revenue sharing; and Models contract agreement.

Unit 4: Innovative Methods for Financing Urban Development
Monetary Exaction: betterment levy, impact fees, external development charges and vacant land development tax; Land exactions: Transfer of development rights, town planning schemes, monetisation of underutilised public assets; Valorisation charges; Debt financing, partnership financing, financing through intermediaries, Municipal bonds, and pooled financing; Funding of development plan proposals and projects.

Text Books and References:

Course Outcomes: Upon completion of the course, the students will be able:
• To express understanding about the major aspects of development finance including municipal finance; and to develop specialized knowledge and relevant skills in urban finance.
• To demonstrate understanding about the financial challenges being faced by urban local bodies.
• To propose effective financial management systems with enhanced organizational capacity for urban reforms.

Course Objective: The primary purpose of a thesis is to independently undertake a piece of research involving a deeper study of theories and frameworks, develop elegant research questions and connect with empirical evidences for creating new knowledge.

Course Contents: The purpose of a postgraduate thesis is to take forward the literature review involving a deep study of theories and frameworks and develop elegant research questions. It is expected that a postgraduate student is clearly able to explain how a piece
of research adds new knowledge to the existing body of knowledge in a field and show its practical significance to the profession of planning. Without a clearly defined purpose and strong theoretical grounding, the thesis is fundamentally flawed.

**Text Books and References:**

**Course Outcomes:** After completing this course, the students would be able:
- To formulate independently a research programme on a chosen topic in order to contribute new knowledge to the field of study.

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Following courses may be taken under an 'Open Elective-II'
1. Urban and Regional Planning in India
2. Urban Information Systems and Spatial Analysis

**For syllabus, Refer Appendix II on Open Electives.**

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<th>Course Code:</th>
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**Course Objective:** To make students aware about the Indian Constitution.

**Course Content**

**Unit 1: The Constitution - Introduction**
- The History of the Making of the Indian Constitution
- Preamble and the Basic Structure, and its interpretation
- Fundamental Rights and Duties and their interpretation
- State Policy Principles

**Unit 2 – Union Government**
- Structure of the Indian Union
- President – Role and Power
Prime Minister and Council of Ministers
Lok Sabha and Rajya Sabha

Unit 3 – State Government
Governor – Role and Power
Chief Minister and Council of Ministers
State Secretariat

Unit 4 – Local Administration
District Administration
Municipal Corporation
Zila Panchayat

Unit 5 – Election Commission
a. Role and Functioning
b. Chief Election Commissioner
c. State Election Commission

Text Books / References:

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<th>S. No.</th>
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<th>Author</th>
<th>Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>The Constitution of India</td>
<td>B.L. Fadia</td>
<td>Sahitya Bhawan; New edition (2017)</td>
</tr>
<tr>
<td>3</td>
<td>Introduction to the Constitution of India</td>
<td>DD Basu</td>
<td>Lexis Nexis; Twenty-Third 2018 edition</td>
</tr>
</tbody>
</table>

Suggested Software/Learning Websites:
3. https://www.sci.gov.in/constitution

Course Outcomes: Upon the completion of this course, the students would be able:
- To demonstrate knowledge about the basic structure, and features of the Constitution of India.
- To develop deeper understanding and knowledge about constitutional provisions pertaining to urban and rural governance involving municipalities and panchayats.
## Professional Electives

### Professional Elective I

**List of available courses under Professional Elective – I**  
(L: 3, T: 0, P: 0)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Subject Code</th>
<th>Subject</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>MPPE 102</td>
<td>1. Public Policy and Politics</td>
</tr>
<tr>
<td>2</td>
<td>MPPE 102</td>
<td>2. Big Data &amp; Data Analytics.</td>
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</tbody>
</table>

### Professional Elective II

**List of available courses under Professional Elective – II**  
(L: 3, T: 0, P: 0)

<table>
<thead>
<tr>
<th>S. No.</th>
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<tbody>
<tr>
<td>1</td>
<td>MPPE 201</td>
<td>1. Real Estate Development and Management</td>
</tr>
<tr>
<td>2</td>
<td>MPPE 201</td>
<td>2. Participatory and Integrated Urban Development</td>
</tr>
</tbody>
</table>
1. Public Policy and Politics

Course Objective: The first objective of this course is to show that public policy, planning policy and politics are enfolded into one another and multiple links amongst them. In the second objective nature and various aspects of planning and public policies are discussed. The third objective provides analyses of integration and coherence of planning policies.

Course Contents:

Unit 1: Comprehending Policy and Politics
Classical and modern notions of politics; Links between politics and planning; Meaning of public policy; Forms and components of public policies; Cycle of public policy formulation; and theories of public policies and policy analysis.

Unit 2: Planning and Public Policies
Meaning of planning policy; Forms and components of planning policies; Sources and content of public planning policies; Joined-up government; and Policy implementation and evaluation.

Unit 3: Integration and Coherence of Planning Policies
Reasons for linking urban and regional planning policies to public policies; Integration and coherence of planning policies; Context and integration of planning policies with relevant other public policies; and Methods of making public planning policies.

Unit 4: Nature of Planning Policies
Welfarist planning policies; Managerialism and urban entrepreneurialism; Neoliberal urbanism; Gentrification; Spatial dialectics of injustice, the Right to the city; and some case examples of current and classical Indian planning policies.

Text Books and References:

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To discuss politics of policy and planning in relation to place and space.
- To examine and analyse public policies and planning policies professionally
- To propose coherently linked up planning policies for planning projects and development plans.

*****

2. Big Data and Data Analytics

**Course Objective:** As technologies are getting embedded in the built environments, in this context, the major objective of this course is to understand the role and application of big data in urban and regional planning.

**Course Contents:**

**Unit 1: Big data – An introduction**
Defining big data and what makes it ‘big’; Emergence of data science and big data; Importance and utility of big data in planning; Characteristics of big data; Links between big data, urban and regional planning, development, management and policy making.

**Unit 2: Mapping the City**
Different tools for making maps with big data; Understanding basic elements of maps; Map online programs and open spatial data and its uses; Geographic information systems software for mapping; and Identification of winners and losers in the big data system.

**Unit 3: Data acquisition and analytics**
Understanding open data platforms; Generators of big data; Handling large datasets, cloud database system; Cleaning data, SQL, introduction to R or other software for urban data analysis.

**Unit 4: Big Data and Smart Cities**
Explore big data in the context of smart cities; Learning use of real-time and crowdsourced data collection and use; Interactive data visualization in the context of smart cities and regions.

**Text Books and References:**

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To express understanding about the nature of big data and its significance for planning and urban development.
- To analyse and evaluate big data for planning projects such as smart city projects in India.

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<tr>
<th>Course Code:</th>
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<tbody>
<tr>
<td>Course Title</td>
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<td>Total Assessment Marks</td>
<td>100 Marks</td>
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| Any one from the following courses: | 1. Real Estate Development and Management  
2. Participatory and Integrated Urban Development |

1. **Real Estate Development and Management**

**Course Objective:** To examine the fast changing nature of the real estate scenario and land markets in India, particularly after the July 1991 economic reforms.

**Course Contents:**

**Unit 1: Developments of Land and Real Property**
Process of land development, market mechanism and land use pattern cost of development, source of finance, and financial calculation for real estate developer

**Unit 2: Real Property Markets**
Heterogeneity and imperfections, valuation of real property - principles and practices; private ownership and social control of land; disposal of land; land development charges and betterment levy; land use restrictions, compensation and requisition taxation of capital gain on land versus public ownerships, economic aspects of land policies at various levels of decision making.

**Unit 3: Factors Influencing Locational Decisions**
Analysis of location of specific uses like residential, industrial, commercial and institutional in the light of location theories in intra-regional and inter-regional context; Techniques of cost benefit analysis of urban development programme.
Unit 4: Case Studies
Case studies of real estate development in public, private, partnership sectors; Real estate as facilitator of development; Development of real estate as a tool for controlling land and property prices; Transaction and renting of real estate, Lease deeds and sale deeds, sale documents, registration; Mortgage and pledging.

Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
• To examine and analyse the nature of real estate and land markets generally but analytically.
• To demonstrate links between economic, social, and political forces on one hand, and real estate on the other.

2. Participatory and Integrated Urban Development

Course Objective: The course intends to sensitize the students to the importance of participatory processes and integrated institutional arrangements for more effective, efficient and sustainable implementation.

Course Contents:

Unit 1: Understanding Public participation
Understanding participation, conditions for effective participation; idea of power and representation in participatory process, Arenas of participation; Brief introduction to theories on citizen and community participation such as Arnstein’s ladder of citizen participation.

Unit 2: Public Participation in India
Channels of public participation in plan making, plan implementation and governance in India; Legislative provisions; mandated and claimed spaces of participation; Requirements for planning a participatory process; evolution of community participation in development projects; Pani Panchayats.

Unit 3: Horizontal and vertical integration
Coordination in planning, understanding various kinds of public agencies involved in urban development and coordination for the purpose of plans projects and management in urban areas and regions; Current practices of cross-sectoral development, and case studies.
Unit 4: Participatory and integrated urban development – Case Studies
Based on the conceptual understanding developed in the first two parts of the course, this section will develop an understanding of the idea of Participatory and Integrated Urban Development through case studies of Multi-stakeholder projects.

Text Books and References:
4. Pune Smart City Development Corporation Ltd. (2016) Smart City Development Plan, Pune Smart City Development Corporation Ltd., Pune.

Course Outcomes: Upon the completion of this course, the students would be able:
• To demonstrate an understanding of the necessity of participatory and integrated urban development.
• To show Knowledge of current mandates and practices of public participation at planning level.
• To express knowledge of horizontal and vertical organizational integration.
• To apply participatory and integrated development processes in planning practice.

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Open Electives

Open Elective I

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<tbody>
<tr>
<td>1</td>
<td>MPOE102</td>
<td>1. Water Security and Planning</td>
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<tr>
<td>2</td>
<td>MPOE102</td>
<td>2. Universally Accessible Built Environments</td>
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Open Elective II

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<th>Subject</th>
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<tbody>
<tr>
<td>1.</td>
<td>MPOE202</td>
<td>1. Urban and Regional Planning in India</td>
</tr>
<tr>
<td>2.</td>
<td>MPOE202</td>
<td>2. Urban Information Systems and Spatial Analysis</td>
</tr>
</tbody>
</table>
1. Water Security and Planning

Course Objective:
Water is the most important life sustaining resource as well as the global and Indian government's top most priority. The primary objective of this course is to teach about the global and Indian water security challenges. It is also our objective that the future professionals know how to effectively transcend these global life threatening water security challenges.

Course Contents:

Unit 1: Definitions and Status of Water Security
Concepts and definitions of water security; Spatial variations of water availability in India; Water stock, water consumption, and demand for various water uses; Status of water security in India; Sustainability and water security; Water security challenges in India.

Unit 2: Disasters and Vulnerabilities
Floods and droughts and their impact on water security; Forms of vulnerabilities; Climate change and its impact on water security; Probable mitigation measures and planning for reduction of impact on water security; Water bodies and water security.

Unit 3: Water Governance and Water Policies
Water governance; Policy interventions for water security in India; Role of water policies, missions and action plans for water security for rural communities and urban settlements; Initiatives for ensuring water security; Role of organisations and institutions working for water security in India.

Unit 4: Water Security and Settlement Planning
Development plans and water resource planning; Integration of concepts of water security in urban and regional planning and other development plans; Water requirements and demand projections for ensuring water security for settlements.

Text Books and References:


**Course Outcomes:** Upon the completion of this course, the students would be able:

- To develop knowledge of global and Indian water security challenges.
- To develop abilities and skills for making development plans and designing projects for meeting global and Indian water security challenges.

*****

2. Universally Accessible Built Environments

**Course Objective:**

This course majorly focuses on issues and problems faced by persons with disabilities on a day to day basis. The primary objective of this course is to sensitise students and provide them with basic understanding of government policies about universally accessible built environments. Another main objective is to equip students with skills so that they could critically examine built spaces from the perspective of universal accessibility and propose planning and design solutions for universal accessibility.

**Course Contents:**

**Unit 1: Concepts and Definitions**
Meanings and definitions of accessibility and universal accessibility; Accessibility challenges for different groups and communities; Freedom and universal accessibility.

**Unit 2: Challenges for Universal Accessibility**
Challenges of building accessible build environments and infrastructure in settlements; Accessibility audits for public spaces, buildings, infrastructures and facilities.

**Unit 3: Acts and Policies and Plans**
Acts, rules and guidelines on universal accessibility; Universal accessibility standards; Harmonious guidelines; Persons with disabilities acts and policies in India; Links between planning and universal accessibility; Development plans and universal accessibility.

**Unit 4: Government Initiatives**
Understanding efforts of government in providing accessible build environments; Accessible India Campaign, other schemes and programmes of governments and other stakeholders.
Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
- To develop abilities to identify critical issues and problems faced by persons with disabilities in human settlements.
- To express basic understanding of government policies about universally accessible built environments.
- To develop skills to critically examine built spaces from the perspective of universal accessibility, and to propose planning and design solutions for universal accessible built environments.

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<tr>
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<tbody>
<tr>
<td>Course Title</td>
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<td>1. Urban and Regional Planning in India 2. Urban Information Systems and Spatial Analysis</td>
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1. Urban and Regional Planning in India

Course Objective: By providing an overview of spatial planning India after 1947, the major concern of this course is to acquaint students with the nature of planning by highlighting its chief features. This course is designed as a generic course because it is aimed at students who may or may not be spatial planners.

Course Contents:

Unit 1: What is Planning and who are the Planners
Various meanings of the term planning, distinction between land use planning and spatial planning; Goals and objectives of planning, orthodoxies of planning; Planning at various spatial scales; Planning challenges; Planners and their different roles.
Unit 2: History of Planning before 1991
Planning in the central Five Year Plans; Planning guidelines: Urban Plans Formulation and Implementation (URDPFI) Guidelines 1996; Story of master plan preparation and their implementation or lack of it; Planning institution building prior to 1990s; Programmes for planning like IDSMT, etc.

Unit 3: Current Nature of Planning
Mission mode planning versus plan based planning, JNNURM, SEZs, SCM; Planning in a globalised and networked India; Planning Guidelines: Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2015, Shyama Prasad Mukherji Rurban Mission, 2016; Sustainable Development goals and their relationship with spatial planning.

Unit 4: Plans and Policies
Types, substance and dimensions of various kinds of development plans; Rethinking about development plans; Do we really need development plans; Planning policies versus economic policies; Politics and spatial planning; Spatial plans for rural settlements; Integration of spatial and economic plans.

Text Books and References:

Course Outcomes: Upon the completion of this course, the students would be able:
- To demonstrate basic understanding and knowledge about urban and regional planning in India.

*****

2. Urban Information Systems and Spatial Analysis

Course Objective: The first objective of this course is to introduce and promote the idea of urban information systems. We also seek to unravel the relevance of urban information systems to city planning. The second concern of this course is to teach students about spatialization of data and information through GIS and remote sensing.

Course Contents:

Unit 1: Urban Information Systems
Importance of urban information systems, information scales and levels; Pre-requisites for using planning information systems; Representing, modelling and impact analysis of the data; Query measurement and transformations; Summary statistics and inferences.

Unit 2: Urban Information Systems for Planning
Urban information systems for planning; Tools for spatial data handling-type systems, nature, hierarchy and values; Raster and vector data structures; Analysis of tools and
software; Spatial data models, geo-database; Geospatial information regulation statutes and policy guidelines.

**Unit 3: Government Initiatives and Urban Information Systems in Planning**
National Natural Resources Management System (NNRMS), National Urban Information System (NUIS), NUIS guidelines and design standards; National urban observatory, municipal information systems, the National E-Governance Plan (NEGP) and land information systems; Global navigation satellite systems.

**Unit 4: Geographic Information System (GIS) and Remote Sensing Techniques**
Geographic Information Systems: Concept, components, and benefits; Spatial data entry into GIS, data structure for GIS; Mapping and spatial analysis software, linking of attribute data, spatial data aggregation, spatial data generalization; Raster data capture; Cloud based GIS on Bhuvan platform; GIS based master plans; Resource satellite, and sensing capabilities; Aerial photography; Digital survey; Raster data processing and analysis; Resolutions; Geo-Rectification; Geometric distortions, image enhancement, transformation, segmentation; Image interpretation and analysis, 3D terrain modelling.

**Text Books and References:**

**Course Outcomes:** Upon the completion of this course, the students would be able:
- To show understanding of urban information systems in planning and relevant government initiatives.
- To produce maps and generate analysis of planning issues with the use of GIS and remote sensing.

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