**ANNA UNIVERSITY, CHENNAI**

**UNDERGRADUATE CURRICULUM (UNIVERSITY DEPARTMENTS)**

**Campus:** School of Architecture & Planning

**Department:** Planning

**Programme:** B. Plan

**Regulations:** 2023 (Revised 2024), with effect from the AY 2024 – 25 to all the students of UG Programme.

## OVERVIEW OF CREDITS

| Sem | PCC | EEC | HSC | PEC | ETC | OEC | UC | IOC | SLC | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| I | 18 | | 2 | | | | 1 | | | 21 |
| II | 13 | 3 | 4 | | | | 1 | | | 21 |
| III | 16 | 3 | | | | | 1 | | | 20 |
| IV | 19 | | | | | | 3 | | | 22 |
| V | 13 | 1 | | 3 | | | 3 | 1 | 1 | 22 |
| VI | 15 | | | 3 | 3 | | | 1 | | 22 |
| VII | 10 | 5 | | 3 | | 3 | | 1 | | 22 |
| VIII | 3 | 14 | | | 3 | | | | | 20 |
| Total | 107 | 26 | 6 | 9 | 6 | 3 | 9 | 3 | 1 | 170 |
| % of Category | 63% | 15% | 4% | 5% | 4% | 2% | 5% | 2% | 1% | 100% |

## CATEGORY OF COURSES

**HSC – Humanities and Social Science Courses**

**EEC -- Employability enhancement courses**

**PCC – Professional Core Course**

**PEC – Professional Elective Course**

**ETC – Emerging Technology Course**

**OEC – Open Elective Course**

**SLC – Self Learning Course**

**IOC – Industry Oriented Course**

**IUC – University Course**

***For Honours & Minor Degree, please refer the Regulations 2023 (Revised 2024).***

| SEMESTER – I | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23101 | Cities in History | T | 2-0-0 | 2 | 2 | PCC |
| 2. | PL23102 | Planning Data Collection and analysis | T | 3-0-0 | 3 | 3 | PCC |
| 3. | PL23103 | Fundamentals of Planning | T | 3-0-0 | 3 | 3 | PCC |
| 4. | PL23104 | Urban Built Environment | T | 3-0-0 | 3 | 3 | PCC |
| 5. | UC23H01 | தமிழர்மரபு / Heritage of Tamils | T | 1-0-0 | 1 | 1 | UC |
| 6. | PL23105 | Course on Writing and Communication | T | 2-0-0 | 2 | 2 | HSC |
| 7. | PL23106 | Planning Studio – I: Space Perceptions and Mapping | S | 0-0-14 | 14 | 7 | PCC |
| | | | | **Total** | **28** | **21** | |

*** TCP –** Total Contact Period(s)

#**TYPE OF COURSE**

**T** – Theory
**TS** – Theory cum studio
**L** – Laboratory
**LT** – Laboratory with Theory Course
**S** – Studio Course
**ET** – Educational Tour
**IT** – Internship Training
**LIT** - Laboratory Integrated Theory

| Semester – II | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23201 | Demography & Urban Sociology | T | 2-0-0 | 2 | 2 | HSC |
| 2. | PL23202 | Site and Land Development | T | 3-0-0 | 3 | 3 | PCC |
| 3. | PL23203 | Economics for Planners | T | 2-0-0 | 2 | 2 | HSC |
| 4. | - | NCC / NSS / NSO / YRC ACTIVITIES | - | 0-0-0 | 0 | 0 | UC |
| 5. | UC23H02 | தமிழரும் தொழில்நுட்பமும் / Tamil and Technology | T | 1-0-0 | 1 | 1 | UC |
| 6. | PL23204 | Surveying and Photogrammetry | LT | 1-0-4 | 5 | 3 | PCC |
| 7. | PL23205 | Computer Applications in Planning | L | 0-0-6 | 6 | 3 | EEC |
| 8. | PL23206 | Planning Studio – II: Area Appreciation | S | 0-0-14 | 14 | 7 | PCC |
| | | | | **Total** | **33** | **21** | |

# The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA.
NCC Credit Course level 1 is offered for NCC students only.

| Semester – III | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23301 | Planning Theory | T | 3-0-0 | 3 | 3 | PCC |
| 2. | PL23302 | Quantitative and Qualitative Methods for Planners | T | 3-0-0 | 3 | 3 | PCC |
| 3. | PL23303 | Housing | T | 3-0-0 | 3 | 3 | PCC |
| 4. | UC23U01 | Universal Human Values | LIT | 1-0-2 | 3 | 2 | UC |
| 5. | PL23U01 | Standards – B.Plan. | T | 1-0-0 | 1 | 1 | UC |
| 6. | PL23304 | Spatial Data Infrastructure for Planning | TS | 1-0-4 | 5 | 3 | EEC |
| 7. | PL23305 | Planning Studio – III: Site Planning and Development | S | 0-0-14 | 14 | 7 | PCC |
| | | | | **Total** | **31** | **20** | |

# Universal Human Values level 2: The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA

| Semester – IV | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23401 | Urban and Regional Infrastructure | T | 3-0-0 | 3 | 3 | PCC |
| 2. | PL23402 | Basics of Urban Design and Landscape | T | 3-0-0 | 3 | 3 | PCC |
| 3. | PL23403 | Traffic and Transportation Planning | T | 3-0-0 | 3 | 3 | PCC |
| 4. | PL23U02 | Perspectives of Sustainable Development in Planning | TS | 2-0-2 | 4 | 3 | UC |
| 5. | PL23404 | Planning and Management of Informal Sector | T | 3-0-0 | 3 | 3 | PCC |
| | - | NCC Credit Course Level 2* | - | 3-0-0 | 3 | 3# | UC |
| 6. | PL23405 | Planning Studio – IV: Land Use and Transportation Planning | S | 0-0-14 | 14 | 7 | PCC |
| | | | | **Total** | **30** | **22** | |
| # NCC Credit Course level 2 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA | | | | | | | |

| Semester – V | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23501 | Planning Legislation and Urban Policies | T | 3-0-0 | 3 | 3 | PCC |
| 2. | PL23502 | Project Formulation, Appraisal and Management | T | 3-0-0 | 3 | 3 | PCC |
| 3. | - | Professional Elective I | T | 3-0-0 | 3 | 3 | PEC |
| 4. | UC23E01 | Engineering Entrepreneurship Development | LIT | 2-0-2 | 4 | 3 | UC |
| 5. | - | Industry Oriented Course I | - | 1-0-0 | 1 | 1 | IOC |
| 6. | PL23S01 | Self-Learning Course | - | - | - | 1 | SLC |
| 7. | PL23503 | Planning Studio – V: Master Plan | S | 0-0-14 | 14 | 7 | PCC |
| 8. | PL23504 | Educational Tour | ET | 0-0-0 | 0 | 1 | EEC |
| 9. | - | Audit Course 1 | T | 3-0-0 | 3 | 0 | AC |
| **Total Credits** | | | | | **27** | **22** | |
| Industry Oriented Course I :15 hours of theory/practical/theory cum practical, course content to be proposed by HoD one semester earlier with DCC approval | | | | | | | |
| **Courses for Honours Degree** | | | | | | | |
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | - | Intelligent Transport System | T | 3-0-0 | 3 | 3 | PEC |
| 2. | - | Terminal and Multimodal Interchanges | T | 3-0-0 | 3 | 3 | PEC |

| Semester – V | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| **Courses for Minor Degree** | | | | | | | |
| 1. | - | Basics in Urban Planning | T | 3-0-0 | 3 | 3 | OEC |
| 2. | - | Human Settlements and Urban Housing | T | 3-0-0 | 3 | 3 | OEC |

| Semester – VI | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23601 | Urban Governance | T | 2-0-0 | 2 | 2 | PCC |
| 2. | PL23602 | Land Economics and Real Estate Market | T | 3-0-0 | 3 | 3 | PCC |
| 3. | PL23603 | Regional Planning and Development | T | 3-0-0 | 3 | 3 | PCC |
| 4. | **-** | Professional Elective II | T | 3-0-0 | 3 | 3 | PEC |
| 5. | **-** | Emerging Technology - I | TS | 1-0-4 | 5 | 3 | ETC |
| 6. | **-** | Industry Oriented Course II | - | 1-0-0 | 1 | 1 | IOC |
| 7. | - | NCC Credit Course Level 3* | - | 3-0-0 | 3 | 3# | UC |
| 8. | PL23604 | Planning Studio – VI: Sub – City Level Plan | S | 0-0-14 | 14 | 7 | PCC |
| 9. | - | Audit Course 2 | T | 3-0-0 | 3 | 0 | AC |
| | | | | **Total** | **31** | **22** | |

Industry Oriented Course I :15 hours of theory/practical/theory cum practical, course content to be proposed by HoD one semester earlier with DAC approval

* NCC Credit Course level 2 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA

**Courses for Honours Degree**

| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
|---|---|---|---|---|---|---|---|
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | - | Disaster Risk Reduction | T | 3-0-0 | 3 | 3 | PEC |
| 2. | - | Water Sensitive Planning | T | 3-0-0 | 3 | 3 | PEC |

**Courses for Minor Degree**

| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
|---|---|---|---|---|---|---|---|
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | - | Environmental Planning | T | 3-0-0 | 3 | 3 | OEC |

| Semester – VI | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 2. | - | Urban Planning and Development | T | 3-0-0 | 3 | 3 | OEC |

| Semester – VII | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23701 | Urban Finance | T | 3-0-0 | 3 | 3 | PCC |
| 2. | | Professional Elective III | T | 3-0-0 | 3 | 3 | PEC |
| 3. | **-** | Open Elective | | | 3 | 3 | OC |
| 4. | **-** | Industry-oriented course III | | 1-0-0 | 1 | 1 | IOC |
| 5. | PL23702 | Planning Studio – VII: Regional Plan | S | 0-0-14 | 14 | 7 | PCC |
| 6. | PL23703 | Dissertation | S | 0-0-6 | 6 | 3 | EEC |
| 7. | PL23704 | Internship Training | IT | X | X | 2 | EEC |
| | | | | **Total** | **30** | **22** | |

Industry Oriented Course III :15 hours of theory/practical/theory cum practical, course content to be proposed by HoD one semester earlier with DAC approval

| Courses for Honours Degree | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | - | Web Based Applications in Planning | TS | 1-0-4 | 5 | 3 | PEC |
| 2. | - | Simulation in Planning | TS | 1-0-4 | 5 | 3 | PEC |

| Courses for Minor Degree | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | - | Infrastructure Planning | T | 3-0-0 | 3 | 3 | OEC |
| 2. | - | Transportation Planning | T | 3-0-0 | 3 | 3 | OEC |

| Semester – VIII | | | | | | | |
|---|---|---|---|---|---|---|---|
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | PL23801 | Thesis | S | 0-0-28 | 28 | 14 | EEC |
| 2. | - | Emerging Technology II – Artificial Intelligence in Planning | T | 3-0-0 | 3 | 3 | ETC |
| 3. | PL23802 | Planning Practice and Professional Ethics | T | 3-0-0 | 3 | 3 | PCC |
| | | | **Total Credits** | | **34** | **20** | |
| **Courses for Honours Degree** | | | | | | | |
| **S. No.** | **Course Code** | **Course Name** | **Course Type#** | **Periods / Week** | | **Credits** | **Category** |
| | | | | **L-T-P/S** | **TCP*** | | |
| 1. | | Planning For Economic Growth Corridor | T | 3-0-0 | 3 | 3 | PEC |
| 2. | | Future Cities | T | 3-0-0 | 3 | 3 | PEC |

*** - Minimum 20 credits for Honors.**

## PROFESSIONAL CORE COURSES (PCC)

| S. NO | COURSE CODE | COURSE TITLE | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| 1. | | Cities in History | T | 2-0-0 | 2 | 2 |
| 2. | | Planning Data Collection & Analysis | T | 3-0-0 | 3 | 3 |
| 3. | | Fundamentals of Planning | T | 3-0-0 | 3 | 3 |
| 4. | | Urban Built Environment | T | 3-0-0 | 3 | 3 |
| 5. | | Planning Studio – I: Space Perceptions and Mapping | S | 0-0-14 | 14 | 7 |
| 6. | | Site and Land Development | T | 3-0-0 | 3 | 3 |
| 7. | | Surveying and Photogrammetry | LT | 0-0-6 | 6 | 3 |
| 8. | | Planning Studio – II: Area Appreciation | S | 0-0-14 | 14 | 7 |
| 9. | | Planning Theory | T | 3-0-0 | 3 | 3 |
| 10. | | Quantitative and Qualitative Methods for Planners | T | 3-0-0 | 3 | 3 |
| 11. | | Housing | T | 3-0-0 | 3 | 3 |
| 12. | | Traffic and Transportation Planning | T | 3-0-0 | 3 | 3 |
| 13. | | Planning Studio – III: Site Planning and Development | S | 0-0-14 | 14 | 7 |
| 14. | | Urban and Regional Infrastructure | T | 3-0-0 | 3 | 3 |
| 15. | | Basics of Urban Design and Landscape | T | 3-0-0 | 3 | 3 |
| 16. | | Planning and Management of Informal Sector | T | 3-0-0 | 3 | 3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17. | | Planning Studio – IV: Land use and Transportation Planning | S | 0-0-14 | 14 | 7 |
| 18. | | Planning Legislation and Urban Policies | T | 3-0-0 | 3 | 3 |
| 19. | | Project Formulation, Appraisal and Management | T | 3-0-0 | 3 | 3 |
| 20. | | Planning Studio – V: Master Plan | S | 0-0-14 | 14 | 7 |
| 21. | | Urban Governance | T | 2-0-0 | 2 | 2 |
| 22. | | Land Economics and Real Estate Market | T | 3-0-0 | 3 | 3 |
| 23. | | Regional Planning and Development | T | 3-0-0 | 3 | 3 |
| 24. | | Planning Studio – VI: Sub- City Level Plan | S | 0-0-14 | 14 | 7 |
| 25. | | Planning Practice and Professional Ethics | T | 3-0-0 | 3 | 3 |
| 26. | | Urban Finance | T | 3-0-0 | 3 | 3 |
| 27. | | Planning Studio – VII: Regional Plan | S | 0-0-14 | 14 | 7 |

## VERTICALS OF PROFESSIONAL ELECTIVES

| SEMESTER OF OFFERING | TRANSPORTATION PLANNING | ENVIRONMENTAL PLANNING | URBAN AND REGIONAL PLANNING- |
|---|---|---|---|
| Semester V PEC I | Public Transportation Systems | Climate Resilient Settlement Planning | Inclusive Cities |
| Semester VI PEC II | Logistics Planning | Environmental Assessment and Management | Urban Planning and Public Health |
| Semester VII PEC III | Transport Economics | Circular Economy | Urban Renewal and Heritage Conservation |

**VERTICAL 1: TRANSPORTATION PLANNING**

| S. NO. | COURSE CODE | COURSE NAME | COURSE TYPE | PERIODS / WEEK | | CREDITS | CATE GORY |
|---|---|---|---|---|---|---|---|
| | | | | L-T-P | TCP | | |
| 1. | PL23001 | Public Transportation Systems | T | 3-0-0 | 3 | 3 | PEC |
| 2. | PL23002 | Logistics Planning | T | 3-0-0 | 3 | 3 | PEC |
| 3. | PL23003 | Transport Economics | T | 3-0-0 | 3 | 3 | PEC |

| VERTICAL 2: ENVIRONMENTAL PLANNING | | | | | | | |
|---|---|---|---|---|---|---|---|
| S. NO. | COURSE CODE | COURSE NAME | COURSE TYPE | PERIODS / WEEK | | CREDITS | CATEGORY |
| | | | | L-T-P | TCP | | |
| 1. | PL23004 | Climate Resilient Settlement Planning | T | 3-0-0 | 3 | 3 | PEC |
| 2. | PL23005 | Environmental Assessment & Management | T | 3-0-0 | 3 | 3 | PEC |
| 3. | PL23006 | Circular Economy | T | 3-0-0 | 3 | 3 | PEC |

| VERTICAL 3: URBAN AND REGIONAL PLANNING | | | | | | | |
|---|---|---|---|---|---|---|---|
| S. NO. | COURSE CODE | COURSE NAME | COURSE TYPE | PERIODS / WEEK | | CREDITS | CATE GORY |
| | | | | L-T-P | TCP | | |
| 1. | PL23007 | Inclusive Cities | T | 3-0-0 | 3 | 3 | PEC |
| 2. | PL23008 | Urban Planning and Public Health | T | 3-0-0 | 3 | 3 | PEC |
| 3. | PL23009 | Urban Renewal and Heritage Conservation | T | 3-0-0 | 3 | 3 | PEC |

| LIST OF HONOR ELECTIVE | | | | | | | |
|---|---|---|---|---|---|---|---|
| COURSE CODE | SEMESTER OF OFFERING | COURSE NAME | COURSE TYPE | PERIODS / WEEK | | CREDITS | CATE GORY |
| | | | | L-T-P | TCP | | |
| PL23010 | Semester V | Intelligent Transport System | | | | | |
| PL23011 | | Terminal and Multimodal Interchanges | | | | | |
| PL23012 | Semester VI | Disaster Risk Reduction | | | | | |
| PL23013 | | Water Sensitive Planning | | | | | |
| PL23014 | Semester VII | Web Based Applications in Planning | | | | | |
| PL23015 | | Simulation in Planning | | | | | |
| PL23016 | Semester VIII | Planning For Economic Growth Corridor | | | | | |
| PL23017 | | Future Cities | | | | | |

| LIST OF MINOR COURSES | | | | | | | |
|---|---|---|---|---|---|---|---|
| **COURSE CODE** | **Semester of Offering** | **COURSE NAME** | **COURSE TYPE** | **PERIODS / WEEK** | | **CREDITS** | **CATE GORY** |
| | | | | **L-T-P** | **TCP** | | |
| PL23018 | V | Basics in Urban Planning | | | | | |
| PL23019 | | Human Settlement and Urban Housing | | | | | |
| PL23020 | VI | Environmental Planning | | | | | |
| PL23021 | | Urban Planning and Development | | | | | |
| PL23022 | VII | Infrastructure Planning | | | | | |
| PL23023 | | Transportation Planning | | | | | |
| **Offered to B. E / B. Tech students** | | | | | | | |

## PROFESSIONAL & HONORS ELECTIVE COURSES (PEC)

| S. NO. | COURSE CODE | COURSE NAME | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| 1. | | Intelligent Transport System | T | 3-0-0 | 3 | 3 |
| 2. | | Public Transport System | T | 3-0-0 | 3 | 3 |
| 3. | | Terminal and Multimodal Interchanges | T | 3-0-0 | 3 | 3 |
| 4. | | Logistics Planning | T | 3-0-0 | 3 | 3 |
| 5. | | Transport Economics | T | 3-0-0 | 3 | 3 |
| 6. | | Disaster Risk Reduction | T | 3-0-0 | 3 | 3 |
| 7. | | Water Sensitive Planning | T | 3-0-0 | 3 | 3 |
| 8. | | Climate Resilient Settlement Planning | T | 3-0-0 | 3 | 3 |
| 9. | | Circular Economy | T | 3-0-0 | 3 | 3 |
| 10. | | Environmental Assessment and Management | T | 3-0-0 | 3 | 3 |
| 11. | | Planning For Economic Growth Corridor | T | 3-0-0 | 3 | 3 |
| 12. | | Inclusive Cities | T | 3-0-0 | 3 | 3 |
| 13. | | Urban Planning and Public Health | T | 3-0-0 | 3 | 3 |
| 14. | | Urban Renewal and Heritage Conservation | T | 3-0-0 | 3 | 3 |
| 15. | | Future Cities | T | 3-0-0 | 3 | 3 |
| 16. | | Web Based Application in Planning | TS | 1-0-4 | 5 | 3 |
| 17. | | Simulation in Planning | TS | 1-0-4 | 5 | 3 |

## HUMANITIES AND SOCIAL SCIENCES COURSES (HSC)

| S. NO. | COURSE CODE | COURSE NAME | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| 1. | | Demography and Urban Sociology | T | 2-0-0 | 2 | 2 |
| 2. | | Economics for Planners | T | 2-0-0 | 2 | 2 |
| 3. | | Course on writing and communication | T | 2-0-0 | 2 | 2 |

## EMPLOYABILITY ENHANCEMENT COURSES (EEC)

| S. NO. | COURSE CODE | COURSE TITLE | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP | |
| 1. | | Computer Applications in Planning | L | 0-0-6 | 6 | 3 |
| 2. | | Spatial Data Infrastructure for Planning | TS | 1-0-4 | 5 | 3 |
| 3. | | Educational Tour | ET | 0-0-0 | 0 | 1 |
| 4. | | Dissertation | S | 0-0-6 | 6 | 3 |
| 5. | | Internship Training | IT | 0-0-0 | 0 | 2 |
| 6. | | Thesis | S | 0-0-28 | 28 | 14 |

## EMERGING TECHNOLOGY COURSES (ETC) – ELECTIVE

| S. NO. | COURSE CODE | COURSE TITLE | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| **EMERGING TECHNOLOGY COURSES (ETC) - I** | | | | | | |
| 1. | PL23E01 | Advanced Spatial Data Infrastructure for Planning | TS | 1-0-4 | 5 | 3 |
| 2. | PL23E02 | Drone Mapping for Urban Application | TS | 1-0-4 | 5 | 3 |
| 3. | PL23E03 | Big Data in Urban Planning | T | 3-0-3 | 3 | 3 |
| **EMERGING TECHNOLOGY COURSES (ETC) - II** | | | | | | |
| 4. | PL23E04 | Artificial Intelligence in Planning | T | 3-0-0 | 3 | 3 |

## OPEN ELECTIVE COURSES (OEC)

| S. NO. | COURSE CODE | COURSE TITLE | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| 1. | PL23901 | Planning and Management of Green and Open Spaces | T | 3-0-0 | 3 | 3 |
| 2. | PL23902 | Tourism Planning and Management | T | 3-0-0 | 3 | 3 |

## UNIVERSITY COURSES (UC)

| S. NO. | COURSE CODE | COURSE TITLE | Course Type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| 1. | | தமிழர்மரபு / Heritage of Tamils | T | 1-0-0 | 1 | 1 |
| 2. | | தமிழரும் தொழில்நுட்பமும் / Tamils and Technology | T | 1-0-0 | 1 | 1 |
| 3. | | Universal Human Values | T | 1-0-2 | 3 | 2 |
| 4. | | Standards – B.Plan. | T | 1-0-0 | 1 | 1 |
| 5. | | Entrepreneurship Development | T | 3-0-0 | 3 | 3 |
| 6. | | Perspectives of Sustainability in Planning | TS | 2-0-2 | 3 | 3 |

## AUDIT COURSES (AC)

| S. NO. | COURSE CODE | COURSE TITLE | Course type | Periods / Week | | CREDITS |
|---|---|---|---|---|---|---|
| | | | | L-T-P/S | TCP* | |
| 1. | | Constitution of India | T | 3-0-0 | 0 | 0 |
| 2. | | Value Education | T | 3-0-0 | 0 | 0 |
| 3. | | Pedagogy Studies | T | 3-0-0 | 0 | 0 |
| 4. | | Stress Management by Yoga | T | 3-0-0 | 0 | 0 |
| 5. | | Personality Development Through Life Enlightenment Skills | T | 3-0-0 | 0 | 0 |
| 6. . | | Unnat Bharat Abhiyan | T | 3-0-0 | 0 | 0 |
| 7. . | | Essence of Indian Knowledge Tradition | T | 3-0-0 | 0 | 0 |
| 8. . | | Sanga Tamil Literature Appreciation | T | 3-0-0 | 0 | 0 |

| PL23101 | CITIES IN HISTORY | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 2 |

**OBJECTIVES**

- To understand the historical evolution of cities and its significance to the modern planning.
- To analyze the concepts, stratifications, structure and Institutions of the agrarian, industrial and tribal societies.
- To analyze the history, common and distinct elements, built form and the town planning of the medieval, colonial, modern and post-modern cities/towns of India.
- To remember the typologies, origin, growth, decline and renewal of different Indian cities based on location and function.
- To analyze with case studies, the evolution, trend of growth, urban pattern, historical challenges, and interventions of South Asian cities and compare their similarities and dis-similarities with Asian cities.

**UNIT I INTRODUCTION** **6**

Significance of studying historical processes; Interpreting history for planning purposes; Concept of time as a dimension of built form; Human settlements as a material expression of civilizational development

**UNIT II SETTLEMENTS IN HISTORY** **6**

Origin of human settlement; Society: concepts and institutions; Social stratification: concept and bases; Agrarian classes; Industry and labor.

**UNIT III HISTORY OF CITIES IN INDIA** **6**

Cities in India from medieval to colonial era; Medieval planning in India and their common and distinct elements; Colonial history, built form and town planning

**UNIT IV HISTORY OF CITIES IN SOUTH ASIA** **6**

Evolution of cities in South Asia, Urban Patterns and trends, similarities and differences from Indian cities; Examples and case studies from South Asia.

**UNIT V URBAN PROCESSES** **6**

Criteria of location and development of towns; Political, economic, technological, social and cultural factors shaping settlements through history

**TOTAL: 30 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Recognize the historical processes for overview of urban settlements and their various urban patterns.

**CO2** Demonstrate familiarity with chronological evolution of different cities and their functional and spatial characteristics in different time periods.

**CO3** Distinguish the various urban processes and different parameters affecting the functioning

**CO4** Relate to a city in terms of its character and pattern.

**CO5** Infer the common elements for categorization of urban patterns based on different parameters.

**CO6** Categorize the locational, developmental, political, economic, technological, social and cultural factors historically shaping the Asian cities.

**TEXT BOOKS**


1. Lewis Mumford, “The City in History”, Harcourt, Brace and World, 1961.
2. Morris A E J, “History of Urban form before the Industrial Revolution”, Routledge, 1994.
3. Spiro Kostof. “The city shaped: Urban patterns and Meaning through history”, Thames, and Hudson, 1999.
4. Bosselmann, P “Urban Transformation”, Island Press, Washington, D.C, 2008.
5. Banga, I. “The City in Indian History”, Manohar Publishers and Distributors, New Delhi, 1991.


**REFERENCES**


1. Beverley, E. “Colonial Urbanism and South Asian Cities”, Social History, Vol. 36, No. 4, pp. 482–497, 2011.
2. Introduction to Settlement Geography, Sumita Ghosh, Orient Black Swan , 1998.
3. Cities, Urbanization& Urban Systems (Settlement Systems), K. Siddhartha and S. Mukherjee, Kitab Mahal, 2016.
4. History of Human Settlements, Sengupta, B.K., New Delhi, Institute of Town Planners, India 2002.
5. G. R. Madan, “Social Change and Problems of Development in India”, Allied Publisher Pvt. Ltd, 1978.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 |
| **CO2** | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| **CO3** | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | | 3 |
| **CO4** | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 3 |
| **CO5** | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| **CO6** | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 3 |
| **Average** | **3** | **3** | **2** | **3** | **2** | **3** | **2** | **2** | **3** | **2** | **2** | **3** |

3- High 2-Moderate 1-Low

| PL23102 | PLANNING DATA COLLECTION AND ANALYSIS | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To enumerate on the data sets required for undertaking studies for different types and levels of planning
- To explain the salient features of different types of data collection techniques
- To understand the steps under various types of data collection techniques
- To explain the various methods of population projection and analysis thereof
- To interpret the basic protocols of data representation

**UNIT I TYPES OF DATA AND SOURCES OF DATA FOR PLANNING** **9**

Understanding the difference between data, information and knowledge. Distinction between facts and opinions. data requirements for urban and regional planning- demography, economy, transport, infrastructure; sources of primary and secondary data. Overview of data availability from different sources for e.g. Census, NSSO etc, Topo sheets, aerial photography, satellite imagery, GSI, Bhuvan geo portal

**UNIT II DATA COLLECTION METHODS** **9**

Quantitative data collection – collection of data, record, file, questionnaire design, design of sample surveys, types of sampling, measurement scales, data coding and data verification.
Qualitative data collection – focus group surveys, individual interviews, observations, ethnographic methods

**UNIT III TYPES OF SURVEYS** **9**

Physical Surveys – Preparation of Base maps at different scales, contents of base maps, techniques for conducting surveys for land use, building use, density and other surveys to be used in planning. Socio – economic survey; Land use / utilization surveys; Density surveys - net and gross residential and non-residential density patterns and analysis; Infrastructure surveys.

**UNIT IV DATA PRESENTATION** **6**

Preparation of tables and charts, interpreting statistical, qualitative and spatial data to identify trends, patterns and processes, Basic protocols of illustration; Color and black and white presentation techniques

**UNIT V TECHNIQUES OF POPULATION ANALYSIS AND POPULATION PROJECTION** **12**

Ratio method: sex ratio, dependency ratio; Rate method: birth and death rate; Mortality measure – crude, specific and standardized death rate; Fertility measure – crude birth rate, general and age specific fertility rate; Population projection: geometric and exponential projection, Cohort – component method, extrapolation and interpolation.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

CO1: Understand and distinguish between data, information, knowledge, facts and opinions

CO2: Identify data requirements for urban and regional planning and evaluate various data sources like Census, NSSO, and satellite imagery

CO3: Design questionnaire

CO4: Design qualitative data collection techniques such as focus group surveys, individual interviews, observations, and ethnographic methods

CO5: Interpret statistical, qualitative, and spatial data through tables and charts, and communicate findings effectively

CO6: Project population and calculate different demographic parameters

**TEXT BOOKS**


1. Canning, David, et al, 'Urban Settlement: Data, Measures, and Trends,' Oxford University Press, 1992.
2. Fitz-Gibbon, C.T., and L.L. Morris, 'How to Analyse Data,' Sage, 1987.
3. Fink, Arlene, 'How to Conduct Surveys,' Sage, 2013.
4. Chattopadhyay, Asis Kumar, and Anuj Kumar Saha., 'Demography: Techniques and Analysis,' Viva Books Pvt Ltd, 2012.
5. Gupta S.C., 'Fundamentals of Statistics,' Himalaya Publishing House, 2013.


**REFERENCES**


1. Buckingham, A., and Peter Saunders, 'The Survey Methods Workbook,' Rawat, 2014.
2. Silberschatz, Abraham, et al, 'Database System Concepts,' McGraw Hill, 2011.
3. Srivastava, O., 'Demography and Population Studies,' Vikas Publishing House, 1994.
4. Mandal, R. B., et al., 'Introductory Methods in Population Analysis,' Concept Publishing Company, 2007.
5. Fowler F, 'Survey Research Methods', Thousand Oaks, CA: Sage, 2013


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 3 | 2 | 3 | 3 | 1 | | | 1 | 3 | | 2 |
| CO2 | 2 | 3 | 3 | 3 | 3 | | | | 1 | 3 | 2 | 3 |
| CO3 | 2 | 3 | 3 | 3 | 3 | | | | 2 | 3 | 3 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 3 | 3 | | 3 |
| CO5 | 3 | 3 | 3 | 2 | 3 | | | | 2 | 3 | | 3 |
| CO6 | 2 | 3 | 3 | 3 | 3 | 2 | | | 2 | 3 | 3 | 3 |
| Average | **2** | **3** | **3** | **3** | **3** | **2** | **1** | **1** | **2** | **3** | **3** | **3** |

3- High 2-Moderate 1-Low

| PL23103 | FUNDAMENTALS OF PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To introduce to students, the basic concepts, and rationales of planning.
- To familiarize students with basic planning terminology.
- To understand the plan making processes, levels of planning
- To provide overview of planning practice and actions in India.
- To introduce the hierarchy of development plans and planning process

**UNIT I DEFINITIONS AND RATIONALES OF PLANNING 9**

Definition of Urban and Rural; Basic definitions and frequently used terminology in planning – land use, demography, physical infrastructure, social infrastructure, and housing; Basic Concepts: Urban sprawl, sub urban & Peri-urban areas, Central Business District (CBD), urbanization, Rural-Urban Continuum, conurbation, satellite town/counter magnets. Goals, objectives, and components of planning; Benefits of planning; Planning as a discipline and multidisciplinary nature of planning; Different roles of planners.

**UNIT II FOUNDATIONS OF PLANNING & LEVELS OF PLANNING 9**

Orthodoxies of planning, Components of sustainable urban and regional development; Reasoning and its forms in planning; Planning knowledge and its various forms; Arguments for and against planning; Economic and social aspects as bases of town and country planning, Constitution of India; Nature of the Indian federal structure; Hierarchy of administrative boundaries in India; Various levels of Planning; Reasoning and its various in planning -space, place, and location.

**UNIT III DEVELOPMENT PLANS 9**

Need for Hierarchy of plans – Types and Scope of various scales of plans – Perspective Plan, Regional Plan – Block Development Plan - Structural Plan, Master Plan, Detailed Development Plan/Zonal Plan/Town Planning Schemes - Local Area Plan - Layouts – Significance of plans – Case studies

**UNIT – IV APPROACHES TO PLANNING & PLANNING ORGANISATIONS 9**

Classical approaches to planning; comparative understanding of the process, objectives and strategies. Sustainability and Rationality in planning; Local government of India; District Planning Committees and Metropolitan Planning Committees; Different development authorities and other organizations

**UNIT IV PLANNING PROCESS 9**

Planning system in India - Institutional mechanism, Plan making process – Delineation of planning area, Formulation of aim and objectives, Art of visioning; Plan period, Assessment of developmental issues, Projection of requirements, Development proposals and phasing - Public Participation - Constraints in plan preparation and implementation – Case studies

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Able to understand the influence of planning as a profession and its correlation with other disciplines

**CO2** Demonstrate understanding about the foundational concepts and terminologies used in planning

**CO3** Expose about planning process and justify the rationale of spatial planning
**CO4** Acquire knowledge on various approaches and planning organisations
**CO5** Able to distingue the scope and level of planning.
**CO6** Acquire knowledge on types of development plans, planning organizations and Governance of Planning

**TEXT BOOKS**


1. Jain, A.K. “Town Planning,” Khanna Book Publishing Co., New Delhi, 2020
2. S.K.Kulshrestha,” Dictionary of Urban and Regional Planning. Kalpaz Publications, 2006
3. G.K.Hiraskar, “Fundamentals of Town Planning”, Dhanpat Rai Publications, 2012
4. John Ratclliffe, “An Introduction to Town and Country Planning”, Hutchinson, 1985
5. S.K. Kulshrestha,” Urban and Regional Planning in India”, Sage Publications, 2012
6. Subhash C.Kashyap,” Our Constitution”, National Book Trust, India,2005.


**REFERENCES**


1. Anthony James Catanese and James C.Synder, “Introduction to Urban Planning”, McGraw-Hill, Inc,US, 1988.
2. Patel, S.B, “Urban Planning by Objectives, Economic and Political Weekly,” Vol. 32, No. 16, pp. 822-826, 1997
3. Niti Aayog,”Reforms In Urban Planning Capacity in India Final Report” , September 2021
4. Chand.M, Puri.V.K(1983), Regional Planning in India, Allied Publishers, New Delhi.
5. Klosterman, R.E., “Arguments for and Against Planning, Town Planning Review,” Vol. 56, No. 1, pp. 5-20, 1985
6. Amiya Kumar Das, “Urban Planning in India”, Rawat Publications, 2007.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 1 | | 2 | 2 | 1 | 2 | 1 | | |
| CO2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | | | 1 | | 1 |
| CO3 | 3 | 2 | 2 | 1 | | 1 | 1 | 1 | 1 | | | 1 |
| CO4 | 3 | 2 | 2 | 1 | | 1 | 1 | | | 1 | 1 | |
| CO5 | 3 | 2 | 2 | 1 | | 1 | 1 | 1 | 2 | | 1 | |
| CO6 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Average | **3** | **2** | **2** | **1** | **1** | **1** | **1** | **1** | **2** | **1** | **1** | **1** |

3- High 2-Moderate 1-Low

| PL23104 | URBAN BUILT ENVIRONMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the physical components of an urban built environment
- To understand the importance of urban morphology and its relevance in the field of urban planning
- To explain the relationship between human being and their built environment, focusing on urban areas.
- To understand the anatomy of a building, and its parts including the material properties.
- To explain the concept of sustainable urban development and its benefits.

**UNIT I INTRODUCTION TO THE URBAN BUILT ENVIRONMENT** **9**

Introduction to the physical urban built environment and its significance. Distinguishing between physical and social aspects of urban environments. Impact of various factors like geo physical, socio-economic, cultural, political, transportation and technological aspects on built environment.

**UNIT II URBAN MORPHOLOGY** **9**

Understanding urban morphology and its relevance to urban planning. Elements of Urban Morphology: Blocks, plots, buildings, streets, and open spaces. Urban Tissue: Analyzing the arrangement and interrelation of urban elements. Different types of urban patterns: grids, radials, organic layouts.

**UNIT III HUMAN URBAN RELATIONSHIP** **9**

Importance of public spaces in fostering social interaction and community cohesion. Design principles for inclusivity and accommodating diverse demographics. Cultural Identity: Integrating cultural heritage and traditions into urban planning to reflect local identities. Psychological Well-being and Urban Environments: How physical environments influence mental health, well-being, and quality of life.

**UNIT IV ANATOMY OF A BUILDING** **9**

Foundations, beams, columns, slabs, walls, lintels and sun shades, sump, water tank, flooring. Lime & Mud as basic material for construction, Mud wall construction methods & Stone wall construction. Basic principles of masonry with brick, brick types and bonds. Elements for concrete and type- components of concrete structures. Steel types and functions – its material properties.

**UNIT V SUSTAINABLE URBAN DEVELOPMENT** **9**

Definition and importance of sustainability in urban contexts. Sustainable Development Goal's (SDG's). Sustainable development – meaning and indicator, strategies for achieving sustainable development goals (SDGs) in urban areas. Economic benefits of sustainability: cost savings, improved public health, and enhanced urban competitiveness

**TOTAL : 45 PERIODS**

**OUTCOMES**

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

| | |
|---|---|
| CO1 | To explain the physical components of built environment. |
| CO2 | To discuss the meaning and relevance of urban morphology in urban planning |
| CO3 | To recognize the relationship that exists between human being and their surrounding urban environment. |
| CO4 | To explain the anatomy of building and its material properties |

CO5 To defend the need for sustainable urban development and its economic benefits.

CO6 To understand the need for sustainable urban development in urban planning.

**TEXT BOOKS**


1. Spiro Kostoff City shaped, Bulfinch, Reprint Edition, 1993
2. Gosling and Maitland, Urban Design, New York: St. Martin's Press, 1989
3. Pekmezovic, A., Walker, G. and Walker J, 'Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology and Law Reform,' John Wiley and Sons, New Jersey, 2019
4. S.P Arora and S.P. Bindra, 'Text book of Building Construction,' Ganpat Rai publications (P) Ltd New Delhi - 110002, 2005.
5. Dr. B.C.Punmia, 'A Text book of Building Construction,' Laxmi Publications Pvt. Ltd., New Delhi, 2001.


**REFERENCES**


1. Jon Lang , Urban Design Typology and procedures, Architectural Press
2. KevinLynch, Good City Form, MIT Press
3. A.E.J. Morris, History of Urban Form, Longman Scientific and Technical.
4. Keith Pezzoli, "Human Settlements and Planning for Ecological Sustainability: The case of Mexico", The MIT Press, 2000.
5. Newman, P. and Kenworthy, J, "Sustainability and Cities", Island Press, Washington, D.C. 1999.


**CO-PO Mapping**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| CO1 | 3 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 3 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| CO6 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| Average | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

**UC23H01** **தமிழர் மரபு** **L T P C**
**1 0 0 1**

**அலகு I** **மொழி மற்றும் இலக்கியம்**: **3**

இந்திய மொழிக் குடும்பங்கள் – திராவிட மொழிகள் – தமிழ் ஒரு செம்மொழி – தமிழ் செவ்விலக்கியங்கள் - சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை – சங்க இலக்கியத்தில் பகிர்தல் அறம் – திருக்குறளில் மேலாண்மைக் கருத்துக்கள் – தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண பௌத்த சமயங்களின் தாக்கம் - பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் – சிற்றிலக்கியங்கள் – தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி – தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.

**அலகு II** **மரபு – பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை – சிற்பக் கலை**: **3**

நடுகல் முதல் நவீன சிற்பங்கள் வரை – ஐம்பொன் சிலைகள்– பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் – தேர் செய்யும் கலை – சுடுமண் சிற்பங்கள் – நாட்டுப்புறத் தெய்வங்கள் – குமரிமுனையில் திருவள்ளுவர் சிலை – இசைக் கருவிகள் – மிருதங்கம், பறை, வீணை, யாழ், நாதஸ்வரம் – தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு.

**அலகு III** **நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்**: **3**

தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஒயிலாட்டம், தோல்பாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.

**அலகு IV** **தமிழர்களின் திணைக் கோட்பாடுகள்**: **3**

தமிழகத்தின் தாவரங்களும், விலங்குகளும் – தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் – தமிழர்கள் போற்றிய அறக்கோட்பாடு – சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் – சங்ககால நகரங்களும் துறை முகங்களும் – சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி – கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி.

**அலகு V** **இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு**: **3**

இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு – இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் – சுயமரியாதை இயக்கம் – இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு – கல்வெட்டுகள், கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.

**TOTAL : 15 PERIODS**

**TEXT-CUM-REFERENCE BOOKS**


1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)

5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

**UC23H01** **HERITAGE OF TAMILS** **L T P C**
**1 0 0 1**

**UNIT I LANGUAGE AND LITERATURE 3**

Language Families in India - Dravidian Languages – Tamil as aClassical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.

**UNIT II HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE 3**

Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.

**UNIT III FOLK AND MARTIAL ARTS 3**

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leatherpuppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

**UNIT IV THINAI CONCEPT OF TAMILS 3**

Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

**UNIT V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE 3**

Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.

**TOTAL : 15 PERIODS**

**TEXT-CUM-REFERENCE BOOKS**


1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

| PL23105 | COURSE ON WRITING AND COMMUNICATION | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 2 |

**OBJECTIVES**

- To familiarize first year students of planning with the fundamental aspects of English.
- To develop all the basic language skills - speaking, listening, reading, writing, presenting by giving sufficient practice in real life contexts.
- To enable the use of language to think, express analysis and communicate meaning
- To enhance the linguistic and communicative competence of students

**UNIT I FUNDAMENTALS OF WRITING AND COMMUNICATION 6**

**Effective communication-** Seven Cs of effective communication, key language skills;

**Listening** – Telephone conversation & Writing message, gap filling; **Reading** – Telephone message, bio-note; **Writing** – Personal profile; Grammar – Simple present tense, Present continuous tense, Asking questions (wh-questions); **Vocabulary** – One-word substitution, Synonyms & Antonyms

**UNIT II NARRATION AND SUMMATION 6**

**Listening** – Travel podcast / Watching a travel documentary; **Reading** – An excerpt from a

travelogue, Newspaper Report, Biographies, literature, travel and technical blogs; **Writing** – Guided writing- paragraph, report, narrative (event, personal experience etc.); **Grammar** –Subject – verb agreement, Simple past, Past continuous Tenses, prepositions; **Vocabulary** –Word formation (Prefix and Suffix), Phrasal Verbs;

**UNIT III EXPRESSION 6**

**Listening** – Group discussion (case study); **Reading** – Visual content (Pictures on social issues /

natural disasters) for comprehension, Editorial, Opinion Blogs; **Writing**- Picture description; Problem and Solution Essay (Descriptive/ Narrative); **Grammar** – Modal verbs; Relative pronoun Future tense, Perfect tenses, Preposition; Vocabulary – Adjectives and Adverb, Negation (Statement & Questions), Simple, Compound & Complex Sentences; **Vocabulary-** Cause & Effect Expressions- Content vs Function words

**UNIT IV REPORTING 6**

**Listening** – Oral news report; **Reading** – Case studies, Newspaper report on survey findings – **Writing** – Survey report, making recommendations, Transcoding, Accident Report, Letter to Editor, Essays (Argumentative/ Problem-Solution); **Grammar** – Active and passive voice, Direct and Indirect speech, Modals; **Vocabulary** – Reporting verbs, Numerical adjectives, Contextual vocabulary, Words used both as noun and verb

**UNIT V PRESENTATION 6**

**Listening** – Job interview, Telephone interview; Self Introduction; **Reading** - Job advertisement and company- profile, Statement of Purpose (SoP), Interview Excerpts making inferences; **Writing** – Job/ internship application (Cover letter and CV/ Resume); Email; **Grammar** – Numerical Adjectives, Prepositional phrases, Conjunctions, Relative Clauses; Question Tags, **Vocabulary** – Fixed expressions, Collocations;

**TOTAL : 30 PERIODS**

**Assignment:** Designing a tourist brochure / Writing an opinion article / Debating on topics of interest and relevance / Narrating one's personal experience in front of a group

**COURSE OUTCOMES**

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

**CO1** Use grammar and vocabulary suitable for general context
**CO2** Comprehend the nuances of spoken and written communication.
**CO3** Read and comprehend technical texts effortlessly
**CO4** Write reports and job application for internship or placement.
**CO5** Learn to use language effectively in a professional context.
**CO6** Communicate effectively in formal and informal context

**TEXT BOOKS**

1. "English for Engineers and Technologists" Volume I by Orient Blackswan, 2022
2. English for Science & Technology - I" by Cambridge University Press, 2023

**REFERENCES**


1. "Interchange" by Jack C.Richards, Fifth Edition, Cambridge University Press, 2017.
2. "English for Academic Correspondence and Socializing" by Adrian Wallwork, Springer, 2011.
3. "The Study Skills Handbook" by Stella Cortrell, Red Globe Press, 2019
4. www.uefap.com


**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | | | | | | | | | 3 | 3 | | 2 |
| CO2 | | | | | | | | | 3 | 3 | | 2 |
| CO3 | | | | | | | | | 3 | 3 | | 3 |
| CO4 | | | | | | | | | 3 | 3 | | 3 |
| CO5 | | | | | | | | | 3 | 3 | | 3 |
| CO6 | | | | | | | | | 3 | 3 | | 3 |
| Average | | | | | | | | | **3** | **3** | | **3** |

3- High 2-Moderate 1-Low

| PL23106 | PLANNING STUDIO I: SPACE PERCEPTIONS AND MAPPING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 14 | 7 |

**OBJECTIVES**

- To understand various building blocks, and city planning elements using movies, lectures, and tours.
- To understand distance and area and drawing the same to scale.
- To study the built forms of various areas with different characteristics and analyses how the built forms support their activities.
- To show ability to observe, record, map and present different activities and spaces. Comprehend the characteristics of form and space.

**STUDIO LEARNING UNIT**:

**Visual Presentation techniques** - Use of points, lines, shapes, forms, colours, and textures. Composition, scale, and proportions in buildings, streets, and cities, **Sketching** of geometric built forms, **Photography** as a tool for visual information

**Drafting Techniques** - Introduction to drawing equipment and materials, Construction of simple and complex solids; Different types of projections; Concept of positive and negative spaces;

Street Plan, Elevation, Section and views

**Presentation of Case Studies and Inferences** - Various city forms & configurations

**Identification of Problems and Presentation** - Applications of design thinking in Urban planning; understand, observe and define the problem, Brainstorming, Mind maps, Ideation games, six thinking hats doodling to express ideas; prototype and analyse.

**CONTENT**

**Introduction to Maps**: Types of maps - political, cadastral, topographic, resource, network, and transportation.

**Cartography and Map Making**: Formulation of maps, elements of maps – Scale, directions, legends, template, etc. - Explore various types of Thematic maps.

**Distance and Area Perception**- Developing an eye for distance and area and translating the same to scale on drawings.

**Creation of base maps**: Recording and presenting information on maps. Preparation of Key / Index Maps

**Cartographic Protocols**: Choice of appropriate scales (numeric and graphic); Title of maps, legends, notation; Map enlargement and reduction; Superimposition of cadastral maps for revenue boundary delineation

**Elements of a city**: Understanding various building blocks of a city; Develop understanding about city planning elements using movies, lectures, and city tours, etc., Cities with special emphasis on the organization and configuration of forms: rhythms, balance, harmony, hierarchy, datum, etc.

**Model Making**: Understanding of different materials for models and built form models to understand the concepts learnt in the studio; A study of basic land and built forms through presentation models

**STUDIO OUTPUT**:

Visual presentation of city forms (group/individual), Visual presentation of the pilot neighbourhood – Sketches, Photographs, Presentation of the neighbourhood with Technical Drawings & Models – Base map of the neighbourhood, Street sections, elevations (individual/ group); Presentation of the problems identified in the neighbourhoods, debate/role-plays for developing strategies

**TOTAL: 210 PERIODS**

**COURSE OUTCOMES**

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

| | |
|---|---|
| CO1 | Able to understand the visual techniques and drafting techniques |
| CO2 | Elucidate the techniques of preparation of base and thematic maps. |
| CO3 | Develop understanding appropriate scale for built form |
| CO4 | Develop understanding of various city elements |
| CO5 | Depict different built environment, scenarios, priorities of development, action areas and elements of a city. |
| CO6 | Presentation of space perception data on maps, models, etc. |

**TEXT BOOKS**


1. Francis D. K. Ching, “Architecture: Form Space and Order”, Van Nostrand Reinhold Co, Canada, 1979.
2. Cartography: Thematic Map Design, Borden Dent and Others, McGraw-Hill Education, 2008
3. Kevin Lynch,” The Image of the City”, M.I.T.Press, 1960.
4. Gavin Parker, “Key Concepts in Planning”, Sage, New Delhi, 2012.
5. Mary Kane and William M.K.Trochim, “Concept Mapping for Planning and Evaluation”, Oxford University Press, 1989.


**REFERENCES**


1. Christiane Wagner, “Visualizations of Urban Space: Digital Age, Aesthetics, and Politics”, Taylor & Francis, Ltd, 2023.
2. Christoph Linder and Shirley Jordan, “Cities Interrupted: Visual Culture and Urban Space”, Bloomsbury Academic, 2016.
3. Mona A. Abdelwahab, “ A Reflexive Reading of Urban Space”, Routledge, 2021.
4. Matthew Carmona, “Public Places Urban Spaces, The Dimensions off Urban Design”, Routledge, 2021.
5. Government of India, “Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organization, Ministry of Urban Development, New Delhi, 2015.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| CO1 | 2 | 2 | 2 | 1 | | 2 | 2 | 1 | | 2 | | 3 |
| CO2 | 3 | 3 | 2 | 2 | | 1 | | 1 | 3 | 3 | | 3 |
| CO3 | 3 | 2 | 1 | 1 | | 2 | 1 | | | 2 | | 2 |
| CO4 | 2 | 3 | 2 | 2 | | 1 | 1 | 2 | 2 | 1 | | 3 |
| CO5 | 3 | 2 | 2 | 2 | | 1 | 1 | 1 | 3 | 3 | | 1 |
| CO6 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | | 3 | 2 | | 2 |
| Average | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | | 2 |

3- High 2-Moderate 1-Low

| PL23201 | DEMOGRAPHY AND URBAN SOCIOLOGY | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 2 |

**OBJECTIVES**

1. To understand the basic concept and definitions of the key terms of the population studies and to remember the demographic trends at the global, national, regional and the city level.
2. To understand the basic terms of migration and analyse the trend of migration at international, national, state, and regional level.
3. To understand the definition of basic terms in urban sociology and the impact of the socioeconomic indicators on urban and the regional planning.
4. To understand various urban social theories and apply their relevance to planning.
5. To understand social problems in an urban community and its impacts

**UNIT I STUDY OF POPULATION 6**

Evolution of population studies, Demographic approaches and key demographic principles including study of population size, determinants of population size, population structure and composition - sex composition, sex ratio, child -woman ratio, measures of age -sex structure, age sex pyramid; workforce; Spatial distribution of population, measures of population distribution and concentration

**UNIT II DEMOGRAPHIC STATISTICS AND URBANIZATION 6**

Trends of vital statistics such as fertility, mortality, migration, demographic balancing equation; Defining migration, theories of migration and population movement, types and effects of migration, migration trends in developing countries; Population growth and decline.

**UNIT III INTRODUCTION: THE FIELD OF SOCIOLOGY IN URBAN PLANNING 6**

Introduction to Urban Sociology - meaning and importance; Origin and development of urban societies. Some Basic Concepts: urbanization, urbanism, Rural-Urban Continuum, conurbation, suburbanization, urban neighborhood, urban ecology; Basic features of Indian society and culture. Urban Inequalities: Caste, Class, And Ethnic Segregation of Space.

**UNIT IV URBAN SOCIAL THEORY 6**

Four approaches: classical urban sociology, dependency structuralism, Marxism and Multi level networks. Traditional and modern theories of sociology; methods of investigation and understanding society, man, and environment;

**UNIT V URBANISATION AND SOCIOLOGY 6**

Urbanisation trends in the Global, Asian, and Indian text; Social impact assessment of urban development, social problems in urban community -informal settlements, and inclusion issues, resettlement, and rehabilitation

**TOTAL: 30 PERIODS**

**OUTCOMES**

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

**CO1** Develop basic understanding of demography approaches and principles
**CO2** Decipher and analyse important migration aspects for preparing development plans.
**CO3** Develop basic understanding of sociology and its principles and its relation in urban context
**CO4** Able to understand the basics of urban social theory and interactions with planning
**CO5** Comprehend the social problems in urban context

**CO6** Disseminate knowledge on urbanization policies and plans, and their relationship with planning.

**TEXT BOOKS**


1. Weinstein, J. and Pillai, V.K, “Demography: The Science of Population,” Second Edition, Rawat Publications, Jaipur ,2017
2. Dudley L.Poston Jr ,“Handbook of Population”, Springer , 2019
3. N Jayabalan, “Urban Sociology”, Atlantic Publishers, and Distributers, 2002
4. AK Sinha, Ratika Thakur, Avanee Khatri, “Social Impact Assessment in India”, Sage Spectrum,2022
5. TK Oommen & CN Venugopal, “Sociology,” Eastern Book Company,2001


**REFERENCES**


1. Gyoujin Cho,’’Global Review of Human Settlements,” Pregamon Press, London, 1976
2. Samuel Golding, “Urban Sociology and Urbanization,” Wilford Press, 2018
3. Castells Manuel and A. Sheridan, “The Urban Question,” London: Edward Arnold,1977.
4. Ahluwalia, I.J., Kanbur, R. and Mohanty, P.K. (eds.), “Urbanisation in India: Challenges, Opportunities and the Way Forward”, Sage, New Delhi, 2014
5. Majumdar, P.K.,“India's Demography: Changing Demographic Scenario in India”, Rawat Publications, Jaipur,2013


**CO-PO Mapping**

| **Course Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO3 | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| CO4 | 3 | 2 | 2 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO5 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO6 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| **Average** | **3** | **2** | **2** | **3** | **2** | **3** | **3** | **1** | **1** | **1** | **3** | **3** |

3-High 2-Moderate 1-Low

| | | L | T | P/S | C |
|---|---|---|---|---|---|
| **PL23202** | **SITE AND LAND DEVELOPMENT** | **3** | **0** | **0** | **3** |

**OBJECTIVES**

- To formulate a site analyses project with illustrations and report.
- To consider and take into account geological factors to prevent natural disasters and the disaster management strategies.
- To examine Hydrological parameters to identify suitable land for the urban and regional planning.
- To evaluate the physical features of the earth's surface to analyze the land suitability in the urban and regional planning process.

**UNIT I SITE ANALYSIS 9**

Definition of plot, site, land and region, units of measurements, reconnaissance and need for surveying. Importance of site analysis; Onsite and off-site factors; Analysis of natural, cultural and aesthetic factors – topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available - sources of water supply and means of disposal system, visual aspects; Preparation of site analysis diagram. Site selection criteria for housing development, commercial and institutional projects.

**UNIT II GEOLOGY 9**

Geological Structure; Land Forms; Weathering; Landslides and Mass Wasting; Instability of hill slopes. Land and terrain suitability for various types of development. Earthquakes; seismic zoning; disaster prevention and other planning considerations.

**UNIT III HYDROLOGY 9**

Ground Water- Concept and role in town planning of different types of terrain, hydrologic cycle; Groundwater bearing properties of different lithological formations; surface water, reservoirs and springs; artificial recharge and ground water mound, hydrological features in relation of seepage; fluctuation of water table and hydrographs; geological structure and underground passages for water supply. Planning considerations for the same. Implications on site selection and development.

**UNIT IV FUNDAMENTALS OF GEOMORPHOLOGY 9**

Geomorphic classification and Evolution of landforms; Geomorphic cycle and their interpretation; Evolution of typical geomorphic features of India; Description and classification of folds, faults, joints, unconformities, fault planes; Land form types; Landslides, instability of hill slopes and its prevention.

**UNIT V CLIMATE AND HUMAN COMFORT 9**

Factors that determine climate of a place; Components of Climate; Climate classifications; Design Considerations involving Site Conditions; Effective temperature; Human thermal comfort; Use of C.Mahony's tables; Design Of Solar Shading Devices; Building Orientation, Plan form and Building Envelope; Heat transfer and Thermal Performance of Walls and Roofs.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Sensitivity towards aspects of site at macro and micro contexts.

**CO2** Acquire skills required to critically analyze land forms and related literature.

**CO3** Understand the complex social, environmental and cultural challenges that confront land development.

**CO4** Demonstrate knowledge about geological and hydrological aspects of land development.

**CO5** Ability to exploit potential of site to plan the built environment

**CO6** Elucidate the potential/ limitations site offers to plan development considering building orientation, form, and building envelop for the thermal comfort at the micro level.

**TEXT BOOKS**


1. Kevin Lynch, 'Site Planning', Third Edition, MIT Press, 1984.
2. Edward. T. White, 'Site Analysis', Archi Basic Press, 2014.
3. Beer, A.R. and Higgins, C. “Environment Planning for Site Development: A manual for sustainable local planning and design”, Second Edition, E and FN Spon, 2000.
4. Dewberry, S.O. “Land Development Handbook: Planning, Engineering, and Surveying”, McGraw Hill, 2008.
5. Warren Viessman and Gary L. Lewis, “Introduction to Hydrology”, Pearson Education, 2012.


**REFERENCES**


1. Syms, P, “Land Development and Design”, Wiley, Oxford, 2010.
2. Joseph De. Chiarra and Lee Coppleman, “Urban Planning and Design Criteria”, Van Nostrand Reinhold Co., 1982.
3. O.H. Koenigsberger, “Manual of Tropical Housing and Building – Part I - Climate design”, Orient Longman, 1993.
4. Richard John Huggett, “Fundamentals of Geomorphology”, Routledge, 2011.
5. Genevieve S. Baudoin, “Interpreting Site: Studies in Perception, Representation, and Design”, Routledge, 2015.


**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 1 | 3 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| Average | **3** | **3** | **2** | **3** | **2** | **3** | **2** | **2** | **3** | **2** | **2** | **3** |

3- High 2-Moderate 1-Low

| PL23203 | ECONOMICS FOR PLANNERS | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 2 |

**OBJECTIVES**

- To remember the definitions of the basic terms of economics and understand their relevance to planning
- To know the laws and the elasticity of demand and supply and their application in urban and regional planning.
- To understand the economic definitions of Perfect and imperfect market types, and economies of scale with reference to urban and regional planning.
- To evaluate and create urban development plan with reference to the housing transportation and land use sectors and the location of socio-economic and infrastructure facilities.
- To create regional plan with reference to the disparities in development, input-output analyses, sectoral development, and the location of socio-economic and infrastructure facilities.

**UNIT I INTRODUCTION TO ECONOMICS 6**

Definition of economics - Normative Economics Versus Positive Economics- Basics of Micro and Macro Economics- Organisation of Economic activities- theories of economics- Central Problems of An Economy- Use of Economics in Planning.

**UNIT II THEORY OF DEMAND AND SUPPLY 6**

Definition of need, Demand and supply- Law of Demand and supply- its use in Planning- Application of demand and supply in relation to housing and infrastructure services- perfect and imperfect market type – pricing under different market conditions and the market mechanism.

**UNIT III PRODUCTION AND CONSUMPTION 6**

Consumer Choice Theory- Production and Costs- Theory of Production- factors of production, cost scale of production - economics of scale- consumption – theories of consumption

**UNIT IV FORMS OF COMPETITION 6**

Performance of Competitive Markets- Efficiency, Equity and Welfare Economics- Imperfect Competition: Monopolies, Oligopolies, Monopolistic Competition - Performance and Regulation of Imperfect Markets- Resource allocation and optimization

**UNIT V DEVELOPMENT AND INVESTMENT 6**

Classical and modern approaches- Growth and development indicators- defining development and under development- Economic role of government

**TOTAL : 30 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Understand and predict how supply and demand concept will affect prices in market economies

**CO2** Interpret, apply and relate economic principles to current economic issues

**CO3** Compute different measures of macroeconomic activity such as the national income accounts, inflation, and unemployment, and evaluate the shortcomings of traditional economic measures.

**CO4** To measure equilibrium level output and measure elasticity of demand

**CO5** Recognize how monetary and fiscal policy can be used to achieve policy goals

**CO6** Recognize market failure and the role of government in dealing with those failures.

**TEXT BOOKS**


1. Robert H.Frank, : Principles of Micro Economics – Sixth Edition: McGraw: Hill Education, 2016
2. Mankiw, N.G., Kneebone, R.D. and McKenzie, K.J.: Principles of Microeconomics – Sixth Canadian Edition: Nelson Education, 2014.
3. Anne C.Steinemann, William C.Apgar, H.James Brown.: Microeconomics for Public Decisions, Thomson/South-Western, Mason, 2005.
4. Jeffrey M.Perloff Microeconomics, Microeconomics, Pearson Education, Inc, Addison – Wesley – Seventh Edition,2015
5. Karl E.Case, Ray C.Fair, Sharon M.Oster. : Principles of Economics, Pearson Education, 10th Edition, 2014


**REFERENCES**


1. Duranton, G., Henderson, J.V., and Strange, W.C. (2015) Handbook of Regional and Urban Economics, Volume 5, Elsevier, Amsterdam, 2015
2. Feldman, M.M.A., What Kind of Economics for What Kind of Planning? Journal of the American Planning Association, Vol. 53, Issue 4, pp. 427-429, 1987.
3. Jacobs, J. , The Economy of Cities, Random House, New York,1970.
4. Sandeep Garg , Introductory Microeconomics by Sandeep Garg, Dhanpati Rai Publication, 2021.
5. Campbell McConnell, Stanley L.Brue, Microeconomics: Principles, Problems and Policies, McGraw-Hill/Irwin, 2005.
6. Robert S. Pindych, Daniel L.Rubinfeld, Microeconomics, Global edition, Published by Pearson, Ninth Edition, 2023.
7. Geoferey A.Jehle, Philip J.Reny, Advanced Microeconomic Theory, Pearson Education Limited, Third Edition, 2011.
8. Dominick Salvatore, Schaum'S Outline of Microeconomics, McGraw Hill, Fourth Edition, 2006.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | | | | 3 | | | | | | |
| CO2 | 3 | | | | | | | | | | | |
| CO3 | | | | | | 3 | 2 | 1 | | | 3 | |
| CO4 | | 3 | | 2 | | | | | | | | |
| CO5 | 3 | 3 | 2 | | 2 | | | | 1 | 2 | 3 | 2 |
| CO6 | | 3 | | | | 3 | | 2 | | | 1 | |
| Average | **2** | **2** | **2** | **2** | **2** | **2** | **2** | **2** | **1** | **2** | **1** | **2** |

3- High 2-Moderate 1-Low

**NCC Credit Course Level 1***

| **UC23P01** | **(ARMY WING) NCC Credit Course Level - I** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| | | **2** | **0** | **0** | **2** |

| | | |
|---|---|---|
| **NCC GENERAL** | | **6** |
| NCC 1 | Aims, Objectives & Organization of NCC | 1 |
| NCC 2 | Incentives | 2 |
| NCC 3 | Duties of NCC Cadet | 1 |
| NCC 4 | NCC Camps: Types & Conduct | 2 |
| **NATIONAL INTEGRATION AND AWARENESS** | | **4** |
| NI 1 | National Integration: Importance & Necessity | 1 |
| NI 2 | Factors Affecting National Integration | 1 |
| NI 3 | Unity in Diversity & Role of NCC in Nation Building | 1 |
| NI 4 | Threats to National Security | 1 |
| **PERSONALITY DEVELOPMENT** | | **7** |
| PD 1 | Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving | 2 |
| PD 2 | Communication Skills | 3 |
| PD 3 | Group Discussion: Stress & Emotions | 2 |
| **LEADERSHIP** | | **5** |
| L 1 | Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour 'Code | 3 |
| L 2 | Case Studies: Shivaji, Jhasi Ki Rani | 2 |
| **SOCIAL SERVICE AND COMMUNITY DEVELOPMENT** | | **8** |
| SS 1 | Basics, Rural Development Programmes, NGOs, Contribution of Youth | 3 |
| SS 4 | Protection of Children and Women Safety | 1 |
| SS 5 | Road / Rail Travel Safety | 1 |
| SS 6 | New Initiatives | 2 |
| SS 7 | Cyber and Mobile Security Awareness | 1 |

**TOTAL : 30 PERIODS**

**NCC Credit Course Level 1***

| UC23P02 | (NAVAL WING) NCC Credit Course Level – I | L T P C<br>2 0 0 2 |
|---|---|---|
| **NCC GENERAL** | | **6** |
| NCC 1 | Aims, Objectives & Organization of NCC | 1 |
| NCC 2 | Incentives | 2 |
| NCC 3 | Duties of NCC Cadet | 1 |
| NCC 4 | NCC Camps: Types & Conduct | 2 |
| **NATIONAL INTEGRATION AND AWARENESS** | | **4** |
| NI 1 | National Integration: Importance & Necessity | 1 |
| NI 2 | Factors Affecting National Integration | 1 |
| NI 3 | Unity in Diversity & Role of NCC in Nation Building | 1 |
| NI 4 | Threats to National Security | 1 |
| **PERSONALITY DEVELOPMENT** | | **7** |
| PD 1 | Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving | 2 |
| PD 2 | Communication Skills | 3 |
| PD 3 | Group Discussion: Stress & Emotions | 2 |
| **LEADERSHIP** | | **5** |
| L 1 | Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code | 3 |
| L 2 | Case Studies: Shivaji, Jhasi Ki Rani | 2 |
| **SOCIAL SERVICE AND COMMUNITY DEVELOPMENT** | | **8** |
| SS 1 | Basics, Rural Development Programmes, NGOs, Contribution of Youth | 3 |
| SS 4 | Protection of Children and Women Safety | 1 |
| SS 5 | Road / Rail Travel Safety | 1 |
| SS 6 | New Initiatives | 2 |
| SS 7 | Cyber and Mobile Security Awareness | 1 |

**TOTAL : 30 PERIODS**

**NCC Credit Course Level 1***

| **UC23P03** | **(AIR FORCE WING) NCC Credit Course Level – I** | **L T P C**<br>**2 0 0 2** |
|---|---|---|

| | | |
|---|---|---|
| **NCC GENERAL** | | **6** |
| NCC 1 | Aims, Objectives & Organization of NCC | 1 |
| NCC 2 | Incentives | 2 |
| NCC 3 | Duties of NCC Cadet | 1 |
| NCC 4 | NCC Camps: Types & Conduct | 2 |
| **NATIONAL INTEGRATION AND AWARENESS** | | **4** |
| NI 1 | National Integration: Importance & Necessity | 1 |
| NI 2 | Factors Affecting National Integration | 1 |
| NI 3 | Unity in Diversity & Role of NCC in Nation Building | 1 |
| NI 4 | Threats to National Security | 1 |
| **PERSONALITY DEVELOPMENT** | | **7** |
| PD 1 | Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving | 2 |
| PD 2 | Communication Skills | 3 |
| PD 3 | Group Discussion: Stress & Emotions | 2 |
| **LEADERSHIP** | | **5** |
| L 1 | Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code | 3 |
| L 2 | Case Studies: Shivaji, Jhasi Ki Rani | 2 |
| **SOCIAL SERVICE AND COMMUNITY DEVELOPMENT** | | **8** |
| SS 1 | Basics, Rural Development Programmes, NGOs, Contribution of Youth | 3 |
| SS 4 | Protection of Children and Women Safety | 1 |
| SS 5 | Road / Rail Travel Safety | 1 |
| SS 6 | New Initiatives | 2 |
| SS 7 | Cyber and Mobile Security Awareness | 1 |

**UC23H02** **தமிழரும் தொழில்நுட்பமும்** **L T P C**
**1 0 0 1**

**அலகு I** **நெசவு மற்றும் பானைத் தொழில்நுட்பம்**: **3**
சங்க காலத்தில் நெசவுத் தொழில் – பானைத் தொழில்நுட்பம் - கருப்பு சிவப்பு பாண்டங்கள் – பாண்டங்களில் கீறல் குறியீடுகள்.

**அலகு II** **வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்**: **3**
சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் – சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரச் சிற்பங்களும், கோவில்களும் – சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் – நாயக்கர் காலக் கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் – செட்டிநாட்டு வீடுகள் – பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக் கலை.

**அலகு III** **உற்பத்தித் தொழில் நுட்பம்**: **3**
கப்பல் கட்டும் கலை – உலோகவியல் – இரும்புத் தொழிற்சாலை – இரும்பை உருக்குதல், எஃகு – வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் – நாணயங்கள் அச்சடித்தல் – மணி உருவாக்கும் தொழிற்சாலைகள் – கல்மணிகள், கண்ணாடி மணிகள் – சுடுமண் மணிகள் – சங்கு மணிகள் – எலும்புத்துண்டுகள் – தொல்லியல் சான்றுகள் – சிலப்பதிகாரத்தில் மணிகளின் வகைகள்.

**அலகு IV** **வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்**: **3**
அணை, ஏரி, குளங்கள், மதகு – சோழர்காலக் குமுழித் தூம்பின் முக்கியத்துவம் – கால்நடை பராமரிப்பு – கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் – கடல்சார் அறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குளித்தல் – பெருங்கடல் குறித்த பண்டைய அறிவு – அறிவுசார் சமூகம்.

**அலகு V** **அறிவியல் தமிழ் மற்றும் கணித்தமிழ்**: **3**
அறிவியல் தமிழின் வளர்ச்சி –கணித்தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் – தமிழ் மென்பொருட்கள் உருவாக்கம் – தமிழ் இணையக் கல்விக்கழகம் – தமிழ் மின் நூலகம் – இணையத்தில் தமிழ் அகராதிகள் – சொற்குவைத் திட்டம்.

**TOTAL : 15 PERIODS**

**TEXT-CUM-REFERENCE BOOKS**


1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும்
   கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby:

The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

**UC23H02 TAMILS AND TECHNOLOGY L T P C**
**1 0 0 1**

**UNIT I WEAVING AND CERAMIC TECHNOLOGY 3**

Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.

**UNIT II DESIGN AND CONSTRUCTION TECHNOLOGY 3**

Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.

**UNIT III MANUFACTURING TECHNOLOGY 3**

Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting,steel -Copper and gold- Coins as source of history - Minting of Coins – Beads making-industries Stone beads -Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.

**UNIT IV AGRICULTURE AND IRRIGATION TECHNOLOGY 3**

Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.

**UNIT V SCIENTIFIC TAMIL & TAMIL COMPUTING 3**

Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.

**TOTAL : 15 PERIODS**

**TEXT-CUM-REFERENCE BOOKS**

1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும்
   கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

| PL23204 | SURVEYING AND PHOTOGRAMMETRY | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 4 | 3 |

**OBJECTIVES**

- To remember the definition, classification, the basic principles of surveying.
- To understand the basic principles, methods and laboratory exercises of chain, compass and plane table surveying.
- To learn the methods of levelling surveys through laboratory exercises for the interpolation of contours, calculation earthwork.
- To analyse the heights and distances of the objects with theodolite.
- To learn the basics of cadastral surveying and photogrammetry.

**Basics of Surveying and Photogrammetry** **15**

Definition, Classifications; Plane and Geodetic Surveying; Basic principles; Classification of measurements and units, Basics of various Instruments used for surveying and Photogrammetry, Introduction to Levelling, Methods of levelling- theodolite survey.

**Laboratory Exercises** **60**

1. Finding Area of the plot using Chaining and Ranging.
2. Mapping of Building with cross staff & accessories.
3. Overcoming Obstacles in Chaining.
4. Computation of Included Angle after adjustment of Local Attraction using Compass.
5. Planimetric Mapping of an Area using Plane Table Surveying (Radiation).
6. Planimetric Mapping of an Area using Plane Table Surveying (Intersection).
7. Plane table surveying – Two-point problem
8. Plane table surveying – Three - point problem
9. Fly leveling using dumpy level.
10. Determination of Longitudinal section and cross section using Dumpy level.
11. Contour Mapping using Grid Levelling.
12. Study of Theodolite and Angle Observations by Repetition Method.
13. Study of Theodolite and Angle Observations by Reiteration Method.
14. Trigonometric Leveling- finding height of building using Theodolite.
15. Study on the Cadastral map, FMB and Aerial Photographs.

**TOTAL: 75 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Introduce the rudiments of various surveying and its principles

**CO2** Imparts concepts of Theodolite Surveying and computation of area and volume calculation

**CO3** Demonstrate skills about the use of photo interpretation for the preparation of land use and land cover maps.

**CO4** Understand the procedure for finding the heights and distance using theodolite

**CO5** Understand the basics of cadastral Maps and its components.

**TEXT BOOKS**

1. Dr.B.C.Punmia, Ashok K.Jain and Arun K Jain, Surveying Vol.I & II, Lakshmi Publications Pvt Ltd, New Delhi,17th Edition,2016.

2. James M. Anderson and Edward M. Mikhail, Surveying, Theory and Practice, Seventh Edition, McGraw Hill 2001.
3. David Clark, Plane and Geodetic Surveying for Engineers, Volume I, Constable and Company Ltd, London, CBS,6th Edition,2004.
4. George M. Cole, Donald A. Wilson, “Land Tenure, Boundary Surveys, and Cadastral Systems”, CRC Press; 1st edition, 2016.
5. Satheesh Gopi Advanced Surveying: Total Station, GIS and Remote Sensing, Pearson, 2007.

**REFERENCES**

1. Wilfried Linder Digital Photogrammetry, Springe, 2008
2. R. Subramanian, Surveying and Levelling, Oxford University Press, Second Edition, 2012.
3. Bannister and S. Raymond, Surveying, Seventh Edition, Longman 2004.
4. S.K. Roy, Fundamentals of Surveying, Second Edition, Prentice‘Hall of India 2004.
5. K.R. Arora, Surveying Vol I & II, Standard Book house, Twelfth Edition. 2013.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | | 3 | 2 | 1 | 2 | | | | | | | |
| CO2 | 2 | 3 | 3 | 3 | | 1 | | | 1 | | | |
| CO3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | | 3 | 2 | |
| CO4 | 2 | 3 | 2 | 2 | 3 | 1 | | | | | | |
| CO5 | 3 | 2 | 2 | 3 | 3 | 2 | | | 1 | 3 | | 1 |
| Average | **2** | **2** | **2** | **2** | **2** | **1** | **1** | **1** | **1** | **1** | **2** | **1** |

3- High 2-Moderate 1-Low

| PL23205 | COMPUTER APPLICATION IN PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 6 | 3 |

**Objectives**

1. To develop fundamental knowledge and skills in 2D drafting, facilitating accurate and precise drafting for planning purposes.
2. To familiarize with the basics of image editing, enabling the creation of visually appealing graphics for planning presentations and documentation.
3. To learn the most essential design applications within the creative industry
4. To utilize best practices for presenting quantitative data using images.
5. To understand and explore the similarities and differences between each application and exactly when to use them in planning projects

**Software in urban planning**

Introduction to software in planning - Concept of Mapping techniques - drafting techniques - Basics of Image editing - Fundamentals of 3D applications in Urban Planning.

**List of experiments**

1. Auto CAD Basics (layout and sketching, drawing environment, drawing commands, modifying tools, layer creation and management, scaling plotting and printing; title blocks, view ports
2. 2D figures using AutoCAD
3. Isometric drawings using AutoCAD
4. 3D figures using AutoCAD, x-ref
5. Sketch up basics and rendering
6. Creating a city view for the given area in 3D
7. 3D Projection of the given layout plan in sketch up
8. 3D Street view in sketch up
9. Photoshop tools (selection tools, magic wand tools, layers, text and transform tools, colour balance tools)
10. Creating isometric view of an urban area with Photoshop
11. Creating a master plan map with Photoshop
12. Introduction to Illustrator (work space view, compatible files, working with Art boards, selecting elements)
13. Creating an axonometric view of a city using Illustrator
14. Creating a 3D model in Lumion
15. Animation, scene creation and rendering in Lumion

**TOTAL : 90 PERIODS**

**Course Outcome**

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

CO 1 Apply drafting techniques to produce accurate and precise mapping and drafting, by employing tools for digitization.
CO 2 Create visually appealing and well-composed graphics in planning presentations.
CO 3 Apply critical thinking skills to identify and solve computer application-related problems in planning.
CO 4 Demonstrate mastery in utilizing inventive visual representations
CO 5 Create professionally designed presentations.
CO 6 Create and design using the advanced techniques of illustration, design, and documentation.

**TEXT BOOKS**


1. Ciro Cardoso, 'Mastering Lumion 3D,' Packt Publishing Ltd, 2014.
2. Andrew Faulkner, Conrad Chavez, 'Adobe Photoshop CC Classroom in a Book,' Adobe Press, 2015.
3. Fitzgerald, J. and Richard, P, 'Introduction to AutoCAD,' Pearson Education, London, 2016.
4. Tickoo, S, 'AutoCAD 2020 Workbook,' BPB Publications, New Delhi, 2019.
5. Jack Harris, Steven Withrow, 'Vector Graphics and Illustration: A Master Class in Digital Image – Making,' Rotovision, 2008.
6. Clint Balsar, 'Adobe Illustrator for Creative Professionals: Develop skills in vector graphic illustration and build a strong design portfolio with Illustrator 2022,' Packt Publishing, 2022.
7. Stephen Laskevitch, 'Adobe InDesign CC: A Complete Course and Compendium of Features,' Rockynook, 2019.


**REFERENCES**


1. Chris Patmore, 'The Complete Animation course: The Principles, Practice, and Techniques of Successful Animation,' 2003.
2. William R.Sherman, Alan B.Craig, 'Understanding Virtual Reality: Interface, Application and Design,' Elsevier, 2018
3. Brad Dayley, DaNae Dayley, 'Adobe Photoshop CS6 Bible: The Comprehensive, Tutorial Resource,' 2012.
4. Adobe Creative Team, 'Adobe After Effects CC Classroom in a Book: The official Training workbook from Adobe Systems', 2013.
5. Mark Christiansen, 'Adobe After Effects CC Visual Effects and Compositing: Studio Techniques,' Adobe Pr, 2013.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO 3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 1 | | | 2 | 1 | | | 2 | 2 | | 2 |
| CO2 | 2 | | 2 | | 3 | | | | 1 | 3 | | 2 |
| CO3 | 2 | 3 | 3 | 3 | 3 | | | | 2 | 3 | 3 | 1 |
| CO4 | 2 | 2 | 3 | 2 | 3 | 2 | | 1 | 3 | 3 | | 3 |
| CO5 | | | 3 | | 3 | | | | 2 | 3 | | 3 |
| CO6 | 2 | 2 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 | 3 | 3 |
| Average | 2 | 2 | 3 | 3 | 3 | 2 | 1 | 1 | 2 | 3 | 3 | 2 |

3- High 2-Moderate 1-Low

| PL23206 | PLANNING STUDIO II: AREA APPRECIATION | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 14 | 7 |

**OBJECTIVES**

- To equip students with fundamental skills for analyzing and understanding urban environments
- To know the historical evolution of a select settlement
- To develop awareness of various factors and their interrelationships that shapes an urban area- social characteristic, economic activities, physical environment, cultural heritage, etc.
- To gain proficiency in designing strategies for planning and designing built form and open spaces that are sensitive to the existing context and community aspirations
- To identify and strategize on potential conflicts and sensitive issues.

**Area Appreciation of Urban/ Rurban/ Peri-Urban**

**STUDIO LEARNING UNIT:**

Documentation techniques- Settlement growth and its socio-economic, physical, and political drivers

Development of pictorial representations, and infographics (through Illustrator) of survey data collected and inferences- Built form, and its typology, infrastructure needs, and socio-economic differences through surveys;

Presentation of case studies and inferences- Land use planning principles and strategies

**CONTENTS:**

**Settlement Pattern Study -** To appreciate how a settlement grows and the driving forces behind the growth. It would involve an analysis of a settlement by comprehending social, economic, physical, and political aspects. Appreciate what makes the settlement unique and understand how social and economic forces shape them

**Elements:** Understanding the various components associated in the formation of Settlement. Study of areas with varying characters to appreciate the concepts of built form, activities, and people. Appreciate various elements of built form such as plot sizes, FAR, densities, building heights and open spaces; Understanding how built form supports various activities in different areas. Guidelines for regulating and promoting built form

**Settlement & Surveys**: Develop understanding of the typology of residential development with respect to built form, legality, evolution, ownership etc. Understand what facilities and infrastructure are required in residential areas. Use of surveys to understand differences in socio economic conditions, infrastructure availability and satisfaction among various residential pockets. Community and stakeholder engagement

**Land Use Study**- Through case studies, develop understanding of basic principles of land use planning such as categorization, hierarchy, permissibility, compatibility etc. Supporting infrastructure required for various types of land uses.

**Strategy:** Students would be expected to develop sensitivity to development issues in the study area, understand the quality of life and to suggest suitable strategies for the sustainable development of the settlement

**TOTAL: 210 PERIODS**

**STUDIO OUTPUT:**

Comprehensive analysis of settlement growth, detailing social, economic, physical, and political drivers. Create maps and infographics illustrating built form components and their impact. Develop surveys assessing residential development typologies, infrastructure needs, and socio-economic conditions. Formulate strategic recommendations for sustainable settlement development based on land use planning principles and case studies through presentations and reports.

**COURSE OUTCOMES**

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

**CO1** Ability to understand the concept of community and settlement evolution and the built environment as influenced by Socio-economic, Cultural, Environmental and Technical factors.

**CO2** Ability to provide a sensitive approach to the design of the built environment considering the above-mentioned factors.

**CO3** Appreciate the study area with various land use such as residential, commercial, institutional, open spaces etc. and understand its interrelations

**CO4** Conduct surveys of various types.

**CO5** Map the socio-economic and cultural attributes of the settlement.

**CO6** Prepare the land use map using guidelines, codes, standards, symbols

**TEXT BOOKS**


1. Gavin Parker," Key Concepts in Planning", Sage, New Delhi, 2012
2. Philip R. Berke, "Urban Land Use Planning", University of Illinois Press, 2006
3. S. K. Kulshrestha," Urban and Regional Planning in India: A Handbook for Professional Practice, SAGE India, 2012
4. A. James and La Gro Jr., "Site Analysis", Jon Wiley and Sons, 2013
5. Handbook of Applied Spatial Analysis: Software Tools, Methods and Applications, Manfred M. Fischer and Arthur Getis, Springer, 2009
6. Kevin Lynch "Site Planning "MIT Press",1971


**REFERENCES**


1. Governement of Tamil Nadu, "Tamil Nadu Combined Development and Building Rules", 2019
2. S. K. Kulshrestha," Dictionary of Urban and Regional Planning", Kalpaz Publications,2006
3. T. Q. Edward," Site Analysis", Architectural Media, 1983
4. Tiwari KK, "Rural Planning and Development", Dnd Publisher, 2012.
5. Government of India, "Rural Area Development Plans Formulation and Implementation (RADPFI) Guidelines, Ministry of Panchayati Raj, 2021.
6. Government of India, "Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2015.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 2 | 3 |
| CO2 | 3 | 3 | 2 | 2 | 1 | 1 | | 1 | 2 | | 3 | 3 |
| CO3 | 3 | 2 | 1 | 1 | 2 | 2 | 1 | | 1 | 2 | 2 | 2 |
| CO4 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 3 | 1 |
| CO6 | 2 | 1 | 3 | 2 | 2 | 1 | 3 | | 3 | | | 2 |
| Average | **3** | **2** | **2** | **2** | **2** | **2** | **2** | **1** | **2** | **2** | **3** | **3** |

3- High 2-Moderate 1-Low

| PL23301 | PLANNING THEORY | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To introduce planning theory and its critical aspects such as rationality, globalization, modernism, postmodernism, sustainability, participation, implementation and evaluation.
- To define planning theory and its typology.
- To trace the evolution of planning theories.
- To explain methods and features of advocacy, equity and participative planning.
- To explain compact city, and other concurrent approaches for city forms.

**UNIT I DEFINITIONS OF PLANNIG THEORY 9**

Historical contexts and conditions that gave rise to planning; Definitions of planning theory - theory of planning and theory in planning; Significance of planning theory; situating planning-city reform, social reform; various issues and their critical evaluation; progressive movement; Planning rights, responsibilities and role of planners in planning practice; Paradigm shifts in Planning theory with time and context

**UNIT II RATIONALITY IN PLANNING 9**

Understanding rationality in planning; chief characteristics of comprehensive rational planning Model; criticism of rational planning model; Theories on rationality – Weber, Philip Johnson; Instrumental-Value rationality (means-end rationality) & Communicative rationality; Systems theory of planning, closed and open systems.

**UNIT III PLANNNIG APPROACHES 9**

Introduction to SITAR - synoptic, incremental, transactive, advocacy and radical theories of planning; relating SITAR with purpose and process of planning; Equity Planning; Collaborative Planning and communicative rationality – planning as a communicative process; Public participation and empowerment; Contributions of Patsy Healey and Judith Innes and others; perspective planning versus inclusive planning; Feminist planning theory;

**UNIT IV POLITICAL ECONOMY THEORIES 9**

Urban planning in response to political ideologies - socialist planning, capitalist planning and mixed economy planning ; Economic and social determinants of land use Contributions of David Harvey, Manuel Castells and others; Richard Foglesong and the property contradiction.

**UNIT V URBAN GROWTH THEORIES 9**

Classical theories of urban structure – concentric zone theory, sector theory, multiple nuclei theory; location theories, Bid rent theory; Urban agglomerations; compact city approach: concept, advantages and limitations; city beautiful versus city functional; forms of cities in developed and developing world; new city development concepts such as smart city, compact city, sponge city, healthy city, etc.

**TOTAL PERIODS: 45**

**COURSE OUTCOMES**

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

CO 1 Summarize some of the core concepts of planning theory.
CO 2 Enumerate the historical and contemporary development in the field of planning theory.
CO 3 comprehend the changes in planning theory in response to changing contexts
CO 4 Recognize the significance of public participation in urban and regional planning process
CO 5 Distinguish a planning issue within a theoretical frame, through which an approach and its consequences can be deducted
CO 6 Prioritize competencies to understand planning issues for technically evaluating planning proposals

**TEXT BOOKS**


1. Readings in Planning Theory, Susan Fainstein and Scott Campbell, Blackwell Publishers, 2003
2. Urban Planning Theory Since 1945, Nigel Taylor, Sage, 2007
3. Planning Theory, Philip Allmendinger, Palgrave MacMillan, 2009
4. Urban Planning Theory and Practice, M. Pratap Rao, CBS Publisher & Distributers Pvt. Ltd., 2012
5. A Reader in Planning Theory, A. Faludi, Butterworth-Heinemann Ltd., 1973


**REFERENCES**


1. Planning Theory for Practitioners, Michael P. Brooks, Planners Press, American Planning Association, 2002
2. Urban Theory: A Critical Assessment, John Rennie Short, Palgrave MacMillan, 2016
3. Mahadevia Darshini, “Globalization, Urban reforms, & Metropolitan response: India”, Manak Publications, New Delhi. 2003.
4. Breheny, M.J. and Hooper, A.J, “Rationality in Planning: Critical Essays on the Role of Rationality in Urban and Regional Planning”, Pion, London. 1985
5. Sassen S, “The Global City”, Princeton University Press, Princeton, 2001.


**CO-PO Mapping**

| COURSE OUTCOME | PROGRAM OUTCOME | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 3 | 2 | 1 | 3 |
| CO3 | 3 | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 3 |
| CO4 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 |
| CO5 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 3 |
| CO6 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 3 |
| Average | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 1 | 3 |

3- High 2-Moderate 1-Low

| PL23302 | QUANTITATIVE AND QUALITATIVE METHODS FOR PLANNERS | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES:**

1. To develop a comprehensive understanding of different types of statistical data and their measures for effective analysis.
2. To acquire practical skills in data collection, and representation data using tabulation and graphical methods.
3. To apply probability theory, estimation techniques, and hypothesis testing for making informed statistical inferences.
4. To understand correlation and regression analysis, utilizing statistical software, to uncover relationships and make reliable predictions in planning scenarios.
5. To understand various qualitative analysis techniques and their relevance for planning practice and research.

**UNIT I INTRODUCTION TO STATISTICAL METHODS 9**

Statistical Data- Types of Data: nominal, ordinal, interval and ratio; Discrete versus continuous data; Numerical data- properties and measures; Data collection, coding and decoding methods, tabulation and graphic representation of data; Frequency distribution; Measures of central tendencies: mean, median, mode; Measures of Dispersion: range, variance and standard deviation, skewed distribution, kurtosis; Introduction to spreadsheet and statistical software.

**UNIT II PROBABILITY, SAMPLING DISTRIBUTION AND TESTING OF HYPOTHESIS 9**

Introduction to probability, Discrete random variables and probability distribution; Sampling distribution, Types of estimation; Point, interval, testing of hypothesis, statistical hypothesis, simple and composite tests of significance, null hypothesis, alternative hypothesis; Types of errors, level of significance.

**UNIT III CORRELATION AND REGRESSION ANALYSIS 9**

Degree of correlation, Scatter Diagram, correlation analysis, correlation co-efficient, co–efficient of rank correlation, partial correlation analysis and multiple correlation, simple Linear and nonlinear regression, lines of regression, coefficient of regression; Multiple Regression Analysis; Use of SPSS and its applications in planning.

**UNIT IV MATHEMATICAL PROGRAMMING TECHNIQUES 9**

Introduction to Mathematical Programming models, linear programming, systems thinking-applications in planning; Construction of index number; simple and weighted index

**UNIT V QUALITATIVE METHODS 9**

Dimensions of qualitative research; Designing qualitative research; Elementary association models and decision making; Terms and principles in qualitative data analysis; Content analysis; Narrative analysis; Discourse analysis for planning.

**TOTAL: 45 PERIODS**

## OUTCOMES

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

CO1 Apply quantitative and qualitative techniques for planning analysis.

CO2 Implement tabulation and graphical representation techniques to visually depict data.

CO3 Analyze and interpret measures of central and measures of dispersion to gain insights into data distributions and variability.

CO4 Apply probability theory, estimation techniques, and hypothesis testing to make statistical inferences.

CO5 Apply the data analysis tools in planning and decision-making processes.

CO6 Evaluate the appropriateness and effectiveness of different statistical methods and techniques in planning, decision-making, and qualitative data analysis.

## TEXT BOOKS


1. Gelman, A. and Hill, J, 'Data Analysis Using Regression and Multilevel and Hierarchical Models,' Colombia University Press, New York, 2006.
2. Molugaram, K. and Rao, G.S, 'Statistical Techniques for Transportation Engineering,' BSP Books Pvt. Ltd. Published by Elsevier, London, 2017
3. Kambo, N.S., 'Mathematical Programming Techniques,' Affiliated East-West Press Pvt. Ltd. New Delhi, 2008
4. Braun, V. and Clarke, V, 'Successful Qualitative Research: A Practical Guide for Beginners,' Sage, New Delhi, 2013


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1. Kothari, C. R., 'Research Methodology – Methods and Techniques,' New Age International, 2004.
2. John W Creswell, 'Research design: Qualitative, Quantitative and Mixed Methods Approaches,' Sage Publications; 2011.
3. Bruce L. Berg, Howard Lune, 'Qualitative Research Methods for the Social Sciences,' Pearson Publishers, 2011.
4. Matthew B. Miles and A. Michael Huberman, 'Qualitative Data Analysis: A Methods Sourcebook,' Sage Publications, 2013
5. Ewing, Reid, and Keunhyun Park, 'Basic Quantitative Research Methods for Urban Planners,'New York: Routledge, 2020.

**CO-PO Mapping**

| COURSE OUTCOME | PROGRAM OUTCOME | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 2 | 3 | 2 | 3 | 3 | 1 | | | 1 | 3 | | 2 |
| **CO2** | 2 | 3 | 3 | 3 | 3 | | | | 1 | 3 | 2 | 3 |
| **CO3** | 2 | 3 | 3 | 3 | 3 | | | | 2 | 3 | 3 | 2 |
| **CO4** | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 3 | 3 | | 3 |
| **CO5** | 3 | 3 | 3 | 2 | 3 | | | | 2 | 3 | | 3 |
| **CO6** | 2 | 3 | 3 | 3 | 3 | 2 | | | 2 | 3 | 3 | 3 |
| **Average** | 2 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 2 | 3 | 3 | 3 |

3- High 2-Moderate 1-Low

| PL23303 | HOUSING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

1. To provide students with an understanding about the nature of housing problems, current issues and aspects in housing.
2. To expose students towards housing needs and how housing need is assessed.
3. To enable the students in acquiring the skills and knowledge about the characteristics of a community.
4. To introduce students to government policies and development regulations.
5. To critically examine and understand how affect housing outcomes particularly for the poor.

**UNIT I INTRODUCTION 9**

Housing: definition, housing as a verb and noun; Housing in relation to planning; Concepts of housing stock, need, demand, shortage; An overview of housing situation; Urban and rural housing scenario in India; Housing as a component of social and economic development; Key challenges of housing provision including housing for the poor, emergence of slums, unauthorised colonies, gentrification, displacement.

**UNIT II COMMUNITY AND HOUSNIG DEVELOPMENT PROCESS 9**

Understanding a community, its characteristics, basic entitlements, strengths and weakness; housing tenure, aspects of informal tenure, socio economic implications behind the formation of slums, critical characteristics of slums, sites and services scheme, factors affecting residential location.

**UNIT III HOUSING PROJECT FORMULATION 9**

Determinants of housing form including physical, social, economic, technical and aesthetic; Development options and housing; Housing costs, standards, densities and FAR; Housing projects and city level housing provisions.

**UNIT IV CITY LEVEL HOUSING STUDIES 9**

Components of housing, housing subsystems; Administrative, legal and financial frameworks for housing development; Processes of housing development; Analysis of housing stress; Concepts of affordability and target identification. Formal and non-formal housing; public and private sector housing development process; inner city housing.

**UNIT V POLICY AND LEGISLATIVE FRAMEWORK 9**

Evolution of housing policy in India; Components of housing policy at national and state level; Approaches to housing provision for the poor, special groups and other vulnerable groups.

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

CO1 Identify the existing housing situation in a city.
CO2 Enumerate the socio-economic aspects in housing.
CO3 Examine the national housing policies and other related housing provisions.
CO4 Infer the relationships between housing markets, housing standards and incomes.

CO5 Categorize the housing needs for the poor in India.
CO6 Formulate housing programmes and projects for the poor and their outcomes.

**TEXT BOOKS**


1. Jain, A.K, “Housing for All”, Khanna Book Publishing Co., New Delhi, 2019.
2. Hardoy, J.E. and Satterthwaite, D, “Squatter Citizen: Life in the Urban Third World”, Routledge, London, 1989.
3. Verma, G.D, “Slumming India”, Penguin, New Delhi2001
4. Cedric, P, “Housing and Urbanisation: A Study of India”, Sage, New Delhi, 1990.


**REFERENCES**


1. Jenkins, P., Smith, H. and Wang, Y.P, “Planning and Housing in the Rapidly Urbanizing World”, Routledge, New York. 2007.
2. Mukhija V, “Squatters as Developers, Slum Redevelopment in Mumbai”, Ashgate, New York. 2003.
3. Christopher Alexander, 'A Pattern Language', Oxford University Press, New York. 1977.
4. S.K.Sharma, 'Mane A New Initiative in Public Housing', Housing and Urban Development Corporation, 1991.
5. Leuris S, 'Front to Back: A Design Agenda for Urban Housing', Architectural Press, 2006.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO 12** |
| **CO1** | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 2 | 3 |
| **CO2** | 3 | 3 | 3 | 2 | 2 | 3 | 1 | 1 | | 2 | 2 | 3 |
| **CO3** | 3 | 2 | 2 | 3 | 2 | 3 | | 2 | 2 | 2 | 2 | 2 |
| **CO4** | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 |
| **CO5** | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 3 |
| **CO6** | 2 | 3 | 2 | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 |
| **Average** | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 | 3 |

3- High 2-Moderate 1-Low

**UC23U01** **UNIVERSAL HUMAN VALUES** **L T P C**

**1 0 2 2**

**COURSE OBJECTIVE:**

The objective of the course is four-fold:

1. Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence.
2. Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
3. Strengthening of self-reflection.
4. Development of commitment and courage to act.

**MODULE I INTRODUCTION (3L,6P)**

Purpose and motivation for the course, recapitulation from Universal Human Values-I, Self-Exploration– Its content and process; 'Natural acceptance' and Experiential Validation- as the process for self-exploration Continuous Happiness and Prosperity- A look at basic Human Aspirations Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario, Method to fulfil the above human aspirations: understanding and living in harmony at various levels.

**Practical Session:** Include sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking

**MODULE II HARMONY IN THE HUMAN BEING (3L,6P)**

Understanding human being as a co-existence of the sentient 'I' and the material 'Body', Understanding the needs of Self ('I') and 'Body' - happiness and physical facility, Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer), Understanding the characteristics and activities of 'I' and harmony in 'I', Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam and Health.

**Practical Session:** Include sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

**MODULE III HARMONY IN THE FAMILY AND SOCIETY (3L,6P)**

Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship, Understanding the meaning of Trust; Difference between intention and competence, Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship, Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals, Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.

**Practical Session**: Include sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives

**MODULE IV HARMONY IN THE NATURE AND EXISTENCE (3L,6P)**

Understanding the harmony in the Nature, Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self regulation in nature, Understanding Existence as Co-existence of mutually interacting units in all- pervasive space, Holistic perception of harmony at all levels of existence.

**Practical Session:** Include sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

**MODULE V IMPLICATIONS OF HARMONY ON PROFESSIONAL ETHICS (3L,6P)**

Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems. Case studies of typical holistic technologies, management models and production systems, Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations, Sum up.

**Practical Session:** Include Exercises and Case Studies will be taken up in Sessions E.g. To discuss the conduct as an engineer or scientist etc.

**TOTAL: 45 (15 Lectures + 30 Practicals) PERIODS**

**COURSE OUTCOME:**

**By the end of the course, the students will be able to:**

1. Become more aware of themselves, and their surroundings (family, society, nature);
2. Have more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
3. Have better critical ability.
4. Become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
5. Apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

**REFERENCES:**


1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 3rd revised edition, 2023.
2. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
3. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
4. The Story of Stuff (Book).
5. The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
6. Small is Beautiful - E. F Schumacher.
7. Slow is Beautiful - Cecile Andrews.
8. Economy of Permanence - J C Kumarappa
9. Bharat Mein Angreji Raj - PanditSunderlal
10. Rediscovering India - by Dharampal
11. Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi

12. India Wins Freedom - Maulana Abdul Kalam Azad
13. Vivekananda - Romain Rolland (English)
14. Gandhi - Romain Rolland (English)

**Web URLs:**

1. Class preparations: https://fdp-si.aicte-india.org/UHV-II%20Class%20Note.php
2. Lecture presentations: https://fdp-si.aicte-india.org/UHV-II_Lectures_PPTs.php
3. Practice and Tutorial Sessions: https://fdp-si.aicte-india.org/UHV-II%20Practice%20Sessions.php

**Articulation Matrix:**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | | | | | | 1 | 1 | 1 | 3 | | | 3 |
| **CO2** | | | | | | 1 | 1 | 1 | 3 | | | 3 |
| **CO3** | | | | | | 3 | 3 | 2 | 3 | | 1 | 3 |
| **CO4** | | | | | | 3 | 3 | 2 | 3 | | 1 | 3 |
| **CO5** | | | | | | 3 | 3 | 3 | 3 | | 2 | 3 |

| PL23U01 | STANDARDS – B.PLAN | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 0 | 1 |

**OBJECTIVES**

1. To acquire knowledge on Indian Standards which will help in the development of an environment.
2. To develop values that will enhance the importance of standards.
3. To curate and calibrate the optimal standards.
4. To attain knowledge on principles and acts governing Indian standards.
5. To appreciate the purpose and benefits of standards.

**UNIT I OVERVIEW OF STANDARDS 6**

Basic concepts of standardization; Purpose of Standardization, marking and certification of articles and processes; Importance of standards to industry, policy makers, trade, sustainability and innovation. Objectives, roles and functions of BIS, Bureau of Indian Standards Act, ISO/IEC Directives; WTO Good Practices for Standardization. Important Indian and International Standards.

**UNIT II CODES AND GUIDELINES FOR PLANNING 9**

Overview of National Building Code (NBC) - Salient features of NBC - development control rules and general building requirements – Need for standards on smart cities - Overview of physical infrastructures – guidelines and standards related with roads, pedestrian, parking, water supply, sewerage & drainage – solid waste management – electricity and housing ; guidelines and standards related with education, health, socio-cultural facilities, sport facilities and -guidelines for rural planning and development

**TOTAL: 15 PERIODS**

**OUTCOMES**

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

CO1 Ability to understand the importance of norms & standards.
CO2 Comprehend the nuances of urban development standards.
CO3 Use standards on smart cities – GIS applications.
CO4 Express the knowledge of standards and guidelines on urban development.
CO5 Ability to apply the ideal standards and guidelines for solving urban problems.
CO6 Equip students with the awareness on urban planning standards and guidelines.

**TEXT BOOKS**


1. Frederick R. Steiner and Kent Butler, “Planning and Urban design standards”, wiley graphic standards, 2006.
2. Daniel G.Parolek, Paul C.Crawford & Karen Parolek, “Form Based Codes: A guide for planners, urban designers, municipaliites, and developers”, wiley, 2008.
3. Eran Ben-Joseph, “The oxford handbook for urban planning”, Oxford University Press, 2012.
4. Larz Anderson, “Guidelines for Preparing Urban Plans”, Routledge, 1995.
5. Doris S.Goldstein, W.Andrew Gowder and Daniel K.Slone,” A Legal guide to urban and sustainable development”, wiley, 2008.

**REFERENCES**


1. Government of India, “Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2015,.
2. Government of India, “Rural Area Development Plan Formulation and Implementation (RADPFI) Guidelines, Ministry of Panchayati Raj, New Delhi, 2021,.
3. Government of Tamil Nadu, “Combined Development and Building Rules”, Directorate of Town and Country Planning, TN, 2019.
4. Bureau of Indian Standards, “National Building Code of India”, Vol I&II, The National Standards Body of India, 2016.
5. Government of India, “Guidebook for adoption of Form Based Codes”, National Institute of Urban Affairs, 2023.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 1 | 1 |
| **CO2** | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| **CO3** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 |
| **CO4** | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| **CO5** | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 |
| **CO6** | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 1 | 2 | 2 | 2 | 3 |
| **Average** | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

3- High 2-Moderate 1-Low

| PL23304 | SPATIAL DATA INFRASTRUCTURE FOR PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 4 | 3 |

**OBJECTIVES**

1. To understand the necessity of spatial data in planning.
2. To understand the use of Remote sensing in Planning.
3. To understand the concepts of spatial data.
4. To enable students to use the GIS in solving Spatial Planning problems.
5. To study GIS Software Packages and Advanced Concepts of GIS.

**UNIT I INTRODUCTION TO SPATIAL DATA AND REMOTE SENSING 15**

Spatial Data in Planning, Classification of spatial and non-spatial data, Maps and Spatial Information, limitations of typical DBMS and CAD packages, Introduction to Projection and Coordinate systems, Data base concepts – Primary key, Foreign Key, ER diagram Introduction to satellite image, Concept of satellite image analysis; Concept of remote sensing, Remote sensing basic and concepts -Types, sensors and satellite details, Remote Sensing Product Availability.

**UNIT II INTRODUCTIONS TO REMOTE SENSING 20**

Definition – components of Remote Sensing, Merits and demerits of data collation between conventional and remote sensing methods, Electromagnetic Spectrum, Types of remote sensing platforms, Classification of satellites – Sun synchronous and Geosynchronous satellites – Legrange Orbit, Classification of remote sensors, – Resolution concept, LIDAR, UAV –Orbital and sensor characteristics of live Indian earth observation satellites.

**UNIT III INTRODUCTION TO GIS 20**

Introduction to Geographic Information Systems and its benefits, types of GIS Software's, Input and Output Devices; overview of ARC GIS Software, Spatial Data types and creation in GIS, Spatial Information Security and Sharing; Database Structure for GIS, Vector and Raster Data Structures, Comparative Advantages and Disadvantages; Georeferencing of Raster, Digitization of spatial data – Editing spatial data, Attribute Data input and Editing, Creation of Base Maps Thematic Maps and Layout.

**UNIT IV SPATIAL ANALYSIS AND GEOPROCESSING 20**

Introduction to Geoprocessing and Analyzing geospatial data, Preparation of data for Analysis, Geoprocessing vector data, Spatial analysis tools, Vector Analysis and Raster Analysis, Image Processing, Overlay functions in GIS, case study-based land suitability analysis.

**TOTAL: 75 PERIODS**

**OUTCOMES**

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

CO1 Explain the importance and requirement of Spatial Data in Planning.
CO2 Solve Urban Planning problems using Remote sensing technologies.
CO3 Analyse the various spatial planning issues using GIS technologies.
CO4 Examine the required maps and spatial data for different activities related to Planning.

CO5 Determine the requirement of various tools for spatial decision making.
CO6 Choose the appropriate spatial tool for specific problem in Urban Planning.

**TEXT BOOKS**


1. Michael Demers, “Fundamentals of Geographic Information Systems”, John Wiley & Sons Inc; 4th edition, 2008.
2. Anji Reddy. M, “Text book of Remote Sensing and Geographical Information Systems”, B.S. Publications, Hyderabad, 2012.
3. Michael Law and Amy Collins, “Getting to Know ArcGIS Desktop”, ESRI Press, USA, 2022.
4. MD Kennedy, ‘Introducing Geographic Information Systems with ArcGIS - A Workbook Approach to Learning GIS’, John Wiley & Sons Inc; 3rd edition 2013.
5. Paul Longley and Michael Betty, “Spatial Analysis – Modeling in GIS Environment”, John Wiley. 1996.


**REFERENCES**


1. Michele Campagna, “GIS for Sustainable Development”, Taylor and Francis, 2005.
2. Martin Wegmann , Jakob Schwalb-Willmann , Stefan Dech, “An Introduction to Spatial Data Analysis: Remote Sensing and GIS with Open Source Software”, Pelagic Publishing, 2020.
3. Wilfried Linder, “Digital Photogrammetry”, Springer Publication, 2008.
4. Victor Mesev, “Integration of GIS and Remote Sensing”, John Wiley, ,2007.
5. K.K. Maltiar, S.R. Maltiar, “Concepts of Cartography Remote Sensing and GIS”, Rajesh Publications ,2019.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO 12** |
| CO1 | 3 | 1 | 1 | - | 3 | 2 | - | - | 2 | 2 | - | 3 |
| CO2 | 2 | 2 | 1 | - | 3 | 1 | - | - | 2 | 1 | 1 | 2 |
| CO3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | - | 3 | 2 | - | - | 3 | 2 | 1 | 2 |
| CO5 | 1 | 1 | 2 | 1 | 3 | - | - | - | 3 | 2 | - | 3 |
| CO6 | 3 | 2 | 3 | 1 | 3 | 1 | - | - | 2 | 1 | - | 3 |
| Average | 2 | 2 | 2 | 1 | 3 | 1 | 2 | 1 | 2 | 2 | 1 | 3 |

3- High 2-Moderate 1-Low

| PL23305 | PLANNING STUDIO III: SITE PLANNING AND DEVELOPMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 14 | 7 |

**OBJECTIVES**

1. To appreciate the rationale for planning at the neighbourhood level.
2. To identify major socio – economic, physical, environmental and regulatory issues pertinent to revitalize neighbourhoods.
3. To understand the dynamics behind observed patterns and trends, and, thereby address problems or maximize strengths.
4. To understand explain the steps in planning affordable and environmentally sustainable neighbourhood project.
5. To experiment innovative participatory methods to achieve collaborative planning.

**STUDIO LEARNING UNIT**

- Site Analysis Diagramming of topography, geomorphic approach to site development, soils, slopes, and drainage systems, climate, site characteristics, landform, visual elements, behavioral factors and space utilization implications of planning and development of a neighborhood.
- Development of technical, analytical and decisive skills necessary for planners
- Case studies and Layout Rules as per the DR
- Formulation of Layout - Proposal and Policy

**CONTENT**

**Spatial and Socio - Economic Dimensions of the Neighbourhood**

Understanding and delineation of neighborhoods (preparation of base map); Socio-economic and cultural mapping of the neighborhood to ascertain community needs, capabilities and behavioral pattern; Appreciation of various neighborhood elements – urban morphology; existing and alternative built form, road network, connectivity to surrounding land, FAR/FSI, densities, building heights, open spaces, vacant land parcel, surrounding urban scape and skyline; Gated enclaves; Documentation of neighborhood typologies and respective characteristics.

**Site Analysis**

Study of planning and development guidelines; building byelaws and zoning regulations; DR and alternatives following DRs compatible for land development; Development and design standards based on case study findings.

**Preparation of Layouts**

Preparation of Unit Level Drawings considering important details of different housing typologies following the building byelaws and zoning regulations; Preparation and evaluation of preliminary layout; Final layout showing, circulation pattern and basic infrastructures following existing statutes; Preparation of presentation drawings; Preparation of model to an appropriate scale; Provisional costing of the proposal on the basis of statutory schedule of rates.

**STUDIO OUTPUT**

Develop a sound theoretical base about the importance of a neighborhood and its relevance in the city. Develop and evaluate alternative scenarios compatible with the site and existing statutes. Create final layout for the neighbourhood with model and drawings

**TOTAL: 210 PERIODS**

**OUTCOMES**

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

CO1 Prepare base map of the neighborhood along with all neighborhood elements

CO2 Analyze the community strengths and weaknesses through socio economic survey.

CO3 Evaluate alternative scenarios compatible with the site and existing statutes and develop create final layout for the neighborhood

CO4 Recognize the significance of public participation in urban and regional planning process.

CO5 Distinguish a planning issue within a theoretical frame, through which an approach and its consequences can be deducted.

CO6 Prioritize competencies to understand planning issues for technically evaluating planning proposals.

**TEXT BOOKS**


1. Nick Wates, 'The Community Planning Handbook: How people can shape their cities, towns and villages in any part of the world,' 2006.
2. Rhonda Philips, Robert Pittman, 'An Introduction to Community Development,' Routledge, 2nd edition, 2014.
3. R.Mandelker Daniel R.Mandelker, 'Designing Planned Communities,' IUniverse, 2010.
4. Developed by Community Places through the support of the BIG Lottery Fund, Community Planning Toolkit, 2012.
5. Nick Wates, 'The Community Planning Handbook: How people can shape their cities, towns and villages in any part of the world,' 2006.


**REFERENCES**


1. Klosterman R.E, 'Community Analysis and Planning Techniques,' Rowman and Littlefield Publishers, Lanham, Maryland, 1990.
2. Pekmezovic, A., Walker, G. and Walker J, 'Sustainable Development Goals: Harnessing Business to Achieve the SDGs through Finance, Technology and Law Reform,' John Wiley and Sons, New Jersey, 2019
3. Cornwall, A. (ed.), 'The Participatory Reader,' Zed Books, London, 2011.
4. Kochi Municipal Corporation and GIZ, 'Multi-stakeholder Ente Kochi Initiative,' Kochi Municipal Corporation and GIZ India, Kochi, 2019.
5. Kumar, A. and Prakash, P. (eds.) 'Public Participation in Planning in India,' Cambridge Scholars Publishing, Newcastle, 2016.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | 2 | 3 | 2 | 1 | 2 | 2 | 1 | 3 | 3 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 2 |
| **CO3** | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 |
| **CO4** | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 3 |
| **CO5** | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |
| **CO6** | 1 | 2 | 3 | 2 | 1 | 2 | | | 2 | 3 | 2 | 2 |
| **Average** | **2** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **3** | **3** | **2** | **2** |

3- High 2-Moderate 1-Low

| PL23401 | URBAN AND REGIONAL INFRASTRUCTURE | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the concept of Infrastructure Planning and Management.
- To educate about the provision of Water Supply, Sanitation and solid waste management.
- To understand the under lying concepts in concept of designing of treatment systems.
- To identify the roles and functions of Infrastructure planning in metropolitan cities.
- To study requirement and Planning issues for Regional Infrastructure.

**UNIT I INTRODUCTION TO BASIC CONCEPTS 6**

Infrastructure and its concepts, Role of planner in planning of utilities and services, objectives of utilities and services planning and its implications for public health and environmental protection – service level benchmarks - Social infrastructure services and their standards- Level and types of social infrastructure- Policy context, national guidelines. sustainable development goals and quality of life.

**UNIT II WATER SUPPLY SYSTEM 10**

Water supply source, treatment system and types, Distribution system and types, Pressure requirements, water requirement for domestic and non-domestic purposes of settlements, firefighting, seasonal variation in demand and factors affecting water demand, standard of water demand per capita, variation of water demand and consumption, requirement of distribution and storage, pipe network analysis. Legal and government policy for urban and rural water supply. Case study discussion on innovative methods.

**UNIT III SEWER AND STORM WATER SYSTEMS 10**

Planning for sewerage system of a settlement: Sources and type of sewage in a settlement, assessment of Sewage, sewerage network type and hierarchy, components of sewerage system, maintenance of sewerage system. Sewage treatment plant: types and considerations disposal of sewage, issues and alternative solutions regional sanitation, planning for storm water drainage system for a settlement: Rainfall and run–off, catchment area, estimation of storm water for a catchment, impact of urban development on storm water runoff and drainage, discharge of storm water, rainwater harvesting.

**UNIT IV SOLID WASTE MANAGEMENT 10**

Solid waste and types Municipal, solid waste Management Rules, Stages of solid waste management and current practices, Methods of solid waste management, collection, transportation and disposal; Land filling and composting, pre and post treatment, location and cost aspects of different methods of solid waste disposal systems; New methods in solid waste treatment, Community participation and involvement of NGOs in efficient solid waste management, Case study of innovative approaches.

**UNIT IV REGIONAL INFRASTRUCTURE 9**

Importance of infrastructure in regional perspective, Integrated infrastructure planning process, regional infrastructure in the context of different level of regions. Norms & Standards. Regional infrastructure constraints, current practices for regional infrastructure development. Planning for infrastructure in a region – Transport, water resources, telecommunication, electricity, energy resources, agriculture market, fertilizer, implements, research and development, extension services. Planning considerations of regional infrastructure, airports, seaports, trade centres etc.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

- **CO1** Explain about the standards for provision of physical infrastructure facilities
- **CO2** Summarize the existing rules and regulation for provision of physical infrastructure facilities.
- **CO3** Outline the various principles, of water supply, sewerage system, storm water drainage and solid waste management.
- **CO4** Assess the issues and problem related to provision of facilities like water supply, sewerage system, storm water drainage and solid waste management for a town/city.
- **CO5** Understand the requirement of facilities and can plan for regional level infrastructure facilities.
- **CO6** Understand the requirement of facilities and can plan for regional level infrastructure facilities

**TEXT BOOKS**


1. George Dickens, “Water Supply Management and Urban Planning”, Larsen and Keller Education, 2018.
2. Jeremy Colin, Jonathan Parkinson, Kevin Tayler, “Urban Sanitation: A guide to strategic planning” Practical Action Publishing, 2003.
3. Spiro Pollalis, “Planning Sustainable Cities: An infrastructure-based approach”, Routledge; 1st edition, 2016.
4. Rangwala, “Water Supply and Sanitary Engineering”, Charotar Publishing House pvt. Ltd, 2022.
5. S.K.Aggarwal (Ed.), “Regional Development and Planning in India”, Concept Publishing Company, 2009.


**REFERENCES**


1. Larry W. Mays, “Urban Water Supply Handbook”, Mc Graw Hill, 2014.
2. Ashok Kumar and D.S. Meshram (eds.), “Future of Cities: Planning, Infrastructure, and Development”, Routledge Publication, 2023.
3. Michael Humphries QC, “National Infrastructure Planning Handbook 2022”, Bloomsbury Professional, 2022.
4. Santosh Kumar Garg, “Environmental Engineering (Vol. I&II)”, Khanna Publishers, 1979.
5. Tan Yigitcanlar, “Sustainable Urban and Regional Infrastructure Development: Technologies, Applications and Management (Advances in Environmental Engineering and Green Technologies)”, IGI Global, US, 2010


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 2 | 1 | 2 | 3 | - | - | 1 | 3 | - | 3 | - |
| CO2 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | - | 2 | - | 2 | 1 |
| CO3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | - | 3 | - | 2 | 2 |
| CO4 | 3 | 1 | 1 | 3 | 1 | 2 | 3 | 3 | 1 | - | 1 | 2 |
| CO5 | 3 | 2 | 1 | 2 | 3 | 3 | 1 | - | 1 | 2 | 2 | 2 |
| CO6 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | 3 | 3 | 3 |
| Average | **3** | **2** | **2** | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| PL23402 | BASICS OF URBAN DESIGN AND LANDSCAPE | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To introduce the fundamental concepts and principles of urban design as an interface between architecture and planning.
- To explore the elements that shape urban form, including masses, voids, building typology, scale, harmony, and urban transportation.
- To analyze the physical and non-physical determinants of urban forms and examine case studies of urban design characteristics in different cities.
- To delve into urban studies topics such as urban decay, place-making, heritage, suburban sprawl, and the agencies responsible for urban design.
- To gain familiarity with the various elements and principles of landscape design and its contribution to urban built environment.

**UNIT I INTRODUCTION TO URBAN DESIGN 9**

Urban design as interface between architecture and planning. City as a three-dimensional entity. Study of volumes and open spaces at all spatial levels. A brief historical review of the development of the urban design discipline and principles.

**UNIT II ELEMENTS OF URBAN DESIGN 9**

Urban form as determined by inter-play of masses, voids, building typology. Scale, harmony, symmetry, color, texture, light and shade. Dominance, height, urban signage and graphics. Organization of spaces and their articulation in the form of squares, streets, vistas and focal points. Image of the city and its components such as edges, paths, landmarks, street features, sky-line, etc.

**UNIT III PHYSICAL AND NON-PHYSICAL DETERMINANTS OF URBAN FORMS 9**

Activity and the morphology of places. Form, size and structure of cities and the related geometry co-related with their determinants. Case studies of urban design characteristics of cities in India and abroad. Other related issues for public intervention.

**UNIT IV URBAN STUDIES 9**

Topics include urban decay, change and renewal, place-making, heritage, conservation, identity, suburban sprawl, gated communities, generic form, privatization of public realm. Agencies responsible for ensuring better urban design, their roles, powers and limitations. Tools and methods to include different types of maps/mapping, drawings, sketches, photo documentation, reading, data collection and analysis.

**UNIT V URBAN LANDSCAPE PLANNING 9**

Landscape as an outcome of natural processes; Humans' evolving relationship with nature and its expression in the designed landscape; Characteristics and components of open space patterns in towns and cities (traditional and contemporary) basic types. Evolution of Public places including their typology, size, nature, distribution in the urban realm; Urban landscape and its transformation; Distinguishing the components of landscape at various levels;

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** Understand the fundamental concepts, principles, and elements of urban design

**CO2** Comprehend the complexities of urban design as a three-dimensional entity

**CO3** Evaluate the impact of physical and non-physical determinants on urban forms, critically examine case studies to identify urban design characteristics

**CO4** Demonstrate the application of urban design principles by organizing and articulating spaces, and considering the image of the city.

**CO5** Critically analyse the role of landscape in the micro scale of shaping the outdoor environments.

**CO6** Synthesize knowledge skills to propose innovative urban design and landscape solutions, to develop sustainable, and functional environments.

**TEXT BOOKS**


1. A.E.J. Morris, 'History of Urban Form before the Industrial Revolution,' Routledge, 2013.
2. Edmund Bacon, 'Design of Cities,' Penguin, 1976.
3. Michelle Provoost et al., 'Dutchtown, NAI Publishers,' Rotterdam, 1999.
4. Donald Natson, 'Time Saver Standards for Urban Design,' McGraw Hill, 2017
5. Motloch, J.L, "An Introduction to Landscape Design", John Wiley and Sons, 2001.


**REFERENCES**


1. Jonathan Barnett, 'An Introduction to Urban Design,' Harper Row, 1982.
2. Gosling and Maitland, 'Concepts of Urban Design,' St. Martin's Press, 1984
3. Malcolm Moor, 'Urban Design Futures,' Routledge, 2006.
4. Geoffrey Broadbent, 'Emerging Concepts in Urban Space Design,' Taylor and Francis, 2003
5. T.K. Bose and Chowdhury, 'Tropical Garden Plants in Colour', NayaUdyog, 2011.


**CO-PO Mapping – BASICS OF URBAN DESIGN AND LANDSCAPE**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 |
| CO2 | 2 | 3 | 3 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO3 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 3 |
| CO5 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 3 | 2 |
| CO6 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| Average | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |

3-High 2-Moderate 1-Low

| PL23403 | TRAFFIC AND TRANSPORTATION PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

1. To understand the transportation planning process, being followed in India
2. To infer the basic concepts of traffic engineering and its fundamentals which includes geometric design of roads and level of service.
3. To infer the various traffic and transport planning surveys and its implications.
4. To examine the role of Traffic engineering regulation and their impact on sustainable transport development.
5. To discuss the traffic management and safety systems being followed and its implications in road network planning.

**UNIT I TRANSPORTATION PLANNING PROCESS 9**

Importance of transport development in economic, political and social development; Characteristics and role of various forms of transport - roadways, railways, waterways and airways; Transport policies and programmes in India before and after independence; Importance of transportation planning, Integration of Land Use and Transport; Systems Approach to Transport Planning; Introduction to four Steps in the Transport Planning Process.

**UNIT II TRAFFIC CHARACTERISTICS 10**

Road Characteristics – Classification – Functions and standards – Geometric design of roads - Road user characteristics – Vehicle characteristics – relationship between the traffic flow variables, fundamental diagrams of traffic flow; Definition of capacity and level of service, factors affecting capacity and level of service, static and dynamic PCU, Design service volume, capacity norms for urban roads with different widths.

**UNIT III TRAFFIC SURVEYS 8**

Traffic Surveys – Vehicle Volume Count Survey – Methods and interpretation- Speed and delay surveys –– Methods and interpretation- Origin Destination Survey – Methods and presentation – Parking Survey – Methods, interpretation and presentation – Accident studies and analyses.

**UNIT IV TRAFFIC ENGINEERING REGULATION AND CONTROL 10**

Design of Intersections, At grade intersection, Uncontrolled, Channelization, Rotary, Introduction to traffic signals, warrant for signals, phasing and inter green period, saturation flow, Vehicle actuated signal facilities, coordination of traffic signal, area traffic control system; Grade Separated Interchanges – Traffic signs and road markings. NMT, Pedestrian facilities – Principles of planning, Level of Service (LoS), Design standards. Cycle Tracks.

**UNIT V TRAFFIC MANAGEMENT SYSTEMS AND SAFETY 8**

Traffic management measures, Transport System Management techniques, Introduction to Intelligent Transportation Systems (ITS)- ITS Applications in Traffic Management. Road safety-collection and analysis of accident data, accident prevention strategies.

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

CO1 Infer on the Transportation Planning Process being followed in India.

CO2 Analyze the road infrastructure facilities with respect to its dimensions and demand

CO3 Discuss the various traffic and transport planning surveys and its usefulness in transport planning studios.

CO4 Compute the role played by the Traffic engineering regulation in achieving the sustainable development goals of the city.

CO5 Discuss the traffic management and safety systems being followed in Indian conditions and its implications in road network planning.

CO6 To understand the role of traffic and transportation system in the master plan preparation process.

**TEXT BOOKS**


1. L.R. Kadiyali, Traffic Engineering and Transportation Planning, Khanna Publishers, 2011.
2. Institute of Transportation Engineers (Michael D. Meyer Editor), Transportation Planning Handbook, Fourth Edition, John Wiley & Sons, Inc., New Jersey, 2016
3. Hook, W., Non-Motorized Transport, Federal Ministry for Economic Cooperation & Development, Germany, 2005.
4. Chowdhury, M.A. and Sadek Adel, Fundamentals of Intelligent Transportation System, , Artech House Inc, 685 Canton Street, 2010.
5. Black, W.R., Sustainable Transport: Problems and Solutions. Gulford Press, New York, 2010.


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1. L. Vlacic, M. Parent, F. Harashima, Intelligent Vehicle Technologies – Theory and Applications, Butterworth-Heinemann, 2010.
2. Nicholas J. Garber, and Lester A. Hoel, Principles of Traffic and Highway Engineering, Cengage Learning India, 2nd Edition, 2010.
3. Fred L. Mannering, Scott S. Washburn, Kilareski Walter P., Principles Of Highway Engineering And Traffic Analysis, Wiley India Pvt Ltd., 4th Edition, 2011.
4. Preston L. Schiller, Eric C. Brunn and Jeffrey R. Kenworthy. An Introduction to Sustainable Transportation: Policy, Planning and Implementation, earthscan, London, 2010.
5. Jeffrey Tumlin, Sustainable Transportation Planning: Tools for creating Vibrant, Healthy and Resilient Communities, John Wiley & Sons, Inc, New Jersey, 2012

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 3 |
| CO3 | 2 | 2 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 2 | 3 |
| CO5 | 1 | 3 | 3 | 1 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 1 |
| CO6 | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 3 |
| Average | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |

3- High 2-Moderate 1-Low

**PL23U02 PERSPECTIVES OF SUSTAINABLE DEVELOPMENT IN PLANNING**

| L | T | P | C |
|---|---|---|---|
| 2 | 0 | 2 | 3 |

**UNIT I INTRODUCTION 6**

Principles & Historical perspectives, Importance and need for sustainability in engineering and technology, impact and implications. United Nations Sustainability Development Goals (SDG), UN summit – Rio & outcome, Sustainability and development indicators.

**UNIT II ENVIRONMENTAL SUSTAINABILITY 6**

Climate change, Biodiversity loss, Pollution and waste management, Renewable vs. non-renewable resources, Water and energy conservation, Sustainable agriculture and forestry. National and international policies, Environmental regulations and compliance, Ecological Footprint Analysis

**UNIT III SOCIAL & ECONOMIC SUSTAINABILITY 9**

Equity and justice, Community development, Smart cities and sustainable infrastructure, Cultural heritage and sustainability, Ethical considerations in sustainable development.

Triple bottom line approach, Sustainable economic growth, Corporate social responsibility (CSR), Green marketing and sustainable product design, Circular economy and waste minimization, green accounting, and sustainability reporting.

**UNIT IV CITIES & CHALLENGES OF SUSTAINABLE DEVELOPMENT 9**

Concept of Sustainable development of cities - Importance of SDG 11 - The 10-Point Agenda for 21st Century Cities –Need for urban sustainability, circles of sustainability – assessing sustainability - city sustainable indicators and practice – parameters of urban sustainability – urban sustainability framework – measuring urban sustainability- challenges to urban sustainability and case studies - Sharing cities - cities as systems – urban adaptation governance.

**UNIT V SUSTAINABILITY PRACTICES IN URBAN PLANNING 30**

- Energy Efficient Cities
- Carbon foot print calculation
- Carbon Neutral Cities
- Climate Resilience – Blue Green Infrastructure
- Sustainable practices in Liquid and Solid Waste Management
- Nature Based Solutions
- Climate Smart Cities Assessment Framework, NDC
- Green building, green building materials, green building certification and rating: green rating for integrated habitat assessment (GRIHA), leadership in energy and environmental design (LEED)
- Tools for Sustainability - Environmental Management System (EMS), ISO14000, life cycle assessment (LCA)
- Ecological footprint assessment using the Global Footprint Network spreadsheet calculator
- National/Sub national Status of Sustainable Development Goals

**TOTAL:60 PERIODS**

**REFERENCES:**


1. Allen, D., & Shonnard, D. R. (2011). Sustainable engineering: Concepts, design and case studies. Prentice Hall.
2. Munier, N. (2005). Introduction to sustainability (pp. 3558-6). Amsterdam, The Netherlands: Springer.

3. Blackburn, W. R. (2012). The sustainability handbook: The complete management guide to achieving social, economic and environmental responsibility. Routledge.
4. Clini, C., Musu, I., & Gullino, M. L. (2008). Sustainable development and environmental management. Published by Springer, PO Box, 17, 3300.
5. Bennett, M., James, P., & Klinkers, L. (Eds.). (2017). Sustainable measures: Evaluation and reporting of environmental and social performance. Routledge.
6. Seliger, G. (2012). Sustainable manufacturing for global value creation (pp. 3-8). Springer Berlin Heidelberg.
7. Stark, R., Seliger, G., & Bonvoisin, J. (2017). Sustainable manufacturing: Challenges, solutions and implementation perspectives. Springer Nature.
8. Davim, J. P. (Ed.). (2013). Sustainable manufacturing. John Wiley & Sons.

**COURSE OUTCOMES**

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

| | |
|---|---|
| **CO1** | Comprehend the importance and overview of the sustainability in today's context |
| **CO2** | Appreciate the essentials of environmental sustainability |
| **CO3** | Know the fundamentals of social & economic sustainability |
| **CO4** | Evaluate the SGD goals & challenges of urban sustainability |
| **CO5** | Evaluate the case studies related to urban sustainability |
| **CO6** | Analyze & examine various sustainability practices related to the urban sector |

**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 2 | 2 | 2 | | 2 | 3 | | | | | 2 |
| CO2 | 2 | 2 | 2 | 1 | | 3 | 3 | 1 | | | | 2 |
| CO3 | 2 | 2 | 2 | 2 | | 3 | 3 | 1 | | | | 2 |
| CO4 | 2 | 2 | 2 | 1 | | 3 | 3 | 1 | | | | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | | | | 3 |
| CO6 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| Average | **2** | **2** | **2** | **2** | **1** | **3** | **3** | **1** | **2** | **2** | **1** | **3** |

3- High 2-Moderate 1-Low

| PL23404 | PLANNING AND MANAGEMENT OF INFORMAL SECTOR | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the dimensions of urban poverty, and analyze the causes and consequences of urban poverty, with a specific focus on slums.
- To examine the theoretical perspectives on poverty alleviation, trace the evolution of poverty alleviation approaches globally and in India
- To comprehend the concept and significance of the informal sector and analyze the socio-economic deprivation associated with the informal sector and its interdependence with formal networks.
- To examine the characteristics of migrants and their impact on the growth of the informal sector and understand the implications of migration for physical planning.
- To evaluate implications of policy framework and planning provisions in addressing informal sector for city planning through case studies from India and other developing countries.

**UNIT I URBAN POVERTY 9**

Dimensions of urban poverty, measurement of poverty, magnitude of problem; MDGs and SDGs, defining the poverty line, urban versus rural poverty; Causes and consequences of urban poverty, slums; Urban poverty alleviation programmes

**UNIT II APPROACHES FOR ALLEVIATION OF URBAN POVERTY 9**

Theoretical perspectives on poverty alleviation; Evolution of approach to poverty alleviation in global context and in India; Policies for the urban poor in India since independence; Five year plans and current policy approaches.

**UNIT III CONCEPT, CAUSES AND CONSEQUENCES OF INFORMAL SECTOR 9**

Concept of informal sector and informality; Types of informal sector and role of informal sector in cities, Spatial focus on informal sector; Socio-economic deprivation and informal sector; Poverty and informality in historic areas; Policies and practices in dealing with the informal sector in India e.g. National Policy on Urban Street Vendors, NCEUS, others; Informal and formal networks and interdependence.

**UNIT IV MIGRATORY IMPULSES AND IMPACT ON INFORMAL SECTOR 9**

Characteristics of migrants and their association with the growth of the informal sector. Socio-economic deprivation and informal sector. Role of the informal sector in housing stock, economy, commercial activities, etc. Implications in physical planning

**UNIT V PLANNING FOR INFORMAL SECTOR 9**

Policy framework for addressing the challenges of informal economy; Planning provisions and norms; Policies governing informal sectors of economy e.g. household industry, street vending, etc. and its implications for city planning. Case studies from India and other developing countries.

**TOTAL: 45 PERIODS**

## COURSE OUTCOMES

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

**CO1** Comprehend the dimensions of urban poverty.
**CO2** Understand the causes, consequences, and specific challenges associated with urban poverty, particularly in slum areas.
**CO3** Apply theoretical perspectives on poverty alleviation to analyze and propose effective approaches for addressing urban poverty in India and other regions of the world.
**CO4** Evaluate the policy's role in socio-economic deprivation and practices aimed at managing the informal sector in India.
**CO5** Analyze and integrate the complex dynamics between migration and the growth of the informal sector and propose strategies for integrating the informal sector into physical planning.
**CO6** Evaluate policy framework, analyze sector-specific policies and examine case studies to identify best practices and lessons for informal sector governance.

## TEXT BOOKS


1. Agnotti, T., 'Metropolis 2000: Planning, Poverty and Politics, Routledge,' New York, 2018.
2. Breman, J., 'At Work in the Informal Economy of India: A Perspective from the Bottom Up', Oxford University Press, New Delh, 2016.
3. Bromley, R., 'The Urban Informal Sector: Critical Perspectives on Employment and Housing Policies,' Pergamon Press, Oxford, 2013.
4. Mazumdar, D., 'The Urban Informal Sector, World Bank Staff Working Paper No. 43, World Bank, Washington,' D.C, 1976.
5. McFarlane, C. (ed.), 'Urban Informalities: Reflections on the Formal and Informal,' Routledge, New York, 2016.


## REFERENCES


1. Nussbaum, M. and Sen, A. (eds.), 'The Quality of Life,' Clarendon Press, Oxford, 1993.
2. Satterthwaite, D. and Mitlin, D., 'Reducing Urban Poverty in the Global South**,'** Routledge, New York, 2013.
3. Sen, A., 'Development as Freedom,'Alfred A. Knopf, New York, 2000.
4. Sen, K. and Rajesh, R.S.N., 'Out of the Shadows?: The Informal Sector in Post-reform India,' Oxford University Press, New Delhi, 2016.
5. Sethuraman, 'S.V., Jakarta: Urban Development and Employment,' ILO, Geneva, 1976


## CO-PO Mapping

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | | | | | 2 | 2 | | | | | 2 |
| CO2 | 2 | 1 | | 1 | | 3 | 3 | 1 | | | | 2 |
| CO3 | 2 | 2 | 2 | 2 | 1 | 3 | 3 | 1 | | | | 2 |
| CO4 | 2 | | | 1 | | 3 | 3 | 1 | | | | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | | | | 3 |
| CO6 | 2 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| Average | **2** | **2** | **2** | **2** | **1** | **3** | **3** | **1** | **2** | **2** | **1** | **3** |

3- High 2-Moderate 1-Low

## NCC Credit Course Level 2*

| UC23P21 | (ARMY WING) NCC Credit Course Level - II | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

| | | |
|---|---|---|
| **PERSONALITY DEVELOPMENT** | | **9** |
| PD 3 | Group Discussion: Change your mindset, Time Management, Social Skills | 6 |
| PD 5 | Public Speaking | 3 |
| **LEADERSHIP** | | **7** |
| L 2 | Case Studies: APJ Abdul Kalam, Deepa Malik, Maharana Pratap, N Narayan Murty, Ratan Tata, Rabindra Nath Tagore, Role of NCC cadets in 1965 | 7 |
| **DISASTER MANAGEMENT** | | **13** |
| DM 1 | Disaster Management Capsule: Organisation, Types of Disasters, Essential Services, Assistance, Civil Defence Organisation | 3 |
| DM 2 | Initiative Training, Organising Skills, Do's & Don't's, Natural Disasters, Man Made Disasters | 9 |
| DM 3 | Fire Service & Fire Fighting | 1 |
| **ENVIRONMENTAL AWARENESS & CONSERVATION** | | **3** |
| EA 1 | Environmental Awareness and Conservation | 3 |
| **GENERAL AWARENESS** | | **4** |
| GA 1 | General Knowledge | 4 |
| **ARMED FORCES** | | **6** |
| AF 1 | Armed Forces, Army, CAPF, Police | 6 |
| **ADVENTURE** | | **1** |
| AD 1 | Introduction to Adventure Activities | 1 |
| **BORDER & COASTAL AREAS** | | **2** |
| BCA 1 | History, Geography & Topography of Border/Coastal areas | 2 |
| | **TOTAL: 45 PERIODS** | |

**NCC Credit Course Level 2***

| **UC23P22** | **(NAVAL WING) NCC Credit Course Level - II** | **L T P C**<br>**3 0 0 3** |
|---|---|---|

| | | |
|---|---|---|
| **PERSONALITY DEVELOPMENT** | | **9** |
| PD 3 | Group Discussion: Change your mindset, Time Management, Social Skills | 6 |
| PD 5 | Public Speaking | 3 |
| **LEADERSHIP** | | **7** |
| L 2 | Case Studies: APJ Abdul Kalam, Deepa Malik, Maharana Pratap, N Narayan Murty, Ratan Tata, Rabindra Nath Tagore, Role of NCC cadets in 1965 | 7 |
| **DISASTER MANAGEMENT** | | **13** |
| DM 1 | Disaster Management Capsule: Organisation, Types of Disasters, Essential Services, Assistance, Civil Defence Organisation | 3 |
| DM 2 | Initiative Training, Organising Skills, Do's & Don't's, Natural Disasters, Man Made Disasters | 9 |
| DM 3 | Fire Service & Fire Fighting | 1 |
| **ENVIRONMENTAL AWARENESS & CONSERVATION** | | **3** |
| EA 1 | Environmental Awareness and Conservation | 3 |
| **GENERAL AWARENESS** | | **4** |
| GA 1 | General Knowledge | 4 |
| **NAVAL ORIENTATION** | | **6** |
| AF 1 | Armed Forces and Navy Capsule | 3 |
| EEZ 1 | EEZ Maritime Security and ICG | 3 |
| **ADVENTURE** | | **1** |
| AD 1 | Introduction to Adventure Activities | 1 |
| **BORDER & COASTAL AREAS** | | **2** |
| BCA 1 | History, Geography & Topography of Border/Coastal areas | 2 |

**TOTAL: 45 PERIODS**

**NCC Credit Course Level 2***

| **UC23P23** | **(AIR FORCE WING) NCC Credit Course Level - II** | **L T P C** |
|---|---|---|
| | | **3 0 0 3** |

| | | |
|---|---|---|
| **PERSONALITY DEVELOPMENT** | | **9** |
| PD 3 | Group Discussion: Change your mindset, Time Management, Social Skills | 6 |
| PD 5 | Public Speaking | 3 |
| **LEADERSHIP** | | **7** |
| L 2 | Case Studies: APJ Abdul Kalam, Deepa Malik, Maharana Pratap, N Narayan Murty, Ratan Tata, Rabindra Nath Tagore, Role of NCC cadets in 1965 | 7 |
| **DISASTER MANAGEMENT** | | **13** |
| DM 1 | Disaster Management Capsule: Organisation, Types of Disasters, Essential Services, Assistance, Civil Defence Organisation | 3 |
| DM 2 | Initiative Training, Organising Skills, Do's & Don't's, Natural Disasters, Man Made Disasters | 9 |
| DM 3 | Fire Service & Fire Fighting | 1 |
| **ENVIRONMENTAL AWARENESS & CONSERVATION** | | **3** |
| EA 1 | Environmental Awareness and Conservation | 3 |
| **GENERAL AWARENESS** | | **4** |
| GA 1 | General Knowledge | 4 |
| **GENERAL SERVICE KNOWLEDGE** | | **6** |
| GSK 1 | Armed Forces & IAF Capsule | 2 |
| GSK 2 | Modes of Entry in IAF, Civil Aviation | 2 |
| GSK 3 | Aircrafts - Types, Capabilities & Role | 2 |
| **ADVENTURE** | | **1** |
| AD 1 | Introduction to Adventure Activities | 1 |
| **BORDER & COASTAL AREAS** | | **2** |
| BCA 1 | History, Geography & Topography of Border/Coastal areas | 2 |

**TOTAL: 45 PERIODS**

| PL23405 | PLANNING STUDIO IV: LAND USE AND TRANSPORTATION PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 14 | 7 |

**OBJECTIVES**

- To understand the interrelationship between transportation and land uses, and related economic, social, and environmental issue to understand
- To appreciate the difference between travel demand and transport supply.
- To learn techniques for assessment, mitigation and management of traffic impact of current and proposed development.
- To understand key techniques for management and enhancement of transport supply.
- To promote and make way for sustainable mobility patterns, improve accessibility and promote livability.

**STUDIO LEARNING UNIT**

Land use transport models – its relationship with Trip generation, trip distribution, land use, etc. Knowledge on the procedure of traffic and transportation survey and data collection techniques. Modelling of various scenarios and preparation of Land use and Transportation. Importance of sustainable transportation modes and networks, the role of public transport system, in making transport sustainable. Data analysis includes comparing travel patterns with socio economic condition, housing typologies and private vehicle ownership, etc. Knowledge about Transit Oriented Development (TOD) – and Development Oriented Transit (DOT). Their interrelationship and advantages in making transit more sustainable.

**CONTENTS:**

Basics: Understanding elements of Land use and transportation; Need for Land use and transportation integration for sustainable development of cities; Planning Tools of Land use and Transportation Integration for compact city development

**Surveys:** Conduct, analyze, interpret and produce reports on various traffic and transport surveys; road and intersection inventory, traffic volume counts, origin destination, spot speed, speed and delay, parking, pedestrian, public transport surveys, etc. Understand traffic and transportation related problems at the local / sub city level, and develop appropriate plans.

**Travel Patterns Study**: Analyzing the mobility profile of residents and workers within an area, modes used, trip lengths, trip purpose, etc. Origin destination survey includes analysis by comparing travel patterns with socio economic condition, housing typologies and private vehicle ownership. This will also include public opinion on traffic, noise, accessibility and local environment.

**Assessment of Travel Demand**: Understanding of basic techniques for assessment of traffic impact of existing uses; Surveys and analysis related to traffic generation rates and patterns, parking demand, non-motorized traffic, traffic conditions on surrounding roads and intersections; Basic principles of travel demand modelling could be used to simulate scenarios to test how change in the intensity of use of land could impact traffic in an area.

**Transport Supply Analysis**: Diagnose the key transportation issues in an area by undertaking studies for analyzing traffic volume, journey speed, parking, pedestrian movement and access to public transport. A study about the adequacy of transport infrastructure vis-à-vis travel demand studies undertaken earlier.

**Impact of transport on local environment**: Analyzing noise, emissions, safety and quality of life; Developing indicators; Consideration of the needs of excluded groups such as children, elderly and women; Development of strategies consisting of planning, design and management measures.

**Transport Modelling**: Simulation and various transport land use relationship scenarios and strategies.

**STUDIO OUTPUT**

Preparation of Comprehensive Mobility Plan with an integrated Land Use Plan Approach (Transit Oriented Development and Development Oriented Transit). Development of land use transport models and simulation of various scenarios. Through analysis of the mobility profile of residents and workers within an area, modes used, trip lengths, trip purpose, assessment of traffic impact of existing use, key transportation issues and development of short term and long-term strategies consisting of planning, design and management measures.

**TOTAL: 210 PERIODS:**

**COURSE OUTCOMES**

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

**CO1** Appreciate urban form and design from the perspective of travel behaviour research.

**CO2** Demonstrate skills and knowledge to prepare traffic and transportation plan. circulation plan or traffic management plan for a human settlement.

**CO3** Elucidate evidence-based approaches to evaluate land use and transportation systems performance.

**CO4** Analyse the impacts of transportation infrastructure on land development and interpret real traffic and transportation problems.

**CO5** Formulate policies aimed to influence the transportation-land use interaction space.

**CO6** Value the ideology of preparation of integrated land use and transportation planning by considering stakeholder's needs, issues, potential and priorities.

**TEXTBOOKS**


1. Kadiyali L.R, "Transport Engineering", Khanna Book Publishing Co., New Delhi, 2017.
2. Sarkar P.K, Maitri V. and Joshi G, "Transportation Planning: Principles, Practices and Policies", Prentice Hall India, New Delhi, 2014.
3. Verma A and Ramanayya T.V, "Public Transport Planning and Management in Developing Countries", CRC Press, London, 2014.
4. Ryan Gravel, "Where We Want to Live: Reclaiming Infrastructure for a New Generation of Cities", St.Martin's Press, 2016.
5. Paramita Majumdar, "Dynamics of Urban Development", Abhijet Publications, 2004.


**REFERENCES**


1. Government of India, "Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2015.
2. Government of India, "Formulation of GIS Based Master Plan for AMRUT Cities", Town and Country Planning Organisation, Ministry of Housing and Urban Affairs, New Delhi, 2015.
3. Government of India, "Master Plan for Delhi – 2021", Delhi Development Authority, Ministry of Urban Development, New Delhi, 2021.
4. T.M.Vinod Kumar, "Smart Master Planning for Cities: Case Studies on Digital Innovations", Advances in 21st Century Human Settlements, Springer, 2022.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 1 | 3 |
| CO2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 1 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 1 | 3 |
| CO4 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 1 | 2 |
| CO6 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 2 |
| Average | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 3 |

3- High 2-Moderate 1-Low

| PL23501 | PLANNING LEGISLATION AND URBAN POLICIES | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the basic concepts of law and relevant constitutional provisions for urban and regional planning
- To know about the Indian constitution, its amendments and the legal tools connected with urban planning and its implications
- To know about the environmental legislations applicable in India.
- To understand the policies related to urban areas in India.
- Develop a comprehensive understanding of Policy analysis, prescription, implementation and Evaluation

**UNIT I CONCEPT OF LEGISLATION 9**

Concept of law, Sources of law including custom, legislation and precedent, ordinance, bill, act, regulations and byelaws; Significance of law and its relationship to urban; Concepts and contents of the Indian Constitution, article 21; Rights and their implications for planning; Fundamental provisions regarding property rights; Model town planning laws.

**UNIT II STATUTORY FRAMEWORK FOR PLANNING AND DEVELOPMENT LAW 9**

Key aspects related to 73rd & 74th Constitutional Amendment Act; 11th & 12th Schedule of the Constitution. Evolution of town planning legislation, town planning laws, town planning as a state subject; Current amendments in planning and development laws; Development Authority Acts ; Model Town and Country Planning Acts of center and state; legislations relating to urban art commissions;

**UNIT III LAND AND ENVIRONMENTAL LEGISLATION 9**

Introduction to Land Acquisition Act, 1894; Apartment Ownership Acts; Slum improvements and clearance Acts; PPP. Legislation controlling the use of land parcels like non-agricultural permissions, ULCRA; Tools of development control-zoning, sub-division regulations, building regulations, model building bye-laws, TNCDBR, Rent Control Acts; Brief overview of key environmental legislations and rules pertaining to urban areas:

**UNIT IV URBAN SECTOR POLICIES OF INDIA 9**

Public policy - Approaches and Models; Multi-sectoral Urban Policies - Master Plan reservations, PPP based, cross subsidization and incentives to developers, relaxation of bye laws and sanctioning process - National Urban Sanitation Policy - National Water Policy Urban Transport: - The National Urban Transport Policy (NUTP) -National Transit Oriented Development (TOD) Policy

**UNIT V POLICY ANALYSIS AND EVALUATION 9**

Policy Analysis – A Multidisciplinary framework, four stages of Policy Analysis, The Practice of Policy Analysis, Policy Analysis in the Policy making process, Structuring Policy Problems; Approaches and Techniques, Policy Evaluation: Techniques and Approaches, Roles, process and Criteria, Policy performance, Evaluating Impacts.

**TOTAL: 45 PERIODS**

## COURSE OUTCOMES

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

CO1 Acquire knowledge about sources of law and basic terminologies in law.

CO2 Show knowledge about the implications of relevant articles of the Constitution of India on town planning.

CO3 To acquire knowledge about various environmental laws and their implications in Town Planning

CO4 To acquire knowledge about various urban sector policies and its implications.

CO5 Demonstrate a thorough understanding of policy analysis, including the multidisciplinary frame work, stages and practices

## TEXT BOOKS


1. Lakshimikanth, M., 'Indian Polity,' Tata McGraw Hill, New Delhi, 2007.
2. Bhattacharya, M., 'New Horizons of Public Administration,' Jawahar Publishers and Distributors, Gurgaon, 2001.
3. Needham, B. 'Planning, Law and Economics: An investigation in the rules we make for using land, Routledge,' London, 2006.
4. McAuslan, P. 'Bringing the Law Back In: Essays in Land, Law and Development,' Routledge, London, 2019.
5. William N. Dunn 'Public Policy Analysis', Pearson Education, 2015.


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1. Anindita, M., 'The Legal Right to Housing in India,' Cambridge University Press, Cambridge, 2019.
2. Brand, C., 'Planning Law,' Cavendish Publishing Limited, Singapore, 2001.
3. Jariwala, C.M., 'Environmental Justice: The Directions and Outcome,' Indian Journal of Environmental Law, Vol. 1, pp. 15-30.
4. Ghosh, S. (ed.) 'Indian Environmental Law: Key Concepts and Principles,' Orient Blackswan, Hyderabad, 2019.
5. David L. Weimer and Adian R Vining, Policy Analysis: Concepts and Practice, Routlege, Taylor and Francis, 2017


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 1 | | | | | 3 | | 2 | 2 | 2 | | 1 |
| CO2 | | 3 | 3 | 3 | 2 | 1 | | 3 | | 2 | | |
| CO3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | | | | 2 | |
| CO4 | 2 | 3 | 2 | | | 3 | | | | | 1 | |
| CO5 | 3 | 2 | 2 | | 3 | | | | | 2 | | 2 |
| CO6 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| Average | 1 | | | | | 3 | | 2 | 2 | 2 | | 1 |

3- High 2-Moderate 1-Low

| PL23502 | PROJECT FORMULATION, APPRAISAL AND MANAGEMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To expose students to techniques of project formulation, appraisal and management.
- To provide inputs to students for learning project evaluation, monitoring and implementation.
- To undesrstand the financial management techniques to monitor and control project.
- To understant the network analysis
- To undertatand the cost benifit analysis for various regional development projects

**UNIT I INTRODUCTION TO PROJECT PLANNING 9**

Overview of the project cycle – Planning process and project planning - Stages of project formulation and their significance; Methodology for project identification and formulation; Search for project ideas - Key elements in project formulation – Methods and tools for project formulation – Preparation of feasibility reports & Detailed Project reports.

**UNIT II PROJECT APPRAISAL 9**

Time and value of money – Investment criteria, techniques of financial appraisal, payback period, IRR, DCF, NPV, CBR. input analysis, financial cost-benefit analysis, social-cost benefit analysis; Project appraisal and report.

**UNIT III PROJECT MANAGEMENT 9**

Project characteristics; techniques of management, importance of project management; reasons for shortfall in performances; concepts of project organization, contracting, procurement and recruitment budget; fund flow statement and stabilization; organization of project, matrix organization, task forces, project teams; monitor and control project; tools and techniques for project management.

**UNIT IV PRE-IMPLEMENTATION PLANNING PHASE 9**

Work break down structure; Network analysis; CPM PERT; resource levelling and allocation; time cost trade off aspects.

**UNIT V PROJECT IMPLEMENTATION, MONITORING AND EVALUATION 9**

Project implementation, stages of implementation, Teamwork, actors in project implementation; Project monitoring: meaning objectives and significance; Monitoring techniques: integrated reporting, Milestones, time, and cost overrun and under runs, unit index techniques; Project evaluation: meaning, objectives, scope, stages, approach and steps, Life of a project; Techniques of project evaluation; case studies in urban and regional development projects.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** To show knowledge about evaluating and monitoring of implementation of development projects.
**CO2** To demonstrate skills for the preparation of detailed reports of development projects.
**CO3** Importance and methodology for project formulation and its application.

**CO4** Stages in network analysis and resource allocation.

**CO5** To know about the input analysis, financial cost- benefit analysis, social-cost benefit analysis in regional projects.

**CO6** Technology and techniques involved in private sector participation in infrastructure projects.

**TEXT BOOKS**


1. Agrawal, R. and Mehra, Y.S., ‘Project Appraisal and Management,’ Taxmann Publisher, New Delhi, 2017.
2. Mattoo, P.K., ‘Project Formulation in Developing Countries,’ South Asia Books, New Delhi, 1978.
3. Johansson, P. and Kriström, B., ‘Cost-Benefit Analysis for Project Appraisal,’ Cambridge University Press, Cambridge, 2016.
4. Gudda, P. A, ‘Guide to Project Monitoring and Evaluation,’ Author House, Bloomington, Indiana, 2011.


**REFERENCES**


1. Joy P.K., ‘Total Project Management - The Indian Context,’ New Delhi, Macmillan India Ltd., 1992.
2. Prasanna Chandra, ‘Projects – Planning, Analysis, Selection, Implementation Review,’ McGraw Hill Publishing Company Ltd., New Delhi. 2006.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 3 | 1 | 3 | 1 | 2 | | 1 | | | 3 | 1 |
| CO2 | 2 | 3 | 3 | 3 | 1 | 1 | 2 | | | 3 | | 1 |
| CO3 | 3 | 1 | 3 | | 3 | 2 | | | 2 | 2 | 3 | |
| CO4 | 2 | 3 | 3 | | 2 | | 2 | 1 | | | 3 | 1 |
| CO5 | 2 | 2 | | | 1 | | 3 | | | 2 | 3 | |
| CO6 | 2 | 3 | 1 | 3 | 3 | 2 | | 1 | | 2 | | |
| Average | **2** | **3** | **2** | **2** | **2** | **1** | **1** | **1** | **2** | **2** | **3** | **1** |

3- High 2-Moderate 1-Low

| PL23503 | PLANNING STUDIO V: MASTER PLAN | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 14 | 7 |

**OBJECTIVES**

- Synthesize knowledge and skills obtained in the core courses in planning in order to prepare a plan for an urban settlement.
- Able understand various types and hierarchy of urban Plans, their Characteristics and Contents.
- Elucidate students to prepare a sector integrated comprehensive development plan of a town or a city or a metropolis.
- Able to understand the importance and constrains of process of plan formulation.
- Evolve Development Policies; Land Use Plan, priorities and Implementation mechanism for a selected Urban Area.

**STUDIO LEARNING UNIT:**

Case Study Analysis: Study the need for master plans addressing city-level issues, and explore various development plans and their focuses.

Survey Tools and Techniques: Prepare secondary information, conduct field surveys, and interact with stakeholders to gather data on demography, socio-economic aspects, housing, and transportation.

Spatial Analysis: Analyze and synthesize collected data to identify trends and issues, develop spatial concepts, and prepare land use plans, policies, and proposals.

Focus on city livability, resilience, financing, phasing, and governance structures for effective implementation and monitoring.

**CONTENT**

**Approach:** Appreciate the need of master plan in cogitation of city level issues.

**Studying development plans:** The study shall involve understanding of contents of various types of development plans and explore their foci.

**Secondary Source Information for a Selected City or Town:** Identification and preparation of secondary source information of the towns or cities selected for the study.

**Organization of field surveys:** Visit to the case study area, collection of primary and secondary data and information on various aspects such as demography, social, economic, housing, transportation, etc. Conduct of primary and secondary surveys.

**Stakeholder Interaction & Visioning**: Interaction with various stakeholders. Carry out visioning exercise with the stakeholders

**Analysis and Synthesis:** Analysis and synthesis of data and information collected on various aspects. Projections of population and other related aspects. Trends and issues identification. Development of spatial concepts in consideration of emerging planning concepts.

**Plan, policies and proposals:** Preparation of Land use plan, policies, proposals and detailed plan document with respect to the identification of priorities and action areas. Phasing and monitoring. Governance structures for implementation.

**STUDIO OUTPUT:**

A comprehensive review of development plans and their focus areas. Detailed secondary data profiles and field survey results for selected cities or towns. Stakeholder interaction outcomes, including visioning exercises. Analyses of collected data, trend identification, and development of spatial concepts for sustainable city planning. Proposed land use plan with policies, proposals, phasing, monitoring strategies governance structures.

**TOTAL: 210 PERIODS**

**COURSE OUTCOMES**

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

- Able to gain the knowledge on approaches adopted in various development plans through case studies and literature reviews.
- Elucidate the delineation of case study area and collection of data on various physical, social and economic aspects.
- To analyze the existing policy and planning literature on urban development plans, and to examine field survey data and information.
- Able to vision the ideology of preparation of comprehensive plan by considering stakeholder's needs, issues, potential and priorities.
- To plan and propose 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.

**TEXT BOOKS**


1. Alexander Garvin, "The Planning Game: Lessons from Great Cities, W.W.Norton & Company, USA, 2013.
2. Shirley Ballaney and Bimal Patel, "Using the Development Plan – Town Planning Scheme, Mechanism to Build Urban Infrastructure, India Infrastructure Report, Oxford University Press, New Delhi, 2009.
3. R.G.Gupta, "Planning and Development of Towns", South Asia Books, 1983.
4. Ryan Gravel, "Where We Want to Live: Reclaiming Infrastructure for a New Generation of Cities", St.Martin's Press, 2016.
5. Paramita Majumdar, "Dynamics of Urban Development", Abhijet Publications, 2004.


**REFERENCES**


1. Government of India, "Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2015.
2. Government of India, "Formulation of GIS Based Master Plan for AMRUT Cities", Town and Country Planning Organisation, Ministry of Housing and Urban Affairs, New Delhi, 2015.
3. Government of India, "Master Plan for Delhi – 2021", Delhi Development Authority, Ministry of Urban Development, New Delhi, 2021.
4. Dr.K.Pratheep Moses, P.Sudharsanamurthy and K.Madhivadhani, "Methodology for the Preparation of GIS Based Master Plan", Tierazliche Praxis, 2021.
5. T.M.Vinod Kumar, "Smart Master Planning for Cities: Case Studies on Digital Innovations", Advances in 21st Century Human Settlements, Springer, 2022.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 3 | 1 | 1 | 2 | 2 | 1 | 3 | 3 | 1 | 2 |
| CO2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 | 1 | 1 |
| CO3 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 3 |
| CO5 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |
| CO6 | 1 | 2 | 3 | 2 | 1 | 1 | | | 2 | 3 | 2 | 2 |
| Average | **2** | **2** | **2** | **2** | **2** | **2** | **2** | **2** | **3** | **3** | **2** | **2** |

3- High 2-Moderate 1-Low

| PL23601 | URBAN GOVERNANCE | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 2 |

**OBJECTIVES**

- To introduce students to key concepts in, and approaches to, politics and its interferences in urban planning
- To teach students the concept of governance and its value system.
- To critically understand functions and power of local body & decentralised planning approaches
- To apprehend the various reforms for change management & capacity building
- To acquire knowledge on various governance innovations and multi-level governance
- To know essentials of urban management to handle large projects

**UNIT I URBAN POLITICS IN PLANNING 4**

Political institutions at center, state and local political economy; Politics of the state and bureaucracy; political interferences in urban planning; Implications in schemes, urban infrastructure projects, Model of Governance; Political decision-making processes.

**UNIT II THE CONCEPT OF GOVERNANCE 6**

Evolution of the concept of governance, core values; critical approaches to governance, Types of democracy and significance of decentralization (political, administrative and fiscal); good governance; Transparency and accountability, Concept of participatory governance. Organogram of a municipality; Executive mayor vs elected mayor; Functions of Standing Committee, Powers and functions of municipality; Interfaces, Organisational Development

**UNIT III LOCAL SELF GOVERNMENT 8**

74$^{th}$ CAA, Models of local government, challenges of local government institutions in India; The need and empowerment of local government; Good governance initiatives in local governments; Decentralized planning in India and its various models; Local body powers, city and metropolitan development authorities, parastatal bodies - scope of their powers and functions, and operational arrangements. Non-municipal urban institutions and its functions, Urban Reform and Managing Change, Improving Systems and Processes for Urban Governance, Capacity Building

**UNIT IV GOVERNANCE INNOVATONS & MULTI LEVEL GOVERNANCE 6**

The concept of E-governance, M- governance, SDI governance and their application in disaster management, public service delivery and efficient local governance. Good Governance Index, Citizens' Charter. Multi-level governance: Globalization and Global Governance; Case Studies

**UNIT V URBAN MANAGEMENT 6**

Service level benchmarking; Improving of delivery of services; Convergence of urban programmes; Service authority versus service provider; essential competencies of city managers; project management; managing trans-municipal and large projects; problem solving and decision making; related to urban and regional planning at national, state and local level,

**TOTAL: 30 PERIODS**

## COURSE OUTCOMES

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

- **CO1** Ability to understand the complex challenges and interferences of politics with urban planning
- **CO2** Demonstrate an understanding the of basic concept of urban governance & organogram of the local body
- **CO3** Develop an understanding of decentralised planning
- **CO4** Acquire knowledge on Urban Reforms and Improving Systems and Processes for Urban Governance
- **CO5** Ability to understand the governance innovations & multi-level governance
- **CO6** Ability to comprehend the complex challenges of Service Delivery & Urban Management

## TEXT BOOKS


1. Aziz, A. & Arnold, D. (eds.) “Decentralized Governance in Asian Countries”, Sage, New Delhi. 1996.
2. Urban Governance and Management: Indian initiatives, P.S.N. Rao (Ed.), Kanishka Publishers, 2006
3. Local Governance in India – Niraja Gopal and Others, Oxford University Press, 2001
4. India: The Challenges of Urban Governance, O.P. Mathur, National Institute of Public Finance & Policy, New Delhi, 1999
5. Urban Management: Challenge of Growth, Kenneth Davey, Avebury
6. G. Mathi Vathanan, “People First: How Odisha’s Drink from Tap Mission Quenched Every Thirst”,Rupa Publications , 2024


## REFERENCES


1. Weinstein L, “One-Man Handled: Fragmented Power and Political Entrepreneurship in Globalizing Mumbai”, International Journal of Urban and Regional Research, Vol. 38, No. 1, pp. 14-35, 2013.
2. Governance and Planning of Mega-City Regions: An International Comparative Perspective, Jiang Xu, Routledge, 2011
3. Urban Local Self-Government in India, R. N. Prasad, Mittal Publication, 2006
4. New Forms of Urban Governance in India: Shifts, Models, Networks and Contestations, I.S.A. Baud, (Ed.), New Delhi, Sage, 2008
5. Fiscal Decentralisation and Governance in India: A Cross-Country Analysis, De Mello, IMF Working Paper, 2001.
6. Luca Pattaroni, Amita Bhide, Christine Lutringer, “Politics of Urban Planning, The Making and Unmaking of the Mumbai Development Plan 2014–2034”, Springer,2022

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | 3 | 3 | 1 | 3 | 2 | 1 | 1 | 3 | 3 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 1 | 3 | 2 | 1 | 1 | 2 | 3 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 1 | 3 | 2 | 1 | 1 | 2 | 3 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 2 | 3 | 3 |
| CO5 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 2 | 3 | 3 |
| CO6 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 3 | 3 | 3 |
| Average | **3** | **3** | **2** | **3** | **1** | **3** | **2** | **1** | **1** | **2** | **3** | **3** |

3- High 2-Moderate 1-Low

| PL23602 | LAND ECONOMICS AND REAL ESTATE MARKET | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To develop a comprehensive understanding of the concepts and principles of land economics
- To analyze the economic principles underlying land use and explore the relationship between economic rent, land use, and land values
- To equip students with the knowledge and techniques necessary for land valuation
- To provide adequate inputs to help understand the whole development process as a seamless activity and be aware of the tactical aspects of the entire process of real estate development.
- To encourage students to explore current trends in asset building and property development.

**UNIT I INTRODUCTION TO LAND ECONOMICS 9**

Economics concepts of land, objectives and scope of land economics; relevance for spatial planning; economic principles of land use; economic rent, land use and land values, demand forecasting, factors affecting land supply and demand market mechanism and land use pattern.

**UNIT II LAND PRICING 9**

Definition, principles of real estate value concepts, The status of land and property ownership in the Constitution of India, types of land, ownership and various land tenure options. Land valuation techniques, land pricing, subsidies, auctions; type of development, land price index, land Information System (LIS), land records

**UNIT III REAL ESTATE MARKET 9**

Introduction to various laws related to real estate - Real Estate (Regulation and Development) Act, 2016, Real estate investment and portfolio management, FDI, role of Non-Residential Indians (NRIs) and Person of Indian Origin (PIOs).

**UNIT IV PRE PROJECT-STUDIES AND EVENTS 9**

Site-Inventory, Evaluation; Feasibility Studies, understanding; Analysis of Trends and Market Trajectories (Micro and Macro market), Factors affecting real estate demand, Development Team assembly.

**UNIT V CURRENT TRENDS IN REAL ESTATE 9**

Special Economic Zone (SEZ), Special Purpose Vehicle (SPV), Joint ventures, Franchisee systems, Types; Parameters, Smart city concepts, green building, Certifications and Rating for Buildings/Townships (IGBC, CARE, CRISIL, ICRA).

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** Understand the concepts, principles, and theories of land economics

**CO2** Interpret and comprehend the economic principles underlying land use

**CO3** Apply their knowledge of land valuation techniques, pricing mechanisms

**CO4** Construct skill in applying the various principles and techniques taught in the subject in real estate design and development process.

**CO5** Criticize the recent trends and innovations in real estate.

**CO6** Evaluate and assess the economic implications of urban development in real estate market.

**TEXT BOOKS**


1. Evan, A., 'Economics and Land Use Planning,' Wiley-Blackwell, Hoboken, New Jersey, 2004
2. Harvey, J, 'Urban Land Economics,' Fourth Edition, Macmillan, London, 1996.
3. Ryan-Collins, J., Lloyd, T., and Macfarlane, L. 'Rethinking the Economics of Land and Housing,' Zed Books, London, 2017.
4. Fillmore W Galaty, "Modern Real estate practice", Dearborn Trade Publishing, New York, U.S.A, 2002.
5. Richard B Peiser & Anne B. Frej, "Professional real estate development" – The ULI guide to the business, Urban Land Institute U.S.A, 2003.


**REFERENCES**


1. Nachem, I, 'The Complete Guide to Financing Real Estate Developments,' McGraw-Hill, New York, 2007.
2. Wu, J. and Duke, J.M., 'The Oxford Handbook of Land Economics,' Oxford University Press, New York, 2014.
3. Glatte, T, 'Location Strategies: Methods and their methodological limitations Journal for Engineering, Design and Technology,' Vol. 13, Issue 3, pp. 435 – 462, 2015.
4. Yogesh Sharma, "Real Estate Planning How to Buy a House", Prabhat Prakashan Pvt.Ltd, 2021.
5. Richard Card and John Murdoch, "Real Estate Management Law", OUP Oxford Publication, 2011.


**CO-PO Mapping –**

| **Course Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 3 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| C06 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| Average | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

| PL23603 | REGIONAL PLANNING AND DEVELOPMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the concept of a region and its significance in spatial planning
- To familiarize the students with various regional planning models and techniques used to analyze and design regional development strategies.
- To examine the patterns and processes of settlement distribution within a region, considering factors such as population density, land use, infrastructure, and accessibility.
- To gain insights into the processes involved in regional development, including economic growth, infrastructure development, environmental considerations, and social aspects.
- To critically analyze regional planning policies and their impacts on sustainable development, social equity, and environmental conservation.
- To apply regional planning principles and techniques, evaluating their effectiveness in addressing real-world regional development challenges with the help of case studies.

**UNIT I REGION AND TYPES OF REGIONS 9**

Defining a region, types of regions; Delineation of regions; Metropolitan region, structure of a metropolitan region, area of influence and dominance, shadow regions; Trickle down effects; Rural-urban fringe, its structure, growth and implications.

**UNIT II SPATIAL DISTRIBUTION OF SETTLEMENTS 9**

Settlement in regional; context; spatial models of location, size and spacing of settlements; Central Place Theory; Characteristic of rural – urban fringe; rural– urban continuum; inter – urban inequalities; Regional interaction: Rank Size Rule, Settlement patterns and analysis; Loschian theory; Regional networks.; Gravity model, classification of settlements; Delineation of Regions, institutional scalogram.

**UNIT III REGIONAL DEVELOPMENT 9**

Regional development; Balanced and unbalanced development; Underdevelopment; Regional multiplier, input-output model; Cumulative causation theory; Core-periphery model; Growth poles and centers; Regional planning projects such as corridor development, road development projects, port development projects, airports and metro rail projects, etc.

**UNIT IV PLANNING PROCESSES 9**

Regional planning processes: Identification of plan objectives; collection, classification and analysis of data; Norms and standards for regional planning; Formulation of alternative plan proposals with respect to population distribution, location of new regional economic activities, infrastructure, plan implementation, etc

**UNIT V CASE STUDIES 9**

Selected case studies in regional development - Rajasthan canal area, South- East resource region, Western ghats region, etc. District planning. Metropolitan regions - National capital region, Mumbai metropolitan region, international case studies.

**TOTAL : 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Comprehend different types of regions, regional planning models, and techniques.
**CO2** Understand the need for planning at various levels, with a specific focus on regional planning.
**CO3** Analyze the spatial distribution of settlements and understand the nature of regional development processes.
**CO4** Familiarize with the contents, approach, and methodology of preparing Regional Plans.
**CO5** Evaluate and assess the effectiveness of regional development processes.
**CO6** Synthesize information from case studies and apply it to real-world regional planning scenarios.

**TEXT BOOKS**


1. Glasson, J., 'An Introduction to Regional Planning: Concepts, Theory and Practice, University of California,' Berkeley, 1978.
2. Mishra, R.P., Sundaram, K.V. and Prakasa Rao, 'V.L.S., Regional Development Planning in India: A New Strategy,' Rawat, Jaipur, 1974.
3. Misra, R.P., 'Regional Development Planning in India: A New Strategy, Vikas Publishing House,' New Delhi, 1978.
4. Plane, D.A., Mann, L.D., Button, K. and Nijkamp, P., 'Regional Planning, Edward Elgar Publishing, Cheltenham,' 2007.
5. Routra, J.K., 'Urban and regional planning in practice in India,' Habitat International, Vol. 17, Issue 3, pp. 55-74, 1993.


**REFERENCES**


1. Glasson, J. and Marshall, T, 'Regional Planning,' Routledge, London, 2007.
2. Appiah-Opoku, S., 'Urban and Regional Planning in Barney Warf' (ed.) Encyclopedia of Geography, Sage, London. Six Volumes, 2010.
3. Calthorpe, P. and Fulton, W., 'The Regional City: Planning for the End of Sprawl,' Island Press, Washington, D.C, 2001.
4. McLoughlin, J.B., 'Urban and Regional Planning: A Systems Approach,' Faber and Faber, London, 1969


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | | | | | 3 | 3 | | | | | 2 |
| CO2 | 3 | | | | 1 | 3 | 3 | 1 | | | | 2 |
| CO3 | 3 | 2 | 1 | 1 | 2 | 3 | 3 | 1 | | | | 2 |
| CO4 | 3 | 2 | 1 | 1 | 1 | 3 | 3 | 1 | | | | 3 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | | | | 3 |
| CO6 | 3 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| Average | **3** | **2** | **2** | **2** | **1** | **3** | **3** | **1** | **2** | **2** | **1** | **3** |

3- High 2-Moderate 1-Low

## NCC Credit Course Level 3*

| UC23P31 | (AIR FORCE WING) NCC Credit Course Level - III | L T P C<br>3 0 0 3 |
|---|---|---|
| **PERSONALITY DEVELOPMENT** | | **9** |
| PD 3 | Group Discussion: Team Work | 2 |
| PD 4 | Career Counselling, SSB Procedure & Interview Skills | 3 |
| PD 5 | Public Speaking | 4 |
| **BORDER & COASTAL AREAS** | | **4** |
| BCA 2 | Security Setup and Border/Coastal management in the area | 2 |
| BCA 3 | Security Challenges & Role of cadets in Border management | 2 |
| **AIRMANSHIP** | | **1** |
| A 1 | Airmanship | 1 |
| **BASIC FLIGHT INSTRUMENTS** | | **3** |
| FI 1 | Basic Flight Instruments | 3 |
| **AERO MODELLING** | | **3** |
| AM 1 | Aero Modelling Capsule | 3 |
| **GENERAL SERVICE KNOWLEDGE** | | **2** |
| GSK 4 | Latest Trends & Acquisitions | 2 |
| **AIR CAMPAIGNS** | | **6** |
| AC 1 | Air Campaigns | 6 |
| **PRINCIPLES OF FLIGHT** | | **6** |
| PF 1 | Principles of Flight | 3 |
| PF 2 | Forces acting on Aircraft | 3 |
| **NAVIGATION** | | **5** |
| NM 1 | Navigation | 2 |
| NM 2 | Introduction to Met and Atmosphere | 3 |
| **AERO ENGINES** | | **6** |
| E 1 | Introduction and types of Aero Engine | 3 |
| E 2 | Aircraft Controls | 3 |

| | | L | T | P/S | C |
|---|---|---|---|---|---|
| **PL23604** | **PLANNING STUDIO VI: SUB-CITY LEVEL PLAN** | **0** | **0** | **14** | **7** |

**OBJECTIVES**

- Able to study plan preparation and its relationship of higher order plan with lower order plans such as Master Plan with Zonal Plan and Detailed Development Plan.
- Develop the lower order plan within the framework of Master Plan.
- Able to details out land allocations and planning proposals given in statutory plans at the inner part of cities.
- Help students to see interrelations amongst different sectors at the sub-city level.
- Understand the practical reality of land allocation and management policies.

**STUDIO LEARNING UNITS**

The approach to develop the lower hierarchy plan, e.g. zonal plan/ward/town planning scheme in the framework of a given master plan.

The study and development of the relevant planning standards for different land uses; Detailing of specific sites in the proposed zonal plans, covering different land uses.

Level / Scale of selected Studio exercise in relation to the city scale- Contextualization

Interlinkages to City Scale in respect of all elements of the City Plan, such as Demography, Physical & Social Infrastructure etc.

Regulations for the Sub-City Plan

**CONTENT**

**Approach to Plan Making:** Introduce different approaches to plan making with a focus on local or sub-city level planning and to apprise the comprehensive development plan, structure plans, zonal plans and sector plans with an intension to understand its local implications.

**Secondary Source Information for a Selected City or Town:** Identification and preparation of secondary source information of the lowest planning level of a city.

**Organization of field surveys:** Conduct, analyze and interpret findings of detailed primary surveys on different aspects of built form – land use and utilization, building footprints, floor-wise land utilization, building and population density, infrastructure needs, etc. Conduct key informant interviews, stakeholder mapping and profiling, case study interviews and questionnaire-based surveys to develop detailed local development covering all spatial and socio-economic aspects of development.

**Analysis and Synthesis:** Analysis and synthesis of data and information collected on various aspects. Projections of population and other related aspects. Trends and issues identification.

**Plan, policies and proposals:** Sub-City level plan to be prepared on aspects of land and building use, local development regulations, planning standards, building bye-laws, local circulation and transportation aspects, land economic base, local environmental conditions, conservation and urban design, and other aspects deemed contextually relevant.

**Studio Output**

Comprehensive analysis of lower hierarchy plan, eg. zonal plan/ward/town planning scheme in the framework of a given master plan and the relevant town planning or development act. Development of relevant planning standards for different land uses; Detailing of specific sites in the proposed zonal plans, covering different land uses; preparation of detailed project reports.

**TOTAL: 210 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Appreciate the rationale for planning at local area level.
**CO2** Outline the development of the relevant planning standards for different land uses.
**CO3** Identify major socio – economic, physical, environmental and regulatory issues pertinent to revitalize local area.
**CO4** Value the ideology of preparation of sub-city plan by considering stakeholder's needs, issues, potential and priorities.
**CO5** Examine the various context specific aspects and to create various development options.
**CO6** Develop spatial guidelines and development regulations to outline the planning strategies adopted for plan implementation.

**TEXT BOOKS**


1. Dutsche Gesellschaft fur International Zusammenarbeit, "Land Use Planning: Concepts, Tools and Application", Ministry for Economic Cooperation and Development, Germany, 2012.
2. Rishi Dev, "Local Area Planning in India", Copal publishing, 2015.
3. Narendra Patel," Town Planning Scheme: A tool for making planning work for city development", Indra Stra Global, 2019.
4. Patrick Geddes, "Town Planning Towards City Development", Vista Publishing, 2016.
5. Carl Patton, David Sawicki and Jennifer Clark, "Basic Methods of Policy Analysis and Planning", 2012.


**REFERENCES**


1. Government of India, "Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organization, Ministry of Urban Development, New Delhi, 2015.
2. Government of India, "Managing Urban Growth using the Town Planning Schemes in Andhra Pradesh", Centre for Good Governance, Ministry of Urban Development, TCPO, Hyderabad. 2010.
3. Government of India, "Report of the Working Group on Urban Strategic Planning, Steering Committee on Urban Development and Management, Ministry of Housing and Urban Poverty Alleviation, New Delhi, 2011.
4. Government of Gujarat, "Manual for Preparation of Local Area Plans", Gujarat Real Estate Regulatory Authority, 2022.
5. New Delhi Municipal Council, "Sub-city Development Plan of Delhi for New Delhi Municipal Council Area", IL&FS Ecosmart Limited, New Delhi 2007.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO10** | **PO 11** | **PO 12** |
| CO1 | 3 | 2 | 3 | 1 | 1 | 2 | 2 | 1 | 3 | 3 | 1 | 2 |
| CO2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 | 1 | 1 |
| CO3 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 3 |
| CO5 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |
| CO6 | 1 | 2 | 3 | 2 | 1 | 1 | | | 2 | 3 | 2 | 2 |
| Average | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |

3- High 2-Moderate 1-Low

**PL23701** **URBAN FINANCE** **L T P/S C**
**3 0 0 3**

**OBJECTIVES**

- To understand about the powers and resource of local government
- To familiarise about the source of financing and urban reforms
- To understand about pooled finance development fund
- To understand about the property tax reforms a monetization of public properties
- To analyse about the process of financial management system for urban area
- To understand about public private partnership

**UNIT I MUNICIPAL FINANCE 9**

Principles and composition of income and expenditure of urban local bodies; Taxation and user charges; Intergovernmental fiscal relations; Powers and resources of local governments; Constitutional provisions; CFC and SFC, Index of decentralization; Limitations and need for revenue enhancement; Expenditure Control methods and mechanisms; Assistance from foreign donors and Mutli-National agencies.

**UNIT II ALTERNATIVE SOURCES OF FINANCING 9**

Types of Partnership approaches, Privatization of civic services, types of contracts and ownerships; user charges projects; Pricing of services; Market Access; Municipal Bonds; Pooled finance; Land Value Capture; Land Extractions; Impact fee, subsidies and betterment fees.

**UNIT III RESOURCE BASED ON ACHIEVEMENT OF URBAN REFORMS 9**

Role of state government and urban local bodies; City's challenge fund Urban reforms, Implications on resources, incentive fund and state level; Pooled finance development fund; property tax reforms and monetization of public properties.

**UNIT IV INSTITUTIONAL CAPACITY ENHANCEMENT &INFORMATION SYSTEM 9**

Finance management, management process; Accounting and budgeting, asset management, receivables management; Computerization as a tool for resource enhancement; Role of Management Information Systems. Financial operating plan, city corporate plan; Development of urban indicators; infrastructure pricing and financing - Financing mechanisms in addition to tax and grants

**UNIT V MODELS OF INFRASTRUCTURE FINANCING 9**

Models of Infrastructure Financing, PPP model for infrastructure financing, BOT, BOOT, BOO, LDOT, BDOT, Problems and Issues emerging in PPP models, LDOT models, Fully Privatized model, partially privatized models; Urban Infrastructure models in Water Supply, SWM, Sanitation- Case studies in Indian Context.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Understand the income and expenditure of local bodies.
**CO2** Analyse about the assistance and requirements of donors from multinational agencies.
**CO3** Analyse about the source of financing from different approaches.
**CO4** Understand about the role of urban local bodies in facing the challenges in urban reforms
**CO5** Understand about the fiancing mechanism & role of management
**CO6** Able to understand the various model of Infrastructuring financing

**TEXT BOOKS**

1. Financing Cities in India: Municipal Reforms, Fiscal Accountability and Urban Infrastructure, Prasanna K. Mohanty, Sage, 2016
2. Municipal Finances and Service Delivery in India, ASCI, Hyderabad, 2014
3. Biekpe, N., Cassimon, D. and Mullineux, A. (eds.) 'Development Finance and its Innovations for Sustainable Growth,' Palgrave Macmillan, New York, 2017.
4. Mathur, O.P. 'Impact of Globalization on Cities and City-Related Policies in India', in H. Richardson, W. Harry, and C. Chang-Hee (eds.) Globalization and Urban Development (pp. 43–58), Springer, Berlin, 2005.
5. R. N. Joshi , "Public Private Partnership in Infrastructure: Perspectives, Principles, Practices", Vision Books,2013
6. Mathur,O.P.,Thakur,D., and Rajadhyaksha, N.(2009)," Urban Property Tax Potential in India, National Institute of Public Finance and Policy, New Delhi.

**REFERENCES**

1. Mathur, O.P. 'The Financing of Urban Infrastructure Issues and Challenges, Background Note,' Ministry of Finance, Government of India, New Delhi, 2018.
2. Mishra, A.K. and Mohanty, 'P.K., Urban infrastructure financing in India: applying the benefit and earmarking principles of taxation,' Journal of Social and Economic Development, DOI: 10.1007/s40847-018-0059-1,2018.
3. Mohanty, P.K., 'Financing Cities: Municipal reforms, fiscal accountability and urban infrastructure,[ Sage, New Delhi, 2016.
4. Peterson, G.J.,'Financing Cities: Fiscal responsibility and urban infrastructure in Brazil, China, India and South Africa,' Sage, New Delhi, 2007.
5. Singh,K. and Ta'l,B.(eds.) 'Financing and Pricing of Urban Infrastructure,' New Age Books Publishers (P) Ltd, New Delhi, 2000.
6. PPP in Urban Infrastructure: Case Studies, Ministry of Urban Development, Ernst & Young Pvt. Ltd. 2010

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 3 | | 2 | | 3 | 3 | 2 | 1 | 1 | 3 | |
| CO2 | 3 | 3 | 1 | 3 | 1 | 1 | 1 | 3 | | 1 | 3 | |
| CO3 | 3 | 2 | 1 | 1 | | 1 | | 3 | 1 | | 3 | |
| CO4 | 3 | 1 | | | | | | | | | 3 | 1 |
| CO5 | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 3 | |
| CO6 | 3 | | 3 | 3 | | | | | | | 3 | 1 |
| Average | **2** | **2** | **1** | **1** | **1** | **1** | **1** | **2** | **1** | **1** | **3** | **1** |

3- High 2-Moderate 1-Low

**PL23702** **PLANNING STUDIO VII: REGIONAL PLAN**

| L | T | P/S | C |
|---|---|---|---|
| 0 | 0 | 14 | 7 |

**OBJECTIVES**

- To understand different approaches to plan making, role and relevance of regional planning, in the context of 73rd and 74th constitutional amendment acts.
- To enumerate the growth and expansion of human settlement within the contextual framework of regions and the approach to planning them.
- To acknowledge regional planning process and manner of preparation of regional plan.
- To impart techniques, tools and methods on preparation of development plan for a region or district.
- To attempt to experiment the significance of regional plan Preparation, Publication and Sanction rules.

**STUDIO LEARNING UNIT**

Documentation and Appreciation of Regional Interdependence, Disparity and Diversity.

Developing alternative planning strategies, settlement patterns and development strategies based on Carrying capacity based regional planning

Decentralized Planning – Formulation of Regional Plan, policies and proposals with different scenarios and identification of priority areas; phasing and monitoring;

**CONTENT**

**Studying development plans:** Role and relevance of regional planning at district or block level for regional planning, critical appraisal of district or block level plans; Understanding the contents of various types of regional plans and their linkages with higher and lower order plans.

**Secondary Source Information for a Selected Region:** Identification and preparation of secondary source information of the region selected for the study.

**Constitutional Provisions:** Through live case examples or literature reviews, understand District planning in the context of 73rd and 74th Constitution Amendment Acts; District Planning Committees (DPCs); Metropolitan Planning Committees (MPCs) and Ward Committees, related to the preparation of Regional Plan.

**Organization of field surveys:** Visit to the case study area, collection of primary and secondary data and information on various aspects such as demography, social, economic, housing, transportation, etc. Conduct of primary and secondary surveys. Interaction with various stakeholders.

**Analysis and Synthesis:** Identification of development issues, potential thrust areas and constraints: sectoral and spatial; designing of alternative planning strategies, settlement patterns and development strategies; Sectoral and spatial prioritization, phasing, financial plans, institutional mechanisms, legislative framework, management plans.

**Plan, policies and proposals:** Preparation of Regional Plan, policies and proposals with different scenarios and identification of priority areas; phasing and monitoring; governance structures for implementation; regional land utilization plan and detailed project report.

**STUDIO OUTPUT**

Detailed analysis of settlement growth, detailing demography, social, economic, housing, transportation, etc. Identification of development issues, potential thrust areas and constraints: sectoral and spatial; designing of alternative planning strategies, settlement patterns and development strategies; Preparation of Regional Plan, policies and proposals with different scenarios and identification of priority areas; phasing and monitoring

**TOTAL: 210 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Appreciate the rationale for planning at regional level, in consideration of economic, social, and cultural factors in regional growth and change.

**CO2** Envision the spatio-economic growth trajectory of the region.

**CO3** Experimental approaches towards stakeholder involvement, community engagement, and working with diverse communities.

**CO4** Propose spatial and sectoral interventions at regional scale, both in urban and rural context.

**CO5** Promote the association amongst land, resources, disparity, diversity, interdependence and equity in regional setting.

**CO6** Prepare alternate spatial strategies, policies, and to make planning proposals, for the identified hierarchy of settlements.

**TEXT BOOKS**


1. Amitabh Kundu and Varghese.K, “Regional Inequality and Inclusive Growth in India under Globalization”, Institute of Human Development, 2010.
2. Kulshrestha, “Urban and Regional Planning in India: Handbook for Professional Practice”, S.K.Sage Publications, 2012.
3. Roy.A and OngA, “Worlding Cities: Asian Experiments and the Art of being Global”, Wiley Blackwell,London, 2011.
4. Walter Isard, “Methods of Regional Analysis: An Introduction to Regional Science”, MIT Press, Cambridge, 1960.
5. David A.Plane, “Regional Planning”, Cheltenham Edward Elgar, 2008.


**REFERENCES**


1. Government of India, “Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2015.
2. Government of Gujarat, “Manual for Preparation of Development Plans”, Gujarat Real Estate Regulatory Authority, 2022.
3. Government of India, “Manual for Preparation of Town and Regional Planning Maps”, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 1972.
4. Government of Tamil Nadu, “Regional Plan (Preparation, Publication and Sanction) Rule”, Directorate of Town and Country Planning, 2021.
5. Government of Maharashtra, “Standardized development control and promotion regulations for Regional Plans in Maharashtra”, Urban Development Department, 2013.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 1 | 2 | 3 |
| CO2 | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 |
| CO3 | 3 | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 3 | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 1 | 2 | 3 |
| CO6 | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 3 | 2 | 1 | 2 |
| Average | **3** | **2** | **2** | **3** | **2** | **1** | **3** | **2** | **2** | **2** | **2** | **3** |

3- High 2-Moderate 1-Low

| PL23703 | DISSERTATION | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 6 | 3 |

**OBJECTIVES**

- To develop knowledge and skills in identifying appropriate literature for a given topic of research /study, draw inferences and understanding from a wide range of literature.
- To explore different tools and techniques and qualitative and quantitative analysis that are acquired in the context of the study undertaken.
- To engage in logical dialogues and discourses based on past research.
- To acquire report writing skills, Report structuring and Chapterisation.
- To promote research in urban and regional planning.

**CONTENT**

To introduce the students on research methods and to develop competencies for critically examining a topic of their interest and present it credibly before the faculty. This is also a preparatory stage for the students to get enough knowledge and skills for carrying out a thesis project of their choice. Furthermore, this course will help them to have general ideas about their topic for undertaking thesis project and develop research questions, structure, research strategy and present critical analysis of existing literature.

**TOTAL: 90 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Identification of topic of interest having relevance to planning profession, Establishing a need for research in the chosen domain.

**CO2** Develop knowledge about how to systematically organize ideas for a particular research topic

**CO3** Articulate responses to various authors, books and papers and move from argument to argument in a succinct and logical way to identify a research gap.

**CO4** Select a research design and appropriate tools & techniques for data analysis.

**CO5** Identification of study area and significance.

**CO6** Report structuring and Chapterisation.

**TEXT BOOKS**


1. Healey, P. and Silva, E., 'The Routledge Handbook of Planning Research Methods,' Routledge, New York, 2015
2. Ward, K., 'Researching the City: A Guide for Students,' Sage, New York, 2020
3. Choy, L. T., "The Strengths and Weaknesses of Research Methodology: Comparison and Complimentary between Qualitative and Quantitative Approaches". IOSR Journal of Humanities And Social Science, 2014.
4. Igwenagu, C, "Fundamentals of research methodology and data collection" Vol.1, Nsukka: University of Nigeria, 2016.
5. Coughian, M., Cronin, P. and Ryan, F, "Step by-step guide to critiquing research. Part 1: quantitative research". Dublin: School of Nursing and Midwifery. Trinity School, 2007.

## REFERENCES


1. Janes OumaOdongo and Donghui Ma, “Perspective in Urban Planning Research: Methods and Tools”, Scientific Research, academic publisher, 2021.
2. Diana MacCallum, Courtney Babb and Carey Curtis, “Doing Research in Urban and Regional Planning: Lessons in Practical Methods”, Routledge, 2019.
3. Sturat Farthing, “Research Design in Urban Planning: A Student’s Guide, SAGE Publications Ltd, 2016.
4. Reid Ewing and Keunhyun Park, “Basic Quantitative Research Methods for Urban Planners”, Taylor & Francis, 2020.
5. Ranjit Kumar, “Research Methodology: A Step-by-Step Guide for Beginners”, Sage: 2014.


## CO-PO Mapping

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| CO4 | 3 | 3 | 1 | 2 | 3 | 1 | 1 | 2 | 3 | | | 2 |
| CO5 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | | 2 | | 1 |
| CO6 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 2 | | | 2 | 2 |
| Average | **3** | **3** | **3** | **3** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **3** |

3- High 2-Moderate 1-Low

| PL23704 | INTERNSHIP TRAINING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 0 | 2 |

**OBJECTIVES**

- Help the students to have direct understanding of the practice of planning profession.
- Able to formally and informally interact with the Officials engaged in planning to enhance employability of the students.
- To enable the acquisition of in-depth knowledge in a specific aspect/ issue in the discipline of planning as well as develop perspectives on the same through reading, study, analysis and thought.
- Enable interacting with practicing Planners, allied professionals, researchers and organizations working in the field of specialty in planning.
- Provide students the opportunity to test their interest in a particular career before permanent commitments are made.

**CONTENT**

The students shall undertake the Internship training, in an Organization engaged in activities relating to Planning for a duration of 6- 8 weeks. The internship training will provide the necessary acumen and knowledge to the students to become employable by any Planning Organization.

The Internship is also expected to make familiar the internship demands and complexities of planning. The students may also utilize the internship training to strengthen the quality of their thesis works. The students are expected to complete the internship training before the commencement of the seventh semester and enroll for the same in the seventh semester.

The work undertaken during this training shall be presented by the students in the training seminar before the faculty. The students shall submit an internship training report and shall be evaluated on the basis of the Report submitted through a Viva-Voce Examination, as part of the End Semester Examinations of the Seventh semester.

**COURSE OUTCOMES**

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

**CO1** Express the basic knowledge of named social sciences and relationship of this knowledge with the core ideas of urban and regional planning.

**CO2** Exposure in and enrichment with respect to specific areas of planning for pursuing practice or independent research.

**CO3** Able to determine the challenges and future potential for his / her internship organization in particular and the sector in general.

**CO4** Able to test the theoretical learning in practical situations by accomplishing the tasks assigned during the internship period.

**CO5** Apply various soft skills such as time management, positive attitude and communication skills during performance of the tasks assigned in internship organization.

**CO6** Analyze the functioning of internship organization and recommend changes for improvement in processes.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 2 | 1 | 1 | - | 3 | 2 | 3 | 1 | 3 | 1 | 3 |
| CO2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO3 | 1 | 3 | 1 | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO4 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO5 | 3 | 3 | 1 | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 1 |
| CO6 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 1 | 3 |
| Average | **3** | **3** | **2** | **3** | **3** | **2** | **2** | **3** | **3** | **3** | **2** | **3** |

3- High 2-Moderate 1-Low

| | | L | T | P/S | C |
|---|---|---|---|---|---|
| **PL23801** | **THESIS** | **0** | **0** | **28** | **14** |

**OBJECTIVES**

- Develop the knowledge and skills to carry out independently the identification of development issues through a well laid out methodology.
- Enhance the design/research abilities and apply the knowledge gained, skills developed and professionalism
- Develop the knowledge in Select a research design and appropriate tools & techniques for data analysis
- Propose rational solutions towards sustainable development of the urban and rural settlements.
- Develop the knowledge and skills to carry out independently the identification of development issues through a well laid out methodology.

**CONTENT**

Building on the subject of 'Dissertation', the main objective of 'Thesis' is to teach students about how to conduct research systematically, starting with making a choice of a research topic through the literature review, field work, analysis of field data, synthesis of literature and field work findings, drawing conclusions and making recommendations.

Each student is required to prepare a thesis on a subject concerning urban, rural or regional planning and development. Each research topic would be approved by the faculty and finalized through discussions within the department. Thesis will provide an opportunity to the student to synthesize knowledge and skills acquired by him/her through learning of various theories and practices during the last three and half year. The students will be required to present their work orally, graphically and through written report. The student will also be required to present his/her thesis before the external jury appointed by the school.

The thesis shall be monitored continuously and periodically through internal marked reviews to check the consistency of work, the relevance of the analysis with respect to the data collected and project scope, and the progress towards logical proposals

**TOTAL: 420 PERIODS**

**COURSE OUTCOMES**

Upon the completion of this course, the students would be able to:

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

**CO1** Create coherent key takeaways on various books and papers, proceeding logically to the thesis topic.

**CO2** Ability to understand sectoral and spatial issues emerging as a consequence to development and scientifically analyze the planning issues.

**CO3** Apply solutions appreciating the principles of planning in a democratically acceptable and a justifiable manner.

**CO4** Conduct data analysis and analyze scenarios related to development.

**CO5** Formulate development related proposals or solutions.

**CO6** Able to write and present a Research Proposal.

**TEXT BOOKS**


1. Murray, Rowena, “How to Write A Thesis, Open University Press", McGraw Hill Education, UK, 2011.
2. Tayie, Sami, “Research Methods and Writing Research Proposals”, Pathways to Higher Education, Cairo, 2005.
3. Choy, L. T., “The Strengths and Weaknesses of Research Methodology: Comparison and Complimentary between Qualitative and Quantitative Approaches”. IOSR Journal of Humanities And Social Science, 2014.
4. Igwenagu, C, “Fundamentals of research methodology and data collection” Vol.1, Nsukka: University of Nigeria, 2016.
5. Coughian, M., Cronin, P. and Ryan, F, “Step by-step guide to critiquing research. Part 1: quantitative research”. Dublin: School of Nursing and Midwifery. Trinity School, 2007.


**REFERENCES**


1. Janes OumaOdongo and Donghui Ma, “Perspective in Urban Planning Research: Methods and Tools”, Scientific Research, academic publisher, 2021.
2. Diana MacCallum, Courtney Babb and Carey Curtis, “Doing Research in Urban and Regional Planning: Lessons in Practical Methods”, Routledge, 2019.
3. Sturat Farthing, “Research Design in Urban Planning: A Student’s Guide, SAGE Publications Ltd, 2016.
4. Reid Ewing and Keunhyun Park, “Basic Quantitative Research Methods for Urban Planners”, Taylor & Francis, 2020.
5. Ranjit Kumar, “Research Methodology: A Step-by-Step Guide for Beginners”, Sage: 2014.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| CO1 | 3 | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 1 | 2 | 3 |
| CO2 | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 |
| CO3 | 3 | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 1 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO5 | 3 | 1 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 1 | 3 | 3 |
| CO6 | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 1 | 2 |
| Average | 3 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 3 |

**3- High 2-Moderate 1-Low**

| PL23802 | PLANNING PRACTICE AND PROFESSIONAL ETHICS | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- Explain planner's role in decision making process
- Appreciate the importance of planner's relationship with others
- Explain the roles and responsibilities of planners' professional bodies
- Explain the procedures for undertaking planning consultancy
- Explain the methods of conflict resolution and consensus building

**UNIT I ROLE OF PLANNERS 9**

Planner's role in decision making processes; Concept of reflective and deliberative practice; Study of decision making; Relationship with client, developers, institutions and other professionals., role of different interest groups, deliberation and negotiation large planning project

**UNIT II PROFESSIONAL BODIES AND RESPONSIBILITIES 9**

Aims and objectives of professional institutes, sister bodies; Responsibilities towards clients, fellow professionals and general public

**UNIT III PLANNING CONSULTANCY 9**

Acquaintance with bidding process, Contract agreement; Formulation of Project Proposals; Professional fees for different types of planning practice, setting up of planning firms, official correspondence, office management practices, An overview of IPR and Copyrights

**UNIT IV CONFLICTS RESOLUTION, NEGOTIATION AND CONSENSUS BUILDING 9**

Nature of conflicts, pre-empting conflicts, and conflict resolution measures; Instruments of negotiation; Information based and principal-based negotiation; Survey of court cases

**UNIT V ETHICS 9**

Ethics in planning profession; Moral reasoning; Planning practice and ethical dilemmas and its resolution; Code of professional conduct; Examples of codes of conduct of different countries including India.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Understand Planner's institutional responsibility
**CO2** Understand Planner's accountability towards clients
**CO3** Ability to formulate project proposals
**CO4** Ability to initiate and execute the bidding process
**CO5** Ability to negotiate and resolve conflicts
**CO6** Understand the importance of ethics in planning and code of professional conduct

**TEXT BOOKS**

1. Singer, P.Practica lEthics, Cambridge University Press, Cambridge, 2010.
2. Richards,J.R. The Skeptical Feminist, Routledge, NewYork, 1980.
3. Harding, C.G. (ed.) Moral Dilemmas and Ethical Reasoning, Routledge, NewYork, 2017.
4. Professional Practice, K.G. Krishnamurthy and S.V. Ravindra, PHI Learning Pvt. Ltd., 2014
5. Planning Ethics: A Reader in Planning Theory, Practice and Education, Sue Hendler, Center for Urban Policy Research, 1995

**REFERENCES**


1. Paul,R. and Elder, L. The Thinker's Guide to Ethical Reasoning: Based on Critical Thinking Concepts and Tools, Foundation of Critical Thinking, Tomales, CA. Second Edition, 2013
2. Barrett, C.D. Everyday Ethics for Practicing Planners, Routledge, NewYork, 2017.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 1 | | | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| CO2 | 2 | 1 | | | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| CO3 | 2 | 1 | | | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| CO4 | 2 | 1 | | | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| CO5 | 2 | 1 | | | 1 | 1 | 1 | 3 | 3 | 2 | 3 | 3 |
| CO6 | 1 | 1 | | | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Average | 2 | 1 | | | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |

**3- High 2-Moderate 1-Low**

## PROFESSIONAL ELECTIVE COURSES

| PL23001 | PUBLIC TRANSPORTATION SYSTEMS | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the characteristics of various urban transportation systems
- To learn the concepts of route network design
- To familiarize with scheduling
- To study the planning aspects of terminals
- To be acquainted with sustainable urban transportation systems

**UNIT I TRANSPORT SYSTEMS** **9**

Urban modes and service types - Technological and operational Characteristics – environmental considerations – relative cost economics – criteria for selection

**UNIT II ROUTE NETWORK DESIGN** **9**

Transportation Demand estimation, Data requirements, Network planning - Corridor identification - Route Systems and Capacity

**UNIT III SCHEDULING** **9**

Components –Scheduling procedure and patterns –Fleet Requirement – Bus and Crew scheduling - Rail operation design – Scheduling – Frequency and Headway

**UNIT IV TERMINAL PLANNING** **9**

Planning and design of terminals - Bus stop capacity – Depot location - Depot layout, Parking patterns, Rail Transit: Station Arrangements - Way capacity and Station Capacity

**UNIT V SUSTAINABLE AND INCLUSIVE URBAN TRANSPORTATION** **9**

Preferential treatment for high occupancy modes, promoting non-motorized modes of transport - Integrated land use and transport planning – Demand management techniques - Integrated public transport planning; Inclusivity; case studies- Smart Cities.

**TOTAL : 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Compare and select suitable urban transportation systems
**CO2** Design route network
**CO3** Schedule the transit units and crew
**CO4** Apply the concepts of terminal planning
**CO5** Have a knowledge of sustainable transportation systems

**TEXT BOOKS**


1. Black, Alan, ‘Urban Mass Transportation Planning,’ McGraw- Hill,Inc., New York,1995
2. Vukan, R. Vuchic, ‘Urban Transit Systems and Technology,’ John –Wiley & Sons, New Jersey, 2007.
3. Sigurd Grava, ‘Urban Transportation Systems – Choices for Communities,’ The McGraw-Hill Companies, 2004
4. Black, William R. ‘Sustainable transportation: problems and solutions,’ The Guilford Press,2010

**REFERENCES**


1. National Urban Transport Policy ,2013
2. Black, Alan, 'Urban Mass Transportation Planning,' McGraw- Hill,Inc., New York,1995.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 2 | | 1 | 3 | | | | | 2 | |
| CO2 | 3 | 3 | 3 | 3 | 2 | 3 | | | | 1 | 3 | 1 |
| CO3 | 3 | 3 | 2 | 2 | 2 | 2 | | 1 | | | 3 | |
| CO4 | 3 | 3 | 3 | 3 | 2 | 1 | | 1 | 1 | 1 | 2 | |
| CO5 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | | 2 | 1 | | 2 |
| Average | **3** | **3** | **2** | **2** | **2** | **2** | **1** | **1** | **1** | **1** | **2** | **1** |

3- High 2-Moderate 1-Low

| PL23003 | TRANSPORT ECONOMICS | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To discuss the characteristics of transport infrastructure facilities, its growth trend and investment strategy.
- To discuss the various transport demand and supply techniques and the methods of forecasting the demand in the future.
- To infer the principle of pricing with respect to utilization of various transport infrastructure facilities as user pay principle and the role of subsidy.
- To estimate the various alternative financing mechanism available with respect to transport infrastructure development around the world.
- To infer the feasibility of a transportation planning project.

**UNIT I FINANCING TRANSPORT INFRASTRUCTURE 9**

Characteristics of transport infrastructure, Growth trends, Investment need and budgetary support, existing financing pattern, financial recurrent expenditure.

**UNIT II TRANSPORT DEMAND AND SUPPLY 9**

Movement, transport and location, transport and economic development; Demand for transport, factors influencing demand; elasticity of demand, measures of elasticity; supply of transport, elasticity of supply; demand forecasting.

**UNIT III COSTING AND PRICING OF TRANSPORT SERVICES 9**

Fixed and variable cost, joint and common cost, cost allocation, user cost, internal cost, external cost, economic cost; Principle of pricing, marginal cost pricing, price discrimination, operational objectives of pricing; capital costs, operation and maintenance costs revenues, transport subsidies.

**UNIT IV ALTERNATIVE FINANCING MECHANISMS 9**

Multilateral and Bilateral Financing mechanism, Financial Institutions, Private sector participation, land as a resource, public private partnership, annuity-based approach risk management, Investment strategy and phasing

**UNIT V FEASIBILITY OF TRANSPORT PROJECTS 9**

Concept of economic feasibility; estimation of economic costs- project cost, estimation of economic benefits- benefits to users, non-users, benefits to community and economy; Financial Internal Rate of Return (FIRR), Economic Internal Rate of Return (EIRR), Net Present Value (NPV)

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Infer the characteristics of transport infrastructure facilities, its growth trends and strategies.

**CO2** Discuss the various transport demand and supply techniques and the methods of forecasting the traffic demand for the future.

**CO3** Infer the principles of pricing of various transport infrastructure facilities as user pay principle and the role of subsidy given by the government.

**CO4** Estimate the various alternative financing mechanism available in the world with respect to transport infrastructure development.

**CO5** Discuss the financial and economic feasibility of a transportation planning project.

**CO6** Appraise the economic demand and financial requirements of a transportation planning project

**TEXT BOOKS**


1. Sarkar, P.K. and Maitri, V., Theory and Applications of Transport Economics in Highway and Transport Planning Standard Publisher 2010.
2. Papacostas, C.S. and Prevedours, Transportation Engineering and Planning Prentice Hall, 2001
3. Allen. F, Yago. G, Financing the Future, Market-Based Innovations for Growth, Pearson Publications, Indianapolis, Indiana, 2013.
4. Kenneth A. Small and Erik T. Verhoef, Urban Transportation Economics, 2nd Edition, Routledge, London, 2007.
5. A. Richard, Richard Hemming and H. Barry, The International Handbook of Public Financial Management Center for aid and public expenditure, Hamburg, Germany, 2013.


**REFERENCES**


1. Indian Road Congress, Manual of Economic Evaluation of Highway Projects IRC, 1989
2. Chakraborty, M. Estimating, Costing, Specification and Valuation of Civil Engineering 23rd Edition The New Book Depot 2010
3. Telliford, G. Public – Private Transportation Partnerships around the World Nova Science Publishers 2009
4. Khan M.Y. and Jain, P.K. Financial Management 4th Edition Tata McGraw Hill
5. Karl E. Case Principles of Economics Pearson Education, 2009.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 3 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| CO6 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 3 |
| Average | **3** | **2** | **2** | **3** | **2** | **3** | **3** | **1** | **1** | **1** | **3** | **3** |

3- High 2-Moderate 1-Low

| PL23002 | LOGISTICS PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the fundamental concept of planning in material procurement
- To understand the mode choice and freight management
- To understand the strategy for logistic planning
- Concept of supply chain management
- Legal aspects in logistic planning

**UNIT I INTRODUCTION** **9**

Introduction to Logistics planning - Concepts, Definition, Evolution and Importance; Urban Logistics Ecosystem; Logistics Planning: Logistics Parks/ Hubs; Warehousing and Material Procurement; Material Storage, Handling, Processing, Packaging and Transportation; Third Party and Fourth Party Logistics; Reverse Logistics and Logistics in Trade

**UNIT II FREIGHT TRANSPORT LOGISTICS** **9**

Management of Freight Transport Logistics and Mode Choice; Mode Characteristics and Key Features of Different Modes; Inter-Modal and Multi-Modal Transport; Shipping Business Environment and Containerization; Transport Cost Drivers; Freight Rate Structures; Freight Transport Best Practices: Vehicle Access and Loading / Unloading Operations, Low Emission Zones, Night Deliveries, Nearly Delivery Areas, ITS Applications

**UNIT III STRATEGIES FOR LOGISTIC AND FREIGHT DEMAND** **9**

Strategic Logistic Management Determinants of Freight Demand; Distribution Channels and Distribution Costs; Logistics Acquisition and Production; Sourcing and Contracting; Logistics Network Planning: Vehicle Routing and Scheduling, Fleet Sizing, Location Decisions

**UNIT IV SUPPLY CHAIN MANAGEMENT** **9**

Supply Chain Management Fundamentals of Supply Chain Management (SCM): Concept and Components; Supply-Demand Variables; Customer Services; Drivers of Supply Chain Performance; Supply Chain Segmentation: Product, Demand, Supply and Market Segmentation; Emerging Trends and Global Practices of SCM; e-commerce and Logistics

**UNIT V LEGAL ASPECT** **9**

Legal Aspects and Liabilities Statutes and Policies for Different Logistics Operations in India and Abroad; Liabilities and Liabilities Resolution; Marine / Cargo Insurance; Freight Quality Partnerships: Case Studies

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Plan concept for procurement of materials
**CO2** Understand Different modes involved in logistic planning
**CO3** Explore Best practices involved in logistic planning
**CO4** Fix Strategy to be followed for satisfying the demand and distribution of materials
**CO5** Understand emerging Trends and Global Practices of supply chain management
**CO6** Understand Logistic operation and legal aspects in India

**TEXT BOOKS**


1. I. Baluch, 'Transport Logistics: Past, Present, and Predictions,' Winning Communications, 2005.
2. Edmund J. Gubbins, 'Managing Transport Operations,' Kogan Page Ltd,2003.
3. KW Ogden, 'Urban Goods Movement – A guide to policy and planning' Ashgate Pub., 1992.
4. R.Z. Farahani, S. Rezapour, L. Kardar, 'Logistics Operations and Management' Elsevier Inc., 2011.


**REFERENCES**


1. Donald Waters, 'Logistics – An Introduction to supply chain Management,' Palgrave Macmillan,2003.
2. 'Urban Transportation and Logistics- Health, Safety and Security Concerns,' CRC Press, Taylor & Francis Group,2014.
3. Max Gath, 'Optimising Transport Logistics process with Multi agent Planning &Control,' Springe, 2015.
4. A. Rushton, P.Chroucher, P. Beker, 'The Handbook of Logistics and Distribution Management,' Kogan Page Ltd, Fourth edition 2010.


**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | 2 | 2 | 2 | 1 | | 1 | 1 | 2 | 3 | 1 |
| CO2 | 3 | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | | 2 | |
| CO3 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | | 2 | 1 | 2 | |
| CO4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO5 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | | | 2 | 1 |
| CO6 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | | | | 1 | 1 |
| Average | **3** | **3** | **2** | **3** | **2** | **2** | **1** | **1** | **1** | **1** | **2** | **1** |

3- High 2-Moderate 1-Low

| PL23004 | CLIMATE RESILIENT SETTLEMENT PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**:

1. To provide a basic understanding of the climate science, natural and anthropogenic climate change and its adverse impacts, how cities contribute to climate change and in turn are worst affected by climate change impacts
2. To impart adequate knowledge of mitigation and adaptation processes of climate change with a special focus on the urban context
3. To create awareness about the international frameworks, national priorities and challenges, institutional arrangements, legal framework, polices and plans and their relevance to planning particularly urban planning
4. To enable a thorough understanding of the challenges that cities face and strategies prepare for the impacts of climate change, and climate resilient urban and settlement planning
5. Articulate and advocate for the best practices in climate mitigation and adaptation planning in local urban contexts.

**UNIT I UNDERSTANDING CLIMATE CHANGE 9**

Basics of climate science, natural and anthropogenic drivers of climate change, changing perspectives on Climate Change, measuring climate change, proxies and models, carbon cycle and energy budget adverse impacts of climate change, climate risk, vulnerability and exposure, climate change and extreme events, urban heat island effect and climate risks, precautionary principle and feedback loops

**UNIT II INSTITUTIONAL ARRANGEMENTS AND LEGAL AND REGULATORY FRAMEWORK 9**

National and international efforts, United Nations Framework Convention for Climate Change, Intergovernmental Panel on Climate Change, Conference of Parties, Paris Agreement, National and State Action Plans on Climate Change, Indian Network on Climate Change Assessment, Clean Development Mechanisms (CDM) and getting to Net-Zero Emissions, coherence between Sendai Framework of Action for Disaster Risk Reduction, Sustainable Development Goals and Paris Agreement, Global, national and state polices on Climate Change

**UNIT III MITIGATION AND DIMENSION OF RESILIENCE IN THE URBAN CONTEXT 9**

Urbanization and climate change, human settlements as major contributors of GHGs, sectoral emissions, carbon footprint, challenges cities face, measures for mitigating climate change, business and industrial solutions, carbon credits, trading and other alternatives, renewable energy alternatives, the role of governments, societies and individuals, blue green solutions, climate resilient infrastructure, green cities, low carbon development, carbon markets, and carbon inventory

**UNIT IV ADAPTATION TO CLIMATE CONDITIONS AND EXTREME WEATHER EVENTS 9**

Loss & damage, importance of adaptation in preparing and coping with Climate Change, ways to adapt to Climate Change, early warning systems, eco-system restoration, blue green solutions, retrofitting for adaptation, preparedness for extreme events, vulnerability assessment, focus on vulnerable groups, sustainable livelihoods, training and capacity building of stakeholders, adaptation path ways, role of city governments in adaptation, preparation of city adaption plan for at strengthening the adaptive capacity and resilience of ecosystems, infrastructure, production systems, people and their wellbeing against the negative impacts of climate change case studies of best practices, mainstreaming adaptation, adaptation plans.

**UNIT V PLANNING CLIMATE RESILIENT CITIES AND SETTLEMENTS 9**

The future of smart cities, coastal cities, low carbon settlements, planning interventions for low carbon settlements, integrated land use and transportation planning, compact city form, sustainable transport, energy efficient approaches and waste management, dimensions of resilience, social and ecological resilience, climate resilient settlements for urban poor, climate justice, integrating climate risk mitigation with development plans, resilience plan for the state, region and the nation, emerging tools and techniques in climate studies, city networks, case studies and best practices.

**TEXT BOOKS**


1. Andrew E. Dessler, 'Introduction to Modern Climate Change' Cambridge University Press 2021
2. Sue Road, David Crichton and Fergus Nicol, 'Adapting Buildings and Cities for Climate Change' Taylor and Francis 2016
3. Joseph Romm, 'Climate Change: What Everybody Needs to Know' Oxford University Press 2022
4. Barbara Norman, 'Urban Planning for Climate Change' Earthscan 2023
5. Anthony M H. Clayton and Nicholas J. Radcliffe, 'Sustainability: A Systems Approach' Earthscan 2018
6. Tri Harso Karyono, Robert Vale and Brenda Vale, 'Sustainable Buildings and Built Environments to Mitigate Climate Change in the Tropics, Springer 2017


**REFERENCES**


1. Madan Kumar Jha, 'Natural and Anthropogenic Disasters: Vulnerability, Preparedness and Mitigation', Springer 2010
2. Emilio Gracia, Brenda Vale and Robert Vale, 'Collapsing Gracefully: Making a Built Environment that is Fit for the Future', Springer
3. Mahendra Sethi, Jose A. Puppim De Oliveria, 'Mainstreaming Climate Co-Benefits in Indian Cities, Springer 2018
4. Daniel D. Perlmutter and Robert L. Rothstein, 'The Challenges of Climate Change: Which Way Now? John Wiley & Sons, 2011


**COURSE OUTCOMES**

Upon completion of this course, the students will be able to:

CO1 Explain the natural and anthropogenic causes of Climate Change

CO2 Analyze the risk in urban areas based on the concepts of hazard, vulnerability and exposure and the adverse impacts of Climate Change

CO3 Get a thorough knowledge of the institutional mechanism for Climate Change at the international and national level and the legal framework for Climate Change mitigation and adaptation

CO4 Appreciate the linkage between Climate Change and extreme weather events, heat island effect and Loss and damage due to extreme weather events

CO5 Understand adaptation and mitigation for Climate Change, particularly nature based and blue green solutions, circular economy, carbon trading, renewable energy and other options

CO6 Provide a rationale for Climate Resilient settlement planning and urban planning for creation of sustainable cities and equitable societies and explain how it can be done

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **Po11** | **PO12** |
| **CO1** | 3 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| **CO2** | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | 1 | 3 |
| **CO3** | 3 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 3 |
| **CO4** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 |
| **CO5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 3 |
| **CO6** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **Average** | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 3 |

3- High, 2- Moderate, 1- Low

| PL23005 | ENVIRONMENTAL ASSESSMENT AND MANAGEMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the theoretical base for application of environmental assessment in development. planning
- To gain theoretical and practical knowledge to plan and execute an environmental assessment.
- To gain knowledge of the methods for assessing quality of environmental components.
- To inculcate an understanding of environment management plan and strategic environmental assessment in compliance with environmental clearance procedures.
- To inculcate an understanding of the various management methods and their applicability in different situations

**UNIT I IMPORTANCE OF ENVIRONMENTAL ASSESSMENT 9**

Rationale, definitions, conceptual framework of Environmental Impact Assessment (EIA) and historical development of EIA; Constitutional Provisions, Policy Regulation, EIA Notifications and Institutional Arrangement in India; Environmental Management Plan; Importance of environmental assessment and management; Legal provisions for Environmental assessment and management;

**UNIT II ENVIRONMENTAL ASSESSMENT PROCESS 9**

EIA practice in Indian context; Baseline data and environmental setting; Impact identification, prediction, assessment and analysis methods; Mitigation and impact management; Public involvement in EIA; EIA report writing, monitoring and auditing; Environmental Management Plan; Case studies (national and international)

**UNIT III APPROACHES OF ENVIRONMENTAL ASSESSMENT AND MANAGEMENT 9**

Environmental Risk Assessment and Risk Management, Strategic Environmental Assessment, Life Cycle Analysis; various management approaches (collective action, traditional knowledge about environmental management, community based environmental management, integrated etc)

**UNIT IV FRAMEWORK FORMULATION FOR ENVIRONMENTAL MANAGEMENT 9**

Methods of formulation- Problem definition and recognition; Methods of management- Intervention, Planning, Regulation, socio- economic and political change; governance and institutional framework; Integration with planning framework; Land resource management, water resource management, Biodiversity management, Forest Management.

**UNIT V ECOSYTEM MODELLING AND ITS APPLICATION 9**

Purpose of Modelling, Types of models, review of important and widely used models, Examples of case studies for demonstrating the successful use of ecological models for environmental management like water quality models, forest conservation models, fisheries and aqua culture models, integrated models

**TOTAL PERIODS: 45**

**COURSE OUTCOMES**

Upon the completion of this course, the students would be able to:

| | |
|---|---|
| CO 1 | Infer the principles of Environmental assessment and Management |
| CO 2 | Evaluate the interrelationships between economic and social development and impacts on the environment at a variety of scales, |
| CO 3 | Appraise the need for environmentally friendly and feasible solutions to real-life problems |
| CO 4 | Comprehend various management methods and their applicability in different situations |
| CO 5 | Produce effective and implementable solutions to policy and planning dilemmas |
| CO 6 | Evaluate challenges facing modern society in terms of the need to plan for a healthy environment and to manage it accordingly |

**TEXT BOOKS**


1. Environmental Impact Assessment: Theory and Practice, Wathern Petal., Routledge, London, 1990
2. Environmental Impact Assessment, Biswas A.K. and Agarwala S.B.C., mButterworth-Heinmann, Oxford, 1992
3. Environmental Impact Assessment, 2nd Ed., L. W. Canter, McGraw-Hill, 1997.
4. Introduction to Environmental Impact Assessment (Natural and Built Environment), R. Therivel, John Glasson, Andrew Chadwick, Routledge, 2005.
5. Environmental Impact Assessment Methodologies, Y. Anjaneyulu, Valli Manickam, BS Publication, 2010


**REFERENCES**


1. The Science of Sustainable Development: Local Livelihoods and the Global Environment: Jeffrey Sayer, Cambridge University Press, 2003
2. Management of Natural Resources for Sustainable Livelihood and Poverty Alleviation – Volume II, NIRD, Hyderabad, O.N.Srivastava, 2004
3. Ecotourism and Livelihoods, Bhattacharya A.K., Concept Publishing Company, New Delhi, 2005
4. Criteria and Indicators for Sustainable Forest Management, Kotwal P.C. and M.D. Omprakash, International Book Distributors, Dehradun, 2007
5. Natural Resources Conservation & Management: K. K. Singh, M D Publication, 2008

| CO – PO Mapping | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** |
| **CO 1** | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 3 |
| **CO 3** | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 3 |
| **CO 4** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| **CO 6** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 3 |
| **Average** | **3** | **3** | **3** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **1** | **3** |
| **3- High 2-Moderate 1-Low** | | | | | | | | | | | | |

| PL23006 | CIRCULAR ECONOMY | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the importance, basics of circular economy and need for sustainable solutions.
- To understand how to create a business culture of sustainability.
- To discover how to demonstrate the value of impactful investments.
- To learn how to develop a sustainable business model.
- To learn how to incorporate circular economy principles in business strategies.

**UNIT I FOUNDATION OF CIRCULAR ECONOMY 9**

Historical contexts and conditions that gave rise to circular economy; Definitions and related concepts; Purpose of circular economy; Indicators of circular economy; Principles of circular economy–Design of urban areas that are more livable, productive and convenient. Barriers and drivers to circular economy; Benefits of circular economy; Linear economy vs Circular economy; Sustainability and Innovation.

**UNIT II URBAN SYSTEMS AND CIRCULAR ECONOMY 9**

Cities as living systems; Dynamic nature of cities; circulation of resources; role of built environment - buildings- materials, design flexible and dynamic; use of digital technology; City Mobility systems; City Food systems; City Resilient systems demonstrating the benefits of a circular economy; relation between circularity and sustainability; forces that enable sustainability, Internet of Things (IoT), impact investment, leadership and management commitment, infrastructure

**UNIT III POLICY FORMULATION FOR CIRCULAR ECONOMY 9**

Importance and power of policy to achieve circularity; Circular economy policy principles and goals; Design of circular policies - Butter fly diagram; Influence of policies; study of existing policies; systemic repercussions of changing circular economy policy;

**UNIT IV TRANSITIONING TO A CIRCULAR ECONOMY 9**

Push and pull factors for transitioning to a circular economy; pathway to decarburization: circular economy solutions for policymakers and industry; economic and climate opportunity presented by a circular economy;

**UNIT V BUSINESS MODELS FOR CIRCULAR ECONOMY 9**

Business models in circular economy and means of access; value of circular business models Environmental, resource, economic and social implication of circular economy; Circular economy in cities and regions; Circular economy success in various cities - China; Chile, France; New London; São Paulo; New York City

**TOTAL PERIODS: 45**

**COURSE OUTCOMES**

Upon the completion of this course, the students would be able to:

CO 1 Infer the characteristics, principles and benefits of Circular economy
CO 2 Create innovative and sustainable solutions to business challenges.
CO 3 Gain strategies that will help them achieve business goals while maintaining a culture of sustainability.
CO 4 Discuss the financial and economic feasibility of a project

CO 5 Comprehend the importance of sustainability to long-term organizational success.
CO 6 Appraise the importance of sustainable business model to mitigate waste.

**TEXT BOOKS**

1. Sustainable Cities for the Third Millennium: The Odyssey of Urban Excellence, Mega Voula, Springer
2. Sustainable Cities: Urban Planning Challenges and Policy, Kimberly Etingoff, Apple Academic Press
3. Energy and Climate in the Urban Built Environment, Matheos Santamouris, and N. Demosthenes Asimakopoulos, James & James (Science Publishers) Ltd., 2001
4. Ecology and Equity, Gadgil M. and Guha R, Oxford University Press, 2013
5. Environmental Law and Policy in India - Cases Materials and Statutes, S. Divan and A. Rosencranz, Oxford University Publications, 2013

**REFERENCES**


1. Environment and Economy, Cato Molly Scott, Routledge
2. Fundamentals of Ecology, Odum, E.P. Barrett and Others, Cengage Learning Publication, 2005
3. Building Ecology: First Principles for A Sustainable Built Environment, Peter Graham, Wiley-Blackwell, 2002
4. Sustainable Practices in the Built Environment, Craig Langston (Ed.), Butterworth-Heinemann, 2001
5. Managing the Transition to a Circular Economy Action Plans in the Tourism Sector, 2024


| **CO – PO Mapping** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** |
| **CO 1** | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 3 |
| **CO 3** | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 3 |
| **CO 4** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| **CO 6** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 3 |
| **Average** | **3** | **3** | **3** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **1** | **3** |
| **3- High 2-Moderate 1-Low** | | | | | | | | | | | | |

| PL23007 | INCLUSIVE CITIES | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- Understand theory and applied practice responses relating to social issues in cities.
- Explore different expressions of social exclusion and inclusion in the city.
- Highlight key features of planning for inclusive cities.
- Examine the lived experience of disadvantage in the city.
- Analyse urban issues through different theoretical lenses.

**UNIT I INTRODUCTION** **9**

Introduction to inequality, segregation, inclusive city and urban design and how these concepts relate to each other; Introduction to Vulnerable group; Universal design; Disability in city planning; Gender Equality and Social Inclusion (GESI) concepts; Urban inequality and socio-economic segregation; drivers and indicators of urban inequality and segregation are, using examples from cities urban poverty, social sustainability;

**UNIT II URBAN SEGREGATION** **9**

Accessibility to urban spaces, services and system; safety of vulnerable groups; improving quality of life; segregation in different domains of daily life: places of residence, work, schools and during leisure time. the role of inequality in producing and reproducing segregation, and how place-based, people-based and connectivity-based policy responses to segregation; measuring segregation, indicators of segregation; segregation indices and its interpretation.

**UNIT III PRINCIPLES OF INCLUSIVITY** **9**

Understanding inclusivity, Need and Guiding Principles for Inclusive Cities - Equitable, Usable, Cultural, Economic and Aesthetic; Objectives of Inclusive Cities; Components of Inclusive Cities - Housing, Physical and Social Infrastructure, outdoor environment, Livelihood, Urban mobility and public transport, IT connectivity, Digitalization, Governance and Citizen Participation, Tourism and recreation. Barriers to Inclusive cities - Physical, Social, Cultural and Psychological and Institutional; Economic Liberalization and inclusive growth; Equitable cities;

**UNIT IV BUILDING INCLUSIVE CITIES** **9**

Relationships between physical form of cities and inclusive qualities across three different urban scales: regional, city and neighborhood; Inclusion through a spatial lens; Social and Economic inclusion; Participatory planning and Governance of Space; Spatial Interventions, Social Interventions, Economic and Cross-Cutting interventions; Traditional/Indigenous Knowledge in Urban Planning; Incremental Micro-Level Transformations; Institutionalizing Place making; Data-Driven, Community Centric Approach; Empowered Urbanism; Transformative thinking and collective action.

**UNIT V CASE STUDIES** **9**

Examples of case studies in which methods of urban spatial analysis are demonstrated to assess an urban environment's potential for inclusivity - Ensuring access to necessary public resources or services, such as education and affordable housing; emphasis on urban borders and connectivity between neighborhoods, distribution of local urban centers, diversity of housing types, analyze

movement patterns within neighborhoods as well as interventions in the public domain., is an essential part of inclusive city design. importance in policy making and design practice.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

Upon the completion of this course, the students would be able to:

| | |
|---|---|
| CO 1 | Explain some contemporary conceptions and principles of planning inclusive cities. |
| CO 2 | Identify and analyze the origins of social exclusion and their expression across diverse urban contexts. |
| CO 3 | Develop capacity to prepare clear and defensible assessments of urban conditions and systems that inhibit inclusive cities. |
| CO 4 | Appraise urban policy and projects in relation to principles of planning for inclusive cities. |
| CO 5 | Develop robust planning responses for advancing inclusive cities. |
| CO 6 | Prioritize and integrate inclusivity considerations, elevate discourse and dialogue, and support inclusivity actions and activities across cities. |

**TEXT BOOKS**


1. Pineda, V.S. (2019) Building the Inclusive City: Governance, Access, and the Urban Transformation of Dubai, Palgrave Macmillan, London.
2. Creating Universal Environment by Steinfeld, E., Maisel, J. (2012).. John Wiley and Sons INC, Hoboken, New Jersey
3. Universal Design Handbook by Preiser, Wolfgang, Editor in Chief; Elaine Ostroff, Senior Editor –McGraw Hill, 2000.
4. Enabling Environments by Steinfeld, E., Danford, G. Scott. (1999). Plenum Press, New York
5. Hamraie, A. (2017) Building Access: Universal Design and the Politics of Disability, University of Minnesota Press, Minneapolis, Minnesota.


**REFERENCES**


1. Building the Inclusive City: Governance, Access, and the Urban Transformation of Dubai Springer Nature Switzerland AG; 1st ed. 2020 edition.
2. Building Inclusive Cities; Women's Safety and the Right to the City; Routledge 2013
3. (Re)Generating Inclusive Cities Poverty and Planning in Urban North America By Dan Zuberi, Ariel Judith Taylor · 2017
4. The Inclusive City The Theory and Practice of Creating Shared Urban Prosperity By Ari-Veikko Anttiroiko, Martin de Jong · 2020
5. Enabling Inclusive Cities Tool Kit for Inclusive Urban Development by Michael Lindfield, Ramola Naik Singru, Asian Development Bank · 2017

| CO – PO Mapping | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO10** | **PO11** | **PO12** |
| **CO 1** | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 3 |
| **CO 3** | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 3 |
| **CO 4** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| **CO 6** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 3 |
| **Average** | **3** | **3** | **3** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **1** | **3** |
| **3- High 2-Moderate 1-Low** | | | | | | | | | | | | |

| PL23008 | URBAN PLANNING AND PUBLIC HEALTH | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- Introduce the domestic and international issues entailed in promoting and designing healthier communities, cities, and metropolitan areas,
- Explore the environmental, social, and health issues that result from specific building and city designs.
- Understand the critical intersection of urban planning and public health.
- Understand principles of healthy city design.
- underscore the importance of public health in urban planning.

**UNIT I INTRODUCTION TO URBAN PLANNING AND PUBLIC HEALTH 9**

History of urban planning and public health; understanding scale of responsiveness of urban planning to its public health; Quality of life; Understanding the significant impact of various instances of epidemics around the world on urban planning strategies. Evolution of cities as a response to epidemics - bubonic plague of the 14th century also called as Black Death; Leonardo da Vinci, vision for an 'anti-epidemic city', 17th century plague in London, Industrial revolution.

**UNIT II URBANIZATION, HEALTH AND URBAN PLANNING 9**

key determinants of urban health; Urban environment and its effect on health; urban health risks; urban factors affecting health; health problems caused by urbanization – air pollution, water pollution, noise, crime; health inequalities; curve of obesity; Scaling effects in cities; Cognitive processes: Dissonance and mismatch.

**UNIT III URBAN HEALTHY LIVING 9**

Urban setting in terms of density and different kinds of pollution; Influence of urban environment on health; socio-spatial fragmentation of the cities, concept of ageing; features of urban environment that influence health and the ageing process; gentrification and its impact on health in different segments of our populations - housing, physical and social infrastructure.

**UNIT IV URBAN MOBILITY AND HEALTH 9**

Sustainable urban transport system, Low carbon transport, green and healthy streets; bicycle friendly cities; road safety; walk able cities; 15-minute cities; non-motorized transport systems.

**UNIT V HEALTHY URBAN SYSTEMS 9**

elements of nature in the urban design; blue and green planning; nature-based solutions; urban farming; food security; Sustainable development goals; millennium development goals; economic prosperity; Role of information technology, sports infrastructure, culture and social networks in building healthier societies. Operational frameworks for modelling urban health; Participatory approaches; collective and systems intelligence; Systems Modelling Framework of crossed 17 SDGs; HEAT Model; Holistic System Modeling; innovative and people-centered approaches to creating healthy cities.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

Upon the completion of this course, the students would be able to:

CO 1 Assess and design urban interventions that promote health, activity.

CO 2 Appraise how urban design can significantly impact community well-being.

CO 3 Analyze methodologies in creating health-focused urban environments.

CO 4 Examine urban design theory and principles of built environment interpreting local and historical examples.

CO 5 Assess capabilities of city residents particularly of weaker sections of society and prepare strategies enhancing their livability capacity.

CO 6 Evaluate alternate development plans and policies.

**TEXT BOOKS**


1. Urban Transportation and Logistics- Health, Safety and Security Concerns, CRC Press, Taylor & Francis Group,2014
2. Disasters and Public Health: Planning and Response, Bruce W. Clements, Elsevier, 2009
3. Towards the healthy city, Jason Corbun, MIT Press, 2009.
4. Public Health: Building Innovative Practice, Linda Jones and Jenny Douglas, Sage, 2012
5. Adriano, B., Daniele, V., Pierre, L., and Simona, C. (eds.) (2017) Smart and Sustainable Planning for Cities and Regions: Results of SSPCR 2017, Springer, Switzerland.


**REFERENCES**


1. Barbara, N. (2019) Sustainable Pathways for our Cities and Regions, Planning within Planetary Boundaries, Routledge, New York.
2. Chapple, K. (2015) Planning Sustainable Cities and Regions: Towards More Equitable Development, Routledge, New York.
3. Hildebrand, F. and Paul, Y. (2007) Visions of Sustainability: Cities and Regions, Taylor and Francis, London.
4. Mcgranahan, G., Schensul, D. and Singh, G. (2016) Inclusive Urbanization: Can the 2030 Agenda be delivered without it, Environment and Urbanization, Vol. 28, No. 1, pp. 13-34
5. Watson, V. (2016) Locating planning in the New Urban Agenda of the urban sustainable development goals, Planning Theory, Vol. 15, No. 4, pp. 435-448.


**CO – PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO 1** | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 3 |
| **CO 3** | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 3 |
| **CO 4** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| **CO 6** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 3 |
| **Average** | **3** | **3** | **3** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **1** | **3** |
| **3- High 2-Moderate 1-Low** | | | | | | | | | | | | |

| PL23009 | URBAN RENEWAL AND HERITAGE CONSERVATION | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand role, Concepts and Techniques of Urban Renewal and Conservation.
- To study Legal and Administrative Aspects of Urban Renewal and Conservation.
- To develop the ability of the students to identify the built forms, land parcels and historic neighborhoods for redevelopment.
- To equip students with the knowledge of various tools and techniques associated with urban renewal and heritage conservation.
- Explain the economic and spatial implication of urban renewal programmes.

**UNIT I INTRODUCTION 9**

Urban redevelopment / renewal /reconstruction / regeneration – definitions and distinctions; Urban redevelopment as a part of urban plan; Identification of areas to be redeveloped; Conservation, rehabilitation and redevelopment – the interrelationship.

**UNIT II ECONOMIC, FINANCIAL AND MANAGEMENT ASPECTS 9**

Economic and spatial implications of urban renewal programs; Mobilization of resources; Urban renewal through Incentive zoning.

**UNIT III URBAN CONSERVATION AND DEVELOPMENT 9**

Understanding the context of both built heritage and historic neighborhoods; Conservation: socio-economic and traffic management aspects; Redevelopment of brown fields; Heritage conservation - case studies.

**UNIT IV HOUSING REDEVELOPMENT 9**

Issues of old, dilapidated, vacant stock; Infrastructure inserts in old city area and augmentation of services; land management; FSI utilization and re-densification/dedensification issues; socio-economic issues; gentrification and de-gentrification; public participation; Convergence of government schemes.

**UNIT V LEGAL AND ADMINISTRATIVE ASPECTS 9**

Implementation of urban renewal programs – an overview of national and international experiences; Legal and administrative aspects: archaeological acts/ charters and institutional mechanism in urban redevelopment and conservation in India.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Understand and able to define urban renewal, redevelopment, regeneration, reconstruction, conservation and the distinction thereof.

**CO2** Appreciate both the tangible and intangible aspects of redevelopment and conservation.

**CO3** Identify the built forms, land parcels and historic neighbourhoods for renewal.

**CO4** Assess the form, extent and direction of planning interventions for renewal.

**CO5** Identify the notions of value and significance associated with cultural and natural heritage.

**CO6** Plot the components of heritage through case studies.

**TEXT BOOKS**


1. Andrao, D.Thomas,"Housing and Urban Renewal". George Allen and Unwin, Sydney, 1986.
2. D. Adams, "Urban Planning and Development Process in Renewal" (2001); UCL Press, London, 1994.
3. K. C. Sivaramakrishnan, "Re-visioning Indian Cities: The Urban Renewal Mission", Sage, 2011.
4. Chris Coch, Palgrave Macmillan, "Urban Renewal: Theory and Practice", Macmillan, London, 1990.
5. N. Balakrishna Reddy, "Urban Redevelopment", Concept Publishing Company, 1996.


**REFERENCES**


1. Horita M. Koizumi .(Ed.), "Innovations in Collaborative Urban Regeneration", Springer, 2009.
2. Heritage and Urban Renewal, Intach, Aryan Books International, New Delhi, 2014.
3. Michael A. Pagano, "Cityscapes and Capital: The Politics of Urban Development", John Hopkins University Press, 1997.
4. Degen Monica Montserrat, "Sensing Cities: Regenerating Public Life in Barcelona and Manchester", Routledge, 2008.
5. Dilip kumar kushwaha, jagpal singh, "Basics of Heritage Conservation: A Handbook", Research India Press, 2020.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 2 |
| CO2 | 3 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 3 | 3 | 1 | 3 |
| CO3 | 3 | 1 | 3 | - | 3 | - | 1 | - | 2 | 1 | 2 | 3 |
| CO4 | 3 | - | 2 | - | 3 | 2 | - | 1 | 3 | 1 | 3 | 3 |
| CO5 | 2 | 3 | 3 | 2 | 3 | - | 1 | - | 2 | 3 | 2 | 2 |
| CO6 | 3 | 3 | 2 | - | 1 | 3 | 2 | - | 3 | 3 | 3 | 3 |
| Average | **3** | **2** | **2** | **2** | **3** | **3** | **2** | **2** | **2** | **2** | **2** | **3** |

3- High 2-Moderate 1-Low

## HONORS ELECTIVE COURSES

| PL23010 | INTELLIGENT TRANSPORTATION SYSTEM | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To learn the fundamentals of ITS
- To understand the different types of sensors
- To study the ITS functional areas
- To have an overview of ITS implementation in developed countries
- To learn the implantation of ITS in developing countries

**UNIT I INTRODUCTION** **9**

Introduction to Intelligent Transportation Systems (ITS) – Definition of ITS and Identificationof ITS Objectives, Historical Background, Benefits of ITS - ITS Data collection techniques – Detectors, Automatic Vehicle Location (AVL), Automatic Vehicle Identification (AVI), Geographic Information Systems (GIS), video data collection.

**UNIT II TELECOMMUNICATION AND ITS** **9**

Telecommunications in ITS – Importance of telecommunications in the ITS system, Information Management, Traffic Management Centres (TMC). Vehicle – Road side communication – Vehicle Positioning System

**UNIT III FUNCTIONAL AREA OF ITS** **9**

ITS functional areas – Advanced Traffic Management Systems (ATMS), Advanced Traveler Information Systems (ATIS), Commercial Vehicle Operations (CVO), Advanced Vehicle Control Systems (AVCS), Advanced Public Transportation Systems (APTS), Advanced RuralTransportation Systems (ARTS).

**UNIT IV MANAGEMENT OF ITS** **9**

ITS User Needs and Services – Travel and Traffic management, Public Transportation Management, Electronic Payment, Commercial Vehicle Operations, Emergency Management, Advanced Vehicle safety systems, Information Management.

**UNIT V APPLICATION OF ITS** **9**

Automated Highway Systems - Vehicles in Platoons – Integration of Automated Highway Systems. ITS Programs in the World – Overview of ITS implementations in developed countries, ITS in developing countries, Case studies

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Understand the sensor technologies

**CO2** Understand the communication techniques

**CO3** Apply the various ITS methodologies

**CO4** Understand the user needs for improving ITS

**CO5** Understand the significance of ITS under Indian conditions

**TEXT BOOKS**


1. Kan Paul Chen, John Miles, 'ITS Hand Book: Recommendations for World Road Association (PIARC),' 2000
2. Sussman, J. M., 'Perspective on ITS,' Artech House Publishers, 2005.
3. Chowdhary, M.A. and A Sadek, 'Fundamentals of Intelligent Transportation systems planning,' Artech House Inc., US, 2003
4. Williams, B., 'Intelligent transportation systems standard,' Artech House, London,2008


**REFERENCES**


1. National ITS Architecture Documentation, US Department of Transportation, 2007
2. Black, Alan, 'Urban Mass Transportation Planning,' McGraw- Hill,Inc., New York,1995.


**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | | 3 | 3 | 3 | | | | 2 | 2 | | |
| CO2 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 1 | | | | |
| CO3 | 3 | 2 | 2 | 3 | 3 | 2 | 1 | | 1 | 2 | 2 | 1 |
| CO4 | 3 | 3 | 2 | | 3 | 3 | | | 2 | 1 | | 1 |
| CO5 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 3 | 1 | 1 |
| CO6 | | | | | | | | | | | | |
| Average | **3** | **2** | **2** | **2** | **2** | **2** | **1** | **1** | **1** | **1** | **1** | **1** |

3- High 2-Moderate 1-Low

| PL23011 | TERMINAL AND MULTIMODAL INTERCHANGES | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To study about the theories of multi modal and terminal interchanges
- To understand the attributes of terminal and interchange points
- To understand the concept of multimodal integration
- To study about the transit-oriented development and smart technologies

**UNIT I INTRODUCTION TO MULTIMODAL TRANSPORT 9**

Introduction to Multi-Modal Transport - Concept of Multi-Modal Transport, Multi modal network and transportation and multi modes transport planning- common standards and requirements- Rail, Road, Air, Ship and Terminal management, Transport Safety, Transport Policy and Planning. Multimodal transport in India.

**UNIT II INTERCHANGE AND UTILITY OF TRAVEL 9**

Interchange and catchment area – theory of interchange - Key design attributes of Interchange- Interchange Hierarchy - Prioritising Attributes and Assessment of Design - Pedestrian levels of service

**UNIT III TRANSPORT TERMINALS 9**

Function and size – hierarchy –– passenger terminal – freight terminal – Attributes – Dwell time – Functions – Terminal cost - Innovations

**UNIT IV MULTIMODAL INTEGRATION 9**

Components – Priority in MMI – Network and service integration – Physical integration – Fare integration – information and institutional integration – Innovation tools and techniques for MMI

**UNIT V RECENT TRENDS 9**

Commercial motives –social and sustainable approach –Interchange hubs in National and international case studies – Interchange station and urban development (TOD) – smart technology in interchange design.

**Total 45 periods**

**COURSE OUTCOME**

Course outcome: upon the completion of this, the students will be able to

**CO 1** Determine the standards requirements of the terminal and multi modal and terminal interchange points

**CO 2** Understand the theory of interchange and terminal design

**CO 3** Understand about the attributes of passenger and freight terminals

**CO 4** Understand about the components, techniques and innovation tools for multimodal integration

**CO 5** Analyse the case studies for interchange hubs, TOD and smart technology in interchange and terminal design

**TEXT BOOKS**

1. Christopher Blow,"Transport Terminals and Modal Interchanges: Planning and Design", Architectural Press; 1st edition (21 January 2005)
2. Airport passenger Terminal Planning and design, Transportation Research Board, Washington DC
3. Litman T., (2009). Introduction to Multi-Modal Transportation Planning. Victoria transport policy institute, Canada.
4. Transit Oriented Development Manual, Delhi TOD Policy & Regulations Interpretation.

**REFERENCE BOOKS**

1. Chakraborty and Das (2009), Principles of Transportation Engineering, PHI Learning, India
2. Yamini Jain Singh A Comprehensive Guide to Transit-Oriented Development for Developing Countries, Copal Publishing Group (7 January 2021)
3. Interchange Best practice guidelines, Transport for London, 2021
4. Papacostas, C.S. and Prevedours, Transportation Engineering and Planning Prentice Hall, 2001
5. Black, Alan, 'Urban Mass Transportation Planning,' McGraw- Hill,Inc., New York,1995

**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO 11** | **PO 12** |
| CO1 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 2 | 3 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 3 | 1 | 1 | | 2 | 2 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 2 | 3 | | 2 | 2 | 2 | 2 | 2 |
| CO4 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 |
| CO5 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 3 |
| Average | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 | 3 |

3- High 2-Moderate 1-Low

**PL23012** **DISASTER RISK REDUCTION** **L T P/S C**

**3 0 0 3**

**OBJECTIVES**

- To enhance the understanding of anatomy of the disasters, understanding their genesis, evolution, typologies and the risks they manifest
- To provide an understanding of the concepts of disaster, disaster management and disaster risk reduction and hazard, vulnerability and risk analysis,
- To impart knowledge of the institutional mechanisms at the international, national, state and district level for disaster risk reduction, international frameworks, Sendai Framework for Disaster Risk Reduction, legal and policy frameworks in India
- To develop the ability to understand the four phases of disaster (prevention/mitigation, preparedness, response and reconstruction/recovery) and the action to be undertaken in each phase
- To appreciate the linkage between development and disaster risk reduction, how development can cause disasters, the role of planners in disaster risk reduction and the preparation of disaster risk reduction plans

**UNIT I CONCEPTS OF DISASTER AND DISASTER RISK 9**

Hazards, vulnerability, exposure and risk, different types of disasters, causes of disasters, natural and human induced hazards, typology of disasters, climate change and extreme weather events, impacts of disasters, disasters and emergencies, climate change and extreme events, urban disasters, hazard profile of India, risks and vulnerabilities in the Indian context.

**UNIT II LEGAL, INSTITUTIONAL AND FINANCIAL ARRANGEMENTS FOR DISASTER RISK REDUCTION 9**

History of disaster management in India, Disaster Management Act 2005, National Policy for Disaster Management 2009, National Disaster Management Plan, Institutional Mechanisms for Disaster Management: Ministry of Home Affairs, National Disaster Management Authority, State Disaster Management Authorities, District Disaster Management Authorities, nodal ministries for disasters and early warning, other institutional arrangements such as National Disaster Response Force, National Institute of Disaster Management etc. Funding for disaster management- NDRMF and SDRMF. Building codes, Development Regulations and other regulatory measures, Financing Disaster Risk Reduction in India, Sendai Framework for Disaster Risk Reduction

**UNIT III DISASTER RISK REDUCTION: PREVENTION AND MITIGATION 9**

Disaster losses and the need for prevention and mitigation, cost-benefit analysis of mitigation measures, mitigation measures- structural and non-structural measures in general, understanding of mitigation measures for select disasters (drought, earthquake, floods, heat waves, cyclones, urban floods) building codes, land use planning, disaster resilient infrastructure, preparation of comprehensive disaster risk reduction plans, case studies in mitigation and building back better, training and capacity building , insurance and risk transfer

**UNIT IV DISASTER MANAGEMENT: PREPAREDNESS AND RESPONSE 9**

Basic principles of disaster management and risk reduction, disaster management cycle, four phases of disaster management: Prevention/mitigation, preparedness, response and reconstruction and recovery, activities to be undertaken in each phase, pre-disaster preparedness, early warning systems, emergency response, emergency management, post-disaster search and rescue, relief and medical response,

damage, loss and post-disaster need assessments, post-disaster recovery, reconstruction and building back better, preparation of a response plan, case studies and lessons learnt

**UNIT V ROLE OF SCIENCE AND TECHNOLOGY, STAKEHOLDERS AND PLANNERS IN DRR9**

Application of Science and Technology in disaster management and risk reduction, GIS, community-based disaster risk reduction, Information, education and communication and awareness creation, the role of Resident Welfare Associations, local self-governments, volunteers, NGOs, academic institutions, media and private sector, the linkage between development planning and disaster risk reduction, the role of planners in DRR, risk informed planning, coherence between Sendai Framework of Action, Sustainable Development Goals and Paris Agreement, study of the National Disaster Management Plan

**TEXT BOOKS**


1. Himanshu Grover, Tanveer Islam and Jean Slick, 'Case Studies in Disaster Mitigation and Prevention' Elsevier (Butterworth-Heinemann), London 2003
2. Micheal Chalaris, 'The Challenges of Disaster Management, Planning and Resilience, Nova Science Publishers, 2023
3. Coppola D P, 'Introduction to International Disaster Management' Elsevier Sciences (Butterworth-Heinemann). London, 2007
4. Madan Kumar Jha, 'Natural and Anthropogenic Disasters: Vulnerability, Preparedness and Mitigation', Springer 2010


**REFERENCES**


1. Government of India, 'Disaster Management Act 2005'
2. Government of India, 'National Disaster Management Policy 2009'
3. Government of India, 'National Disaster Management Plan 2019'
4. Ministry of Home Affairs, Disaster Management in India 2012
5. Saeid Eslamian and Faezeh Eslamian,' Disaster Risk Reduction for Resilience' Springer 2022


**COURSE OUTCOMES**

Upon completion of the course the student will be able to:

CO1 Explain the basics of disaster management basics and theory (Risk, vulnerability, diester cycle, phases, response, reconstruction)

CO2 Describe the Institutional Mechanism at the National, State and District level in India, and at the international level and understand the legal and financial framework in the country

CO3 Understand Prevention and Mitigation measures and the cost-benefit advantage of such measures

CO4 Understand the importance and need for preparedness and mitigation measures

CO5 Examine the role of science and technology in disaster management and risk reduction

CO6 Analyse the role of Planners in disaster risk reduction and risk informed planning

**CO-PO MAPPING**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **Po11** | **PO12** |
| CO1 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 1 | 1 | 3 |
| CO2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| CO4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 |
| CO5 | 3 | 2 | 2 | 2 | 3 | 1 | 1 | 3 | 2 | 3 | 1 | 3 |
| CO6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Average | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 |

3- High, 2- Moderate, 1- Low

| PL23013 | WATER SENSITIVE PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To recognize the importance of water in the urban landscape, and its role in the welfare and health of humans.
- To familiarize with the different ways of identifying opportunities for integrating water into the urban landscape.
- To elucidate the application of water sensitive techniques to integrate the management of water into the urban landscape.
- To inculcate an interest towards sustainability and livability of cities while securing adequate resources for growing cities as well as alternative water sources.
- To expose students to best management practices, state of art knowledge in the area of water sensitive planning.

**UNIT I WATER SENSITIVITY 9**

Introduction to water sensitive planning, Concept of water sensitivity, approach, principles, objectives; Need for water sensitive planning; Components of water sensitive planning; Water in the urban landscape, the urban water cycle and its component characteristics; Various sources of water and its quality, use of water, Spatial variations of water availability in India; Water stock, water consumption, and demand for various water uses. Development challenges for water management

**UNIT II WATER RESOURCE MANAGEMENT 9**

Water supply management, best practices in water supply management; Water demand management, Strategies for demand management; Social, environmental and economic impacts of urban water management; Strategies for Water pricing, regulation; water conservation measures; Water cycle management, Waste water - Waste water estimation, collection and disposal, and its subsequent use, waste water treatment and management systems, storm water resource management systems. Technological options for wastewater management, recycling, reuse and treatment; Storm runoff management, desalination.

**UNIT III PLANNING APPROACHES 9**

Sustainable urban drainage systems and measures for public open spaces: bio retention areas, filter drains, detention basins constructed wetlands, bio swales. Initiatives for ensuring water Sensitivity; Water sensitive planning approaches, Case studies and best management practices of Water-sensitive planning (city/zonal scale), Case studies and best management practices of Water-sensitive designing (neighborhood/institutional scale), Case studies and best management practices of Water-sensitive designing (individual scale). Best management practices and Case Studies of water sensitive street design.

**UNIT IV SOCIO-ECONOMIC AND ECOLOGICAL IMPACTS 9**

Economics of Water Sensitivity planning, Factors affecting costs, benefits of water sensitivity planning, Social and ecological impact of Water Sensitivity planning, Role of organizations and institutions working for water Sensitivity in India. Comparison between conventional practice and water sensitive planning approaches for managing urban water resources. Scope of water sensitive planning interventions; Tools and approaches for plan, policy, programme and projects.

**UNIT V LEGAL ASPECTS RELATED TO WATER SENSITIVITY PLANNING 9**

Water rights and its legal implication; Legal Aspects of Water & Environment Systems: Principles of Law applied to Water Rights and Water Allocation, Water Laws, Environmental Protection Law, Environmental Constraints on water Resources Development. Development plans and water resource planning; Integration of concepts of water security in urban and regional planning and other development plans; Implementation of water sensitive planning, Stakeholder participation.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Elucidate global and Indian water sensitive challenges.
**CO2** Appreciate the Potential and opportunities for connecting water, urban planning/development.
**CO3** Demonstrate an ability and skills to make development plans and design projects for meeting global and Indian water sensitivity challenges.
**CO4** Formulate water sensitive layouts and street designs.
**CO5** Critically analyse the implementation and institutional issues relating to water sensitive planning, including maintenance and policy.
**CO6** Illustrate the various technologies, strategies, regulations involved in water management.

**TEXT BOOKS**


1. B.C. Punmia& Ashok Kumar Jain, 'Waste water engineering', Lakshmi Publications, 2005.
2. Asit K. Biswas & Cecilia Tortajada, 'Water Pricing and Public Private Partnership', Routledge, 2005.
3. Hoekstra A.Y, "The Water Footprint of Modern Consumer Society", Routledge, 2013.
4. David Butler and Fayyaz Ali Memon, 'Water demand management', IWA Publishing, 2006.
5. Sharp L, "Reconnecting People and Water, Public Engagement and Sustainable Water Management", Earthscan, 2017.


**REFERENCES**


1. Ramaswamy, R. Iyer, "Water and the Laws in India", Sage, 2009.
2. Cori L. Barraclough and Wm. Patrick Lucey, 'Water Sensitive Urban Design', http://www.oaa.on.ca/oaamedia/documents/water sensitive urban design. pdf
3. Water sensitive urban design in the UK – Ideas for built environment practitioners', (2013) CIRIA, London.
4. Jacqueline Hover, "Water Sensitive Urban Design: Principles and Inspiration for Sustainable Storm water Management in the City of the Future", 2011.
5. Ashok Kumar and D.S. Meshram, "Future of Cities: Planning, Infrastructure, and Development", Routledge.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 3 | 3 |
| CO2 | 3 | 2 | 3 | 2 | 1 | 1 | 3 | - | 1 | 2 | 2 | 1 |
| CO3 | 2 | 3 | 2 | 2 | 3 | 1 | 2 | 1 | 2 | - | 2 | 2 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO4 | 3 | 1 | 3 | 3 | 1 | 2 | 3 | - | 1 | - | 2 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 2 | 1 | 3 | 2 | 2 | 3 | 1 | 2 |
| CO6 | 3 | 1 | 1 | 3 | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 3 |
| Average | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2 | 2 | 2 | 2 |

3- High 2-Moderate 1-Low

| PL23014 | WEB BASED APPLICATION IN PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 4 | 3 |

**OBJECTIVE**

- To introduce the fundamentals of cloud computing and principles of web-based application
- To learn the use of a variety of strategies and tools for data analysis
- To understand the nature of web-based data available at the rural, urban, and regional levels of planning
- To understand the collection and interpretation of data from the web-based applications
- To understand the role of state and central government agencies in cloud computing and geoinformatics

**UNIT I WEB-BASED GIS PLATFORMS IN INDIA 15**

National GIS mission NIC – Products and platforms; Centre Level and State Level – PRAYAS, Collab GEO, SVAMITVA, Bhuvan, Jal Jeevan and other web-based platforms.

**UNIT II BHARAT MAPS, BHUVAN 20**

Direct Benefits Transfer, Spatial Data services framework, access in Government-to-Government Function; SWAMITVA, DBT GIS, Green watch, etc.

**UNIT III TNGIS 20**

Data available in TNGIS, accessing TNGIS, Accessing data; Physical infrastructure, social infrastructure, transportation and natural resources.

**UNIT IV CLOUD DATA AND FREE GIS DATA SOURCES 20**

GIS and cloud computing, Cloud GIS, Q field, ArcGIS insights; Open Street Map, ESRI open data hub, NASA's SEDAC, NASA Earth Observation

**TOTAL: 75 PERIODS**

**OUTCOMES**

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

- To know various government portals to collect GIS-based web data.
- To demonstrate skills to examine various data collected from the web portals.
- To know the Government-to-government functions.
- To identify various roles of State and Central Government agencies with respect to geoinformatics, GIS and urban planning.
- To know how to use cloud computing for data access, data collection and mapping.
- To collect all Web-based data for various levels of planning – rural, urban, regional.

**TEXT BOOKS**


1. Saha, K., Froyen, Y. K. (2021). Learning GIS Using Open-Source Software: An Applied Guide for Geospatial Analysis. United Kingdom: Taylor & Francis.
2. Emerging Trends in Open-Source Geographic Information Systems. (2018). United States: IGI Global.
3. Graser, A., Cutts, A. (2018). Learn QGIS: Your Step-by-step Guide to the Fundamental of QGIS 3.4, 4th Edition. United Kingdom: Packt Publishing.

4. Vacca, J. (2020). Solving Urban Infrastructure Problems Using Smart City Technologies: Handbook on Planning, Design, Development, and Regulation. Netherlands: Elsevier Science
5. Zheng, Y. (2019). Urban Computing. United Kingdom: MIT Press.

**REFERENCES**

1. Buildings and Semantics: Data Models and Web Technologies for the Built Environment. (2022). Netherlands: CRC Press
2. Winston Yap, Patrick Janssen, Filip Biljecki, (2022) Free and open-source urbanism: Software for urban planning practice, Computers, Environment and Urban Systems, Volume 96
3. Praharaj, Sarbeswar. (2020). Development Challenges for Big Data Command and Control Centres for Smart Cities in India. 10.1007/978-3-030-12180-8_4.
4. Maciej M. Nowak, Katarzyna Dziób, ŁukaszLudwisiak, Julian Chmiel,(2020) Mobile GIS applications for environmental field surveys: A state of the art, Global Ecology and Conservation, Volume 23.
5. M. Mazhar Rathore, Awais Ahmad, Anand Paul, Seungmin Rho, (2016) Urban planning and building smart cities based on the Internet of Things using Big Data analytics, Computer Networks, Volume 101.

**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 3 | 3 |
| CO2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | - | 1 | 2 | 2 | 1 |
| CO3 | 2 | 3 | 2 | 3 | 3 | 1 | 2 | 1 | 2 | - | 2 | 2 |
| CO4 | 3 | 1 | 1 | 3 | 1 | 2 | 1 | - | 1 | - | 2 | 3 |
| CO5 | 3 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 1 | 2 |
| CO6 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | 3 | 3 | 3 |
| Average | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 |

3- High 2-Moderate 1-Low

| PL23015 | SIMULATION IN PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 4 | 3 |

**OBJECTIVES**

- To understand the requirement and process of simulation in Planning.
- To understand different simulation Techniques.
- To understand the land use Dynamics and stimulation methods.
- To enable students to understand about the stimulation in transportation Planning.
- To enable students to understand about the stimulation in environmental Planning.

**UNIT I MODELING AND SIMULATION TECHNIQUES 20**

Introduction to a System, model, spatial models, Simulation and Systems Modelling Language; Modelling urban system dynamics, Problem Communication, System Objectives, Development, Life-Cycle System Behaviour, Simulation Techniques, Modelling and simulation, Growth model, Wolves and sheep model, Simple urban system, grid city, network city, Monte Carlo Method, Importance Sampling, Metropolis Algorithm, Heat- bath algorithm, MD and Verlet algorithm, correlations.

**UNIT II SIMULATION ON LAND DYNAMICS AND CHANGE 15**

Land Dynamics, factors influencing land dynamics, types of land use dynamics model, economic module, vegetation change module, agent-based module, Introduction to cellular automata for land use change simulation, Overview of urban Simulation software's.

**UNIT III SIMULATION IN TRANSPORTATION 20**

Four stages in transportation planning, accessibility and mobility consideration in transportation planning, Importance of simulation in transportation planning, Application of software in transportation Planning.

**UNIT IV SIMULATION IN ENVIRONMENTAL STUDIES 25**

Importance of environment in Planning, components which can be simulated in environment planning, Geographic data for environmental modelling and assessment, Vegetation mapping and monitoring, The land surface atmosphere interface, climate simulation, Envi met for climate simulation.

**TOTAL: 75 PERIODS**

**COURSE OUTCOMES**

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

| | |
|---|---|
| **CO1** | Basics of transportation Planning and different transportation polices. |
| **CO2** | Acquire knowledge about the traffic and Travel characteristics in transportation. |
| **CO3** | Understand the interaction between urban mobility and land use and able to provide sustainable solution for Mobility. |
| **CO4** | To carryout various traffic surveys, analysis and present it various formats. |
| **CO5** | Understand the different stages of transportation planning. |
| **CO6** | To carryout different land use and transportation modelling. |

**TEXT BOOKS**


1. Stefan Müller Arisona, Gideon Aschwanden, Jan Halatsch, Peter Wonka Digital, “Urban Modeling and Simulation”, Springer,2012.
2. Sudhir Kumar Singh, “Remote sensing and GIS: Land Use land cover Dynamics”, LAP Lambert Academic Publishing,2011.
3. Luis G. Willumsen, “Modelling Transport”, 4th Edition, Wily Publication,2011.
4. Andrew Skidmor, “Environmental Modelling with GIS and Remote Sensing”, Taylor & Francis Group, 2002.
5. Michele Campagna (Ede), GIS for Sustainable Development, Taylor & Francis Group, 2006.


**REFERENCES**


1. Xiangzheng Deng , “Modeling the Dynamics and Consequences of Land System Change”, Springer; 2011th edition
2. Pinki Mondal, Sonali Shukla Mc Dermid, “Global Vegetation and Land Surface Dynamics in a Changing Climate”, Mdpi AG Publisher, 2021.
3. Dan Malkinson, Danny Czamanski, et al, “Modeling of Land-Use and Ecological Dynamics (Cities and Nature)”, Springer,2016.
4. Michael L. Deaton and James J. Winebrake, “Dynamic Modeling of Environmental Systems (Modeling Dynamic Systems)”, Springer, 2012.
5. Biswajeet Pradhan, Rajib Shaw, et al, “Impact of Climate Change, Land Use and Land Cover, and Socio-economic Dynamics on Landslides (Disaster Risk Reduction)”, Springer, 2022


**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 3 | 3 |
| CO2 | 3 | 1 | 3 | 2 | 1 | 1 | 2 | - | 1 | 2 | 2 | 1 |
| CO3 | 2 | 3 | 2 | 1 | 3 | 1 | 2 | 1 | 2 | - | 1 | 3 |
| CO4 | 3 | 1 | 1 | 3 | 1 | 2 | 1 | - | 1 | 3 | 3 | 3 |
| CO5 | 3 | 2 | 2 | 1 | 2 | 3 | 1 | 2 | 2 | 3 | 1 | 2 |
| CO6 | 3 | 1 | 1 | 3 | 2 | 2 | 3 | 1 | 2 | 2 | 1 | 3 |
| Average | **3** | **2** | **2** | **2** | **2** | **2** | **2** | **1** | **2** | **2** | **2** | **3** |

3- High 2-Moderate 1-Low

| PL23016 | PLANNING FOR ECONOMIC GROWTH CORRIDOR | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the foundational concepts and evolution of economic growth corridors.
- To explain the environmental and social impacts associated with economic growth corridors.
- To understand strategies for effective industrial development within economic corridors
- To enumerate sustainable industrial infrastructure and ancillary facilities
- To understand regulations, case studies, and emerging trends in economic corridor development.

**UNIT I INTRODUCTION TO ECONOMIC GROWTH CORRIDOR 9**

Definition and importance, Historical background and evolution, Theories of global economic, India Economic and Sectors, Industrial Parks and growth Corridors, Industrial clusters and agglomeration economies, Industrial Categories and Process, E-Commerce, EXIM and Make in India, Policy Framework and Government Initiatives, Role of public-private partnerships, Planning Process and Stakeholders Involved.

**UNIT II ENVIRONMENTAL AND SOCIAL IMPACTS 9**

Zoning Atlas, Carbon Footprint and Carbon Credit, Environmental Assessment, Sensitivity Mapping and Bio-diversity Assessment, Environmental sustainability and Reduction Strategies, Employment and economic growth, Industrial diversification and innovation, Urbanization and demographic shifts, Impact on local economies and SMEs, Challenges and Solutions, Managing growth and preventing sprawl

**UNIT III STRATEGY FOR INDUSTRIAL DEVELOPMENT AND MARKET ASSESSMENT 9**

Visioning and goal setting, Stakeholder engagement, Market Demand Analysis, Economic Drivers and Factors, Scenario planning and forecasting, Economic and Financial Aspects: Investment models and funding mechanisms, Techno-Economic Analysis and cost-benefit analysis, Financial planning and risk management, Implementation Structure and Project Management

**UNIT IV INDUSTRIAL INFRASTRUCTURE AND ANCILLARY DEVELOPMENT 9**

Zoning and land use planning, Mixed-use development, Industrial housing, Community facilities and amenities, Rehabilitation and Resettlement Strategies, Blue-Green infrastructure, Multi-Modal Logistic Hub, Dedicated Fright Corridors, Planning for Ancillary Facilities, Fulfillment Centers, Utilities and Service Infrastructure, Hazardous Waste Management, Common Effluent Treatment Plant

**UNIT V CASE STUDY AND REGULATIONS 9**

Successful Case Studies (National & International), Comparative Analysis of successful economic corridors, Industrial Regulations, Design Guidelines, EXIM Policy, Environmental Compliances, Emerging Trends and Innovations: Smart corridors and digital infrastructure, Green and sustainable economic corridors, Role of artificial intelligence and automation in corridor development

**TOTAL : 45 PERIODS**

## COURSE OUTCOMES

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

**CO1** Summarize the foundational concepts and evolution of economic growth corridors
**CO2** Evaluate the environmental and social impacts of economic growth corridors
**CO3** Analyse strategic plans for industrial development within economic corridors
**CO4** Interpret sustainable industrial infrastructure and ancillary facilities
**CO5** Critically analyze regulations and case studies of successful economic corridors.
**CO6** Assess emerging trends and innovations impacting economic corridor development

## TEXT BOOKS


1. Hilhorst, J. G. M, 'Regional Planning,' Rotterdam University Press, 1971.
2. Powe, Neil, et al., 'Market Towns,' Routledge, 2014.
3. Gupta, K. R., 'Special Economic Zones: Issues, Laws and Procedures,' Atlantic Publishers, 2008.
4. Boarder Area Development Programme Guidelines. Ministry of Home Affairs, 2008.
5. Manoj, P. K, 'Special Economic Zones in India,' Deep Publications Pvt. Ltd., 2001


## REFERENCES


1. The Role of Intermediate Towns in Regional Development: A Case Study. National Institute of Urban Affairs (NIUA), NIUA, 2004.
2. Yadav, V., and Neelkanthrao R. Kalambe, 'Corridor Development in India: Impact on Land Acquisition,' 1st ed., Routledge India, 2022.
3. Carrillo, Francisco J., et al, 'Knowledge and the City,' Routledge, 2014.
4. Firodia, V., N. Pavnaskar, and N. Murthy, 'Smart City: A Blueprint for a Zero Pollution, Sustainable, Smart Industrial City,' 1st ed., Vishwakarma Publications, 2015.
5. Hatuka, T., and E. Ben-Joseph, 'New Industrial Urbanism: Designing Places for Production' 1st ed., Routledge, 2022


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| CO1 | 3 | | | | | 3 | 3 | | | | | 2 |
| CO2 | 3 | | | | 1 | 3 | 3 | 1 | | | | 2 |
| CO3 | 3 | 2 | 1 | 1 | 2 | 3 | 3 | 1 | | | | 2 |
| CO4 | 3 | 2 | 1 | 1 | 1 | 3 | 3 | 1 | | | | 3 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | | | | 3 |
| CO6 | 3 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| Average | **3** | **2** | **2** | **2** | **1** | **3** | **3** | **1** | **2** | **2** | **1** | **3** |

3- High 2-Moderate 1-Low

| PL23017 | FUTURE CITIES | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand a city as a whole, its people, components, functions, scales and dynamics.
- To explore the city as the most complex human-made “organism
- To emphasize upon appropriate design and management of the urban system.
- To learn how to support the development of future cities
- To focus on different representations, properties and impact factors of the urban system

**UNIT I SOCIETY 5.0** **9**

Emergence of the first to the fifth industrial revolutions, their evolution, and their transformative steps towards Society 5.0; nuances of the different phases of industrial revolutions and their positive and negative externalities; Addressing Them in the Fifth Industrial Revolution; Significance of the Fifth Industrial Revolution - Ways in which Society 5.0 affects various aspects of human society (e.g., advances in healthcare and improved life expectancy; business, the economy, growth, and industry; education and skills; privacy and cybersecurity; smart cities; labour and the workforce)

**UNIT II PLANNING AND TECHNOLOGY** **9**

City as an Organism; Digital transformation of our communities, spatial planning and technology interface, socio-economic planning and technology interface, planning cities and local technologies, technological innovations and responsive city planning, planning responsive technology versus technology responsive planning.; sustainable innovation and growth; technology trends and tools collaborative eco-systems; community mobilization Role of planners in the future growth of cities;

**UNIT III CITY DYNAMICS -INFRASTRUCTURE** **9**

Understand city’s people, components, functions, scales and dynamics, as precondition for sustainable design and management; Technology and data towards improving quality of life - for residents, protect the environment, and economic growth - Transportation and technology, water, sanitation and technology, energy efficient technology for home, street, neighborhoods and city, telecommunication, health and education, security and safety for buildings and people in cities

**UNIT IV INNOVATIVE CITIES** **9**

New Urban Agenda, Digital cities, virtual cities, digital-based solutions and new experiences for future cities and human environments; utilization of IoT and A.I. in the development of new types of urban infrastructure systems, experiences, and services; big data analytics can be of use to decode the behavior of large scale systems and urban dynamics, improve public services, energy, infrastructure; principles of big data visualizations and communication for decoding hidden large scale patterns in cities. harmonious integration of humans and technology to address the world’s pressing problems in the future Virtual reality and augmented reality;

**UNIT V PLANNING OF FUTURE CITIES** **9**

Post Fordist urbanism; Flying cars; net zero cities; water-saving solutions Strategies for more effective land use, distributed energy systems, and alternative mobility; environmental, and socially friendly future cities; decarbonisation through digitalization.

**TOTAL PERIODS: 45**

**COURSE OUTCOMES**

Upon the completion of this course, the students would be able to:

| | |
|---|---|
| CO 1 | Explain urban economic decline and renaissance in the context of Post Fordist urbanism, globalization and its implications in planning for future cities. |
| CO 2 | Gain a holistic view on existing and new cities, with a focus on Asia. |
| CO 3 | Formulate Data-driven approaches for the development of the future city and new strategies to rethink the development of the cities of the future. |
| CO 4 | Shape, plan, design, build, manage future cities for a more resilient urban world. |
| CO 5 | Engage in innovative research with first-hand empirical material. |
| CO 6 | Witness the transformation of urban spaces from past to present and in future. |

**TEXT BOOKS**


1. Urban Redevelopment, Displacement and the Future of the American City, C. Thodore Koebel, Community Affairs Office, 1996
2. Urbanisation, Urban Sustainability and Future of Cities, B. Bhattacharya, Concept Publishers, 2010
3. Urban Design Futures, Malcolm Moor (Ed.), Routledge
4. Territory of Delhi, India. In Ashok Kumar and D.S. Meshram (eds.) Future of Cities: Planning, Infrastructure, and Development, New York: Routledge.
5. Helen, P., Jenny D., Tanja W., David S., Leonardo S., Andrew L. and Christopher P. (2016) Universal Design 2016: Learning from the Past, Designing for the Future, IOS Press E-books.


**REFERENCES**


1. Malcolm Moor, 'Urban Design Futures,' Routledge, 2006.
2. Abbott, C, "Imagining Urban Futures: Cities in Science Fiction and What We Might Learn From Them. Middletown", CN: Wesleyan University Press.,2016.
3. Berger, J, "Ways of Seeing. London", British Broadcasting Corporation: Penguin Books, 1972.
4. Koeck, R., & Roberts, L, "The city and the moving image: Urban projections. Houndmills, Basingstoke, Hampshire; New York", Palgrave Macmillan, 2010.
5. Ashok Kumar and D.S. Meshram, "Future of Cities: Planning, Infrastructure, and Development", Routledge.


**CO – PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO10** | **PO11** | **PO12** |
| **CO 1** | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO 2** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 3 |
| **CO 3** | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 3 |
| **CO 4** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 2 |
| **CO 5** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 3 |
| **CO 6** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 3 |
| **Average** | **3** | **3** | **3** | **3** | **3** | **2** | **2** | **3** | **2** | **2** | **1** | **3** |

**3- High 2-Moderate 1-Low**

## EMERGING TECHNOLOGY COURSES

| | | L | T | P/S | C |
|---|---|---|---|---|---|
| **PL23E01** | **ADVANCED SPATIAL DATA INFRASTRUCTURE FOR PLANNING** | **1** | **0** | **4** | **3** |

**OBJECTIVES**

- To expose the students to advanced techniques in GIS
- To educate students in Python language.
- To impart the skill of customization using Phyton in GIS.
- To educate students in R programming.
- To enable the students to do spatial analysis using R Programming.

**UNIT I MODEL BUILDER AND ARC TOOLBOX 15**

Introduction to Arc Scene, 3D Spatial Analyst Tool, Introduction to model builder, Types of Model builder, creating a new tool box for a work flow. Mobile Mapping and data integration. Flood stimulation mapping.

**UNIT II INTRODUCTION TO PYTHON 25**

Scripting, Introduction to Python, Numbers and operators, Variables and Data types, Expressions, Decisions and Loops, Modules, File Access, loading Vector & Raster layers, List, Dictionaries, Simple Functions, Simple Graphics, Image Processing, Design of Simple GUI, Instance Variables, functions for vector to raster conversion, georeferencing raster layer, creating a hill shade map, Objects and Classes, Data-Modelling, Building a New Data structure, Inheritance and Polymorphism, Data Encryption, Threads and Processes, Search Algorithms, Basic Sort Algorithms. Setting up a Python editor, Geo processing using Python, Arcpy Package, Debugging and error handling.

**UNIT III R PROGRAMMING BASICS 20**

Introduction, Data types, Variables, Vectors, Scalars, Conclusion, Data Frames, Lists, Matrices, Arrays, Classes, Arithmetic and Boolean Operators and values, Structures, Control Statements, Loops, Recursion, Scoping Rules, Loop functions, Array and Matrices, Spatial programming.

**UNIT IV DATA MANIPULATION AND DATA VISUALISATION 15**

Functions, Math Functions, Linear Algebra Operation, Probability Distributions: Normal, Binomial, Poisson, Graphics, Creating Graphs, Customizing Graphs, Box plot, Histogram, Pie graph, Line chart, Scatterplot, Spatial Attribute Analysis.

**TOTAL: 75 PERIODS**

**COURSE OUTCOMES**

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

- **CO1** Develop 3d visualisation and stimulation using GIS software.
- **CO2** construct required tools using model builder.
- **CO3** Explain the use of phyton programming and its functions in analysis of issues. sustainable solution for Mobility.
- **CO4** Solve urban Planning problems by customizing the work flow using phyton Scripts.
- **CO5** Explain the use of R programming and its functions in simplifying the data visualization.
- **CO6** Develop an interaction between land use and Transportation.

**Text Books**


1. David W. Allen, Getting to Know ArcGIS Model Builder, Esri Press; 1st edition 2011.
2. Paul A. Zandbergen, Python Scripting for ArcGIS Pro, Esri Press, 2nd ed. Edition, 2020.
3. Silas Toms , Bill Parker, Dr. Christopher Tucker, Rene Rubalcava, Python for ArcGIS Pro: Automate cartography and data analysis using ArcPy, ArcGIS API for Python, Notebooks, and pandas, Packt Publishing Limited, 2022.
4. Chris Brunsdon, Lex Comber, An Introduction to R for Spatial Analysis and Mapping (Spatial Analytics and GIS), SAGE Publications Ltd; Second edition, 2018.
5. Robin Lovelace, Jakub Nowosad, Jannes Muenchow, Geocomputation with R, Chapman & Hall/CRC The R Series, 2019.


**References**


1. Paul A. Zandbergen, Advanced Python Scripting for ArcGIS Pro, Esri Press; 1st edition,2020.
2. Tripp Corbin GISP, Learning ArcGIS Pro 2: A beginner's guide to creating 2D and 3D maps and editing geospatial data with ArcGIS Pro, Esri Press; 2nd Edition,2020.
3. Lex Comber and Chris Brunsdon, Geographical Data Science and Spatial Data Analysis: An Introduction in R (Spatial Analytics and GIS), SAGE Publications Ltd; 1st edition,2020.
4. Alex David Singleton; Seth Spielman; David Folch, Urban Analytics (Spatial Analytics and GIS) Series: Spatial Analytics and GIS, SAGE Publications Ltd, 2017.
5. Andrew Crooks, Nick Malleson , Ed Manley, Alison Heppenstall, Agent-Based Modelling and Geographical Information Systems: A Practical Primer (Spatial Analytics and GIS), SAGE Publications Ltd; 1st edition,2018.

| PL23E02 | DRONE MAPPING FOR URBAN APPLICATION | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 4 | 3 |

**OBJECTIVES**

- To understand the basics of drone concepts.
- To impart the knowledge of and flying and operation of drone.
- To understand the different mapping and modelling techniques.
- To understand about the image processing applications for drone images.
- To know about the various applications of drone.

**UNIT I INTRODUCTION TO UAV 15**

UAV: Definition and history, Difference between aircraft and UAV, DGCA classification of UAV's, Types and Characteristic of Drones, fixed, multi-rotor, flapping wings, existing Regulation in UAV Operations. Application of Drone Images in Different sectors, use of drone image in urban planning.

**UNIT II DRONE FLYING AND OPERATION 15**

Land Dynamics, factors influencing land dynamics, types of land use dynamics model, economic module, vegetation change module, agent-based module, Introduction to cellular automata for land use change simulation, Overview of urban Simulation software's.

**UNIT III MAPPING AND MODELLING 20**

Introduction to mapping and modelling concepts, Understanding RTK, PPK and GCP's, Overview of popular data processing software platforms and functions.

**UNIT IV IMAGE PROCESSING AND PHOTOGRAMMETRY 25**

Aerial Triangulation, post processing software's, Analyzing Data, Orthomosaic Maps, 3D Point Cloud, Digital Surface Models (DSM), Digital Terrain Models (DTM)- Contour Maps-3D textured mesh, cut, fill and Volumetric Measurement Calculation and orthophoto generation, extraction of data from drone images and its uses in urban planning, Linked mobile devices and applications.

**TOTAL: 75 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Explain about the about a various type of drone technology
**CO2** Plan to execute the suitable operating procedures for functioning a drone.
**CO3** Choose appropriate sensors and actuators for Drones.
**CO4** Classify different mapping and modeling
**CO5** Choose appropriate image processing and photogrammetry software for processing.
**CO6** Formulate procedure to use drone image in urban planning issues.

**TEXT BOOKS**


1. Daniel Tal and John Altschuld, “Drone Technology in Architecture, Engineering and Construction: A Strategic Guide to Unmanned Aerial Vehicle Operation and Implementation”, John Wiley & Sons, Inc, 2021.
2. Zavrsnik, “Drones and Unmanned Aerial Systems: Legal and Social Implications for Security and Surveillance”, Springer, 2018.
3. Amy Frazier, Kunwar Singh , “Fundamentals of Capturing and Processing Drone Imagery and Data”, CRC Press, 2021.
4. Paul Cureton, “Drone Futures: UAS in Landscape and Urban Design” Routledge, 2020.
5. Garvit Pandya, “Basics of Unmanned Aerial Vehicles: Time to start working on Drone Technology”, Notion press, 2021.


**REFERENCES**


1. Daniel Tal, Jon Altschuld, “Drone Technology in Architecture, Engineering and Construction: A Strategic Guide to Unmanned Aerial Vehicle Operation and Implementation, Wiley, 2021.
2. Quan Shao, Jiaming Li, “Study of Urban Logistics Drone Path Planning Model Incorporating Service Benefit and Risk Cost”, Drones, 2022.
3. David Gallacher, “Drone Applications for Environmental Management in Urban Spaces: A Review”, International Journal of Sustainable Land Use and Urban Planning, 2016.
4. Jake Nelson R, Tony Grubesic H,” UAV and Urban Spatial Analysis: An Introduction”, Springer Nature Swizerland AG, 2021.
5. Alexandros Skondras, “UAV Mapping and 3D Modeling as a Tool for Promotion and Management of the Urban Space”, Drones, 2022.


| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 1 | 1 | - | 3 | 2 | - | - | 2 | 2 | - | 3 |
| CO2 | 2 | 2 | 1 | - | 3 | 1 | - | - | 2 | 1 | 1 | 2 |
| CO3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 3 |
| CO4 | 1 | 1 | 1 | - | 3 | 2 | - | - | 3 | 2 | 1 | 2 |
| CO5 | 1 | 1 | 2 | 1 | 3 | - | - | - | 3 | 2 | - | 3 |
| CO6 | 3 | 2 | 3 | 1 | 3 | 1 | - | - | 2 | 1 | - | 3 |
| Average | **2** | **2** | **2** | **1** | **3** | **1** | **2** | **1** | **2** | **2** | **1** | **3** |

3- High 2-Moderate 1-Low

| PL23E03 | BIG DATA IN URBAN PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the usefulness of Big data in Urban planning.
- To understand the necessity of collecting big data in different sectors
- To study the type of data and its implication in urban planning.
- To make detailed analyses, which can influence the design of cities and support the creation of data-based policies, plans, and projects
- To provide students with knowledge of advanced Big Data Analysis and Geo informatics principles, with a focus on how they apply to urban and regional planning.

**UNIT I INTRODUCTION** **9**

Evolution of Concept: Cloud, Internet of Things and Big Data, Types of Big Data, Concept of Urban Metabolism, Big Data in Urban Planning.

**UNIT II BIG DATA FOR CITIES** **9**

Investigating the city and its spatial, social, and economic dynamics through the lens of data and visual analytics. Utilizing large public datasets to develop knowledge about visual methods for analyzing data and communicating results. Developing a critical understanding of data structures, collection methodologies, and their inherent biases.

**UNIT III URBAN SENSING** **9**

Context, Currently Available Datasets, 'Real-Time' Planning, Pervasive Technology and Digital Footprint; Urban Dynamics; Applications of Urban Sensing: Mobile Phone Network Data, Event Driven Network Data; Urban Sensing Applications, Monitoring Land Use and Land Use Inferences, Sensing Urban Mobility and other urban issues.

**UNIT IV CASE STUDIES AND RELEVANT RESEARCHES** **9**

Global and national case studies for Sensing Urban Problems, Sensing Urban Mobility, Deciphering Urban Activities etc. using big data applications.

**UNIT V BIG DATA IN URBAN DESIGN AND PLANNING** **9**

Experimenting big data using online tools, Tools are the foundations of innovative participation methods, Public Participation Geographic Information Systems (PPGIS) or Citizen Design Science, Potentials of creative data mining. Creating direct bridges between policy-makers and citizens and supports real-time views of a particular city.

**TOTAL : 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Choose various government portals to collect GIS-based web data.
**CO2** Define the necessity of Big Data in planning
**CO3** Develop the ways of collecting big data in various sectors.
**CO4** Utilising Big Data sources to assess urban issues in different sectors
**CO5** Develop 3D multi-data maps, converting data between different formats
**CO6** Develop an experimental approach in data collection.

**TEXT BOOKS**


1. Zhenjiang Shen, Miaoyi Li, “Big Data Support of Urban Planning and Management”, Springer, 2018.
2. Arnab Jana, “Advances in Urban Planning in Developing Nations Data Analytics and Technology”, Routledge, 2010.
3. Simon Elias Bibri, “Big Data Science and Analytics for Smart Sustainable Urbanism”,2019.
4. Luca Saverio Valzano, Carlo Caldera, Carlo Luigi Ostorero, Valentino Manni, Andrea Galli, “Generative Computational Urban Planning Through Big Data Analysis”, IGI Global publisher, 2021.
5. Nathan Marz and James Warren, “Big Data: Principles and Best Practices of Scalable Real-Time Data Systems”, Manning Publications,2015.


**REFERENCES**


1. Alasdair Rae, Cecilia Wong, “Applied Data Analysis for Urban Planning and Management”, Sage Knowledge, 2021.
2. Thomas Erl Wajid khataak, Paul Bhuler, “Big Data Fundamentals: Concepts, Drivers & Techniques”, Service tech press, 2015.
3. Bart Baesens, “Analytics in a Big Data World: The Essential Guide to Data Science and its Applications”, Wiley; 1st edition, 2014.
4. Thomas H. Davenport, “Big Data at Work: Dispelling the Myths, Uncovering the Opportunities”, Harvard Business Press 2014.
5. Cole Nussbaumer Knaflic, “Storytelling with Data: A Data Visualization Guide for Business Professionals”, Wiley; 1st edition, 2015.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 1 | 2 | 3 | 1 | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | - | 1 | 2 | 2 | 1 |
| CO3 | 2 | 3 | 2 | 3 | 3 | 1 | 2 | 1 | 2 | - | 1 | 2 |
| CO4 | 2 | 1 | - | 3 | 1 | 2 | 3 | - | 1 | 1 | 2 | 3 |
| CO5 | 3 | 2 | 2 | - | 2 | 1 | 1 | 2 | 2 | 3 | 1 | 2 |
| CO6 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | 3 | 3 | 3 |
| Average | **3** | **2** | **2** | **2** | **2** | **2** | **2** | **1** | **2** | **2** | **2** | **2** |

3- High 2-Moderate 1-Low

| PL20E04 | ARTIFICIAL INTELLIGENCE IN PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- Understanding the basic concepts of AI in urban planning
- Understanding how AI applications, building on GIS and remote sensing (RS) technologies, can be used for urban planning
- Use AI methods for satellite classification
- Use AI methods for spatial modeling and analysis in urban applications
- Bringing a critical and judicious assessment to AI processing and applications

**UNIT I THEORETICAL FOUNDATIONS 9**

A new agenda for AI-based urban planning, AI and the limits of human creativity in urban planning and design, Complexity science for urban solutions.

**UNIT II AI TOOLS AND TECHNIQUES 9**

Classes of AI tools, techniques, and methods; urban form analysis through morphometry and machine learning; AI-driven BIM on the cloud.

**UNIT III AI IN URBAN SCALE RESEARCH 9**

Urban analysis for health; spatial design for energy self-sufficient communities; optimizing urban grids layouts using proximity metrics.

**UNIT IV AI FOR SMART CITIES 9**

The mission, key areas of innovation, the role of AI in smart cities mission, measuring how smart the Indian cities are, case studies, and comparison of approaches

**UNIT V CASE STUDIES 9**

Barcelona Superblock, Pune, Singapore, Integrated Command and Control Centre, Dubai, Boston, Buenos Aires, Fukuoka.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

- To Explore the current state of Artificial Intelligence and Machine Learning (ML), with particular emphasis on their applications in the fields of Architecture, Landscape, Urbanism and Real Estate
- Gain an understanding of Artificial Intelligence and Machine Learning that allows you to better assess and compare products and services powered by algorithms
- To use various tools and techniques.
- To know about applications of AI in research and urban systems.
- To know how to use cloud computing for data access, data collection, and mapping
- To have a view for the meaningful use of AI technology in the future

**TEXT BOOKS**


1. Imdat As, Prithwish Basu, Pratap Talwar, “Artificial Intelligence in Urban Planning and Design Technologies, Implementation, and Impacts”, Elsevier, 2022.
2. Lyu, Kangjuan, Hu, Min, Du, Juan, “AI-Based Services for Smart Cities and Urban Infrastructure”, Business Science Reference, 2020.
3. Christopher Grant Kirwan, Fu Zhiyong, “Smart Cities and Artificial Intelligence: Convergent Systems for Planning”, Design, and Operations 1st Edition, 2020.
4. Jinmo Rhee , Context-rich Urban Analysis Using Machine Learning: A Case Study in Pittsburgh, Eliva Press, 2020.
5. Chandan Kumar Shiva, “Artificial Intelligence and Machine Learning in Smart City Planning”, Elsevier - Health Sciences Division, 2023.


**REFERENCES**


1. Vacca, J, “Solving Urban Infrastructure Problems Using Smart City Technologies: Handbook on Planning, Design, Development, and Regulation. Netherlands” Elsevier Science,2020.
2. C. Daniel & C. Pettit, “Digital disruption and planning – use of data and digital technology”, professional planners, and perceptions of change to planning work, Australian Planner, 57:1, 50-64, 2021.
3. Adegbola Ojo, “GIS and Machine Learning for Small Area Classifications in Developing Countries”, CRC Press; 1st edition, 2023.
4. S Carta, “Machine Learning and The City: Applications In Architecture And Urban Design”, Wiley-Blackwell, 2022.
5. Ivana Semanjski, “Smart Urban Mobility: Transport Planning in the Age of Big Data and Digital Twins”, Elsevier Science Publishing Co Inc, 2022.


**CO-PO Mapping**

| **Course Outcome** | **Program Outcome** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 1 | 1 | - | 3 | 2 | - | - | 2 | 2 | - | 3 |
| CO2 | 2 | 2 | 1 | - | 3 | 1 | - | - | 2 | 1 | 1 | 2 |
| CO3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| CO4 | 1 | 1 | 1 | - | 3 | 2 | - | - | 3 | 2 | 1 | 2 |
| CO5 | 2 | 2 | 2 | 1 | 1 | - | 1 | - | 3 | 2 | - | 3 |
| CO6 | 3 | 2 | 3 | 1 | 3 | 1 | - | - | 2 | 1 | - | 3 |
| Average | **2** | **2** | **2** | **1** | **3** | **1** | **1** | **1** | **2** | **2** | **1** | **2** |

3- High 2-Moderate 1-Low

## OPEN ELECTIVE COURSES

| PL23901 | PLANNING AND MANAGEMENT OF GREEN AND OPEN SPACES | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand Open Spaces as a critical element of value in planning.
- To impart open space planning methodologies through case studies.
- To demonstrate the ability to plan green urban structure.
- To create an awareness of the decisive influence of planning green open spaces on the living environment.
- To analyze what makes a public space part of sustainable urban green space.

**UNIT I ELEMENTS OF OPEN AND GREEN SPACES 9**

Green & Open spaces as an outcome of natural processes – Principles and techniques of design with landform, water and vegetation – role of surface materials – outdoor fittings and structures – open space and landscape elements – Man-made landscapes in history – comparative study of major traditions of landscape planning in relation to concepts of space and the use of landscape elements.

**UNIT II URBAN OPEN SPACES 9**

Characteristics and components of open space patterns in town and cities (traditional and contemporary) – basic types: streets, squares, plazas, gardens, ghats and maidan, public parks at district, local and neighborhood levels – park system – circulation networks and activity – street furniture as a component of urban landscape.

**UNIT III URBAN GREEN SPACES 9**

Design with nature concept – principles of understanding and evaluation of existing landscape – land suitability analysis – concept of landscape and urban green space for site planning and recreation – role of vegetation – environmental benefits, functional requirements, aesthetic considerations.

**UNIT IV SPORT AND PLAY FIELDS 9**

Multipurpose open spaces/maidan – contested spaces – hierarchy and standards for sports and play fields – role of public/private institutions.

**UNIT V MANAGING OPEN SPACES 9**

Open spaces in master plans – role of government and NGO, Community participation – legal measures for managing open spaces – parks and play grounds – case studies.

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES**

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

**CO1** Discover knowledge in urban open spaces and value of green environment.
**CO2** Recognize and understand the functions of open space and its activities.
**CO3** Understand the significance of urban green spaces and its management.

**CO4** Identify the causes, effects and implications of promoting green and open spaces to the society.

**CO5** Apply the principles of making green and open spaces in an urban environment.

**CO6** Recognize different forms of green and open spaces and apply them for sustainable environment and social development.

**TEXT BOOKS**


1. Clare, Copper Marcus and Carolyn Francis, “Environmental Studies”, Tata Mc Graw Hill Publishing Co. Ltd, New Delhi, 1st Edition, 2006.
2. Marsh W, “Landscape Planning”, Wiley Danvers, 2010.
3. Mark Francis, “Urban Open Space: Designing for User needs”, Island Press, 2003.
4. Plummer, Brian,”City Gardens: An open spaces survey in the City of London”, Belhaven Press, 1992.
5. Byrom, John.A,”Greener Greater Edinburgh”, Cockburn Association, 2002.


**REFERENCES**


1. Government of India, “Master Plan for Delhi – 2021”, Delhi Development Authority, Ministry of Urban Development, New Delhi, 2021.
2. Government of India, “Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, Vol I&II, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2015.
3. Government of India, “Urban Greening Guidelines 2014, Town and Country Planning Organisation, Ministry of Urban Development, New Delhi, 2014.
4. Luca Battisti, Federica Larcher and Marco Devecchi, “Urban green management plan: Guidelines for European Cities”, Front.Hortic,2023.
5. Dempsey N Smith, Understanding place-keeping of open space”, Routledge, 2014.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 2 | 2 | 1 | 2 | | 3 | 2 | 3 | 1 | 2 | 1 | 3 |
| CO2 | 3 | 2 | 1 | 1 | | 2 | 3 | 3 | 2 | 2 | 1 | 3 |
| CO3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 3 | 2 | 2 |
| CO4 | 3 | 2 | 3 | 3 | 1 | 2 | 3 | 3 | 1 | 1 | 2 | 3 |
| CO5 | 2 | 1 | 3 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 3 | 1 |
| CO6 | 1 | 3 | 3 | 1 | | 1 | 2 | 2 | 1 | 1 | 1 | 2 |
| Average | **2** | **2** | **2** | **2** | **2** | **2** | **3** | **3** | **1** | **2** | **2** | **2** |

3- High 2-Moderate 1-Low

| PL23902 | TOURISM PLANNING AND DEVELOPMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To understand the fundamental concepts and key determinants of tourism
- To explore the impacts of tourism on urban development, the environment, and local social and economic development.
- To familiarize with the planning processes and components involved in tourism projects
- To familiarize with the importance of tourism infrastructure and their role in supporting tourism development.
- To examine tourism policies at the state and national levels

**UNIT I INTRODUCTION TO TOURISM 9**

Definitions, scope, nature, types, key determinants and characteristics of tourism; tourism hubs; tourism as an industry; growth of tourism in developed and developing world; problems and issues of tourism; sociology of tourism- leisure, recreation, travel and tourism.

**UNIT II TOURISM SECTOR- IMPACTS 9**

Relationship between tourism and urban development; Tourism and environment; Tourism multiplier and forecasting methods; capacity building and carrying capacity; planning for tourism projects; cultural and social aspects, Eco- Tourism, and local social and economic development; case studies

**UNIT III PLANNING FOR TOURISM 9**

Tourism plans - plan components; social and spatial planning of origin- transit – destination planning; Role of multiple government authorities and agencies involved in tourism development; Tourism circuits- planning and development of region; case- studies.

**UNIT IV TOURISM INFRASTRUCTURE 9**

Need for infrastructure support planning such as accommodation, transportation, water supply, solid waste disposal, health, safety and information system; Revenue streams and resources.

**UNIT V TOURISM POLICIES AND PROGRAMS 9**

Tourism policies at the state and national level; Government and community interventions to develop tourism sector.

**COURSE OUTCOMES**

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

**CO1** Understand tourism and its various types and characteristics

**CO2** Evaluate the impacts of tourism on urban development, the environment, and socio-economic development

**CO3** Analyze the tourism projects considering social and spatial factors and involving multiple government authorities and agencies

**CO4** Assess the importance of tourism infrastructure and its role in supporting tourism development

**CO5** Evaluate tourism policies at the state and national levels and their impact on the tourism sector

**CO6** Analyze case examples that foster the growth and development of the tourism sector from India and global perspectives.

**TEXT BOOKS**


1. Andrew Holden, 'Tourism, Poverty and Development, Routledge,' London 2013.
1. Bhatia A.K., 'Tourism Development-Principles and Practice,' Sterling Publishers, New Delhi, 1982.
2. David J. Telfer, 'Richard Sharpley, Tourism and development in the developing World,' Routledge, 2008.
3. David L.Edgell, 'Tourism Policy and Planning,' Routledge, London, 2013.
4. Edgell D, 'Tourism policy and planning: yesterday, today and tomorrow,' Routledge, 2008.


**REFERENCES**


1. Glare A. Gunn, 'Tourism Planning-Basics, Concepts, Cases,' Taylor & Francis, London, 1994.
2. Manuel Baud Bouy, 'Tourism and Recreation Development,' Architecture Press, London, 1977.
3. Noel Scott and Eric, 'Laws, Safety and Security in Tourism,' Routledge, London, 2013.
4. Peter Mason, 'Tourism Impacts, Planning and Management,' Routledge, 2012.


**CO-PO Mapping**

| Course Outcome | Program Outcome | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | | | | | 3 | 3 | | | | | 2 |
| CO2 | 3 | | | | 1 | 3 | 3 | 2 | | | 2 | 2 |
| CO3 | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | | 3 | 2 | 2 |
| CO4 | 3 | 2 | 2 | 1 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 3 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 3 |
| Average | 3 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 3 |

3- High 2-Moderate 1-Low

## MINOR SPECIALIZATION COURSES (URBAN PLANNING)

| PL23018 | BASICS IN URBAN PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

### OBJECTIVES

- To introduce the basic concepts and rationales of urban planning and the role of an urban planner.
- To understand the basic foundation of planning and its economic and societal benefits.
- To familiarize the urbanization pattern at the Global as well as Indian context.
- To expose on the various facets of demography and its trends in the Indian context
- To educate on the types of development plans being prepared and practiced across the world.

### UNIT I DEFINITIONS AND RATIONALES IN PLANNING 9

Definition of Urban and Rural; Basic definitions and frequently used terminology in planning – land use, demography, physical infrastructure, social infrastructure and housing, Goals, objectives, and components of planning; Benefits of planning; Planning as a discipline and multidisciplinary nature of planning; Different roles of planners.

### UNIT II FOUNDATIONS OF PLANNING 9

Orthodoxies of planning, Components of sustainable urban and regional development; Reasoning and its forms in planning; Planning knowledge and its various forms; Arguments for and against planning; Economic and societal aspects as bases of town and country planning.

### UNIT III URBANIZATION TRENDS AND PATTERNS 9

Definition of Human settlement, Urban area, Town, City, Urbanization, Suburbanization, Urban sprawl, Peri-urban areas, Central Business District (CBD), Classification of urban areas; Trend of Urbanization at International, National, Regional and State level.

### UNIT IV DEMOGRAPHY 9

Evolution of population studies, Demographic approaches and key demographic principles including study of population size, determinants of population size, population structure and composition - sex composition, sex ratio, child -woman ratio, measures of age -sex structure, age-sex pyramid; Spatial distribution of population, measures of population distribution and concentration, factors affecting population distribution and density; Demographic trends at global, national, regional and city scale; Census definitions, levels and types of demographic data, methods and sources of demographic data, accessing and using census information available at various levels

**UNIT V DEVELOPMENT PLANS 9**

Art of visioning -forecasting and back casting approaches; Defining development plan; Types and scope of development plans: regional plan, master plan, zonal plan, layout plan; Structure plan, district plan, sector plan; town planning scheme, Hierarchy of plans and its significance; URDPFI & RADPFI guidelines

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** To recognize the basic concepts and rationales of urban planning and the role of an urban planner
**CO2** To relate to the importance of urban planning in drawing economic and social benefits at large.
**CO3** To describe the urbanization pattern across the globe and its impact in urban areas.
**CO4** To discuss the various aspects of demography and its trends in the Indian context.
**CO5** To identify the various types of development plans being prepared in the world.
**CO6** To understand the basics of urban planning and the role of an urban planner.

**TEXT BOOKS**


1. Alexander, E.R. (1987) Planning as Development Control: Is That All Urban Planning Is For? Town Planning Review, Vol. 58, No. 4, pp. 453-467.
2. Branch, M.C. (2018) Comprehensive City Planning: Introduction and Explanation, Routledge. First Edition published in 1985.
3. Majumdar, P.K. (2013) India's Demography: Changing Demographic Scenario in India, Rawat Publications, Jaipur.
4. Ramachandran, R. (1989) Urbanization and urban systems in India, Oxford University Press, New Delhi.
5. Branch, M.C. (2018) Comprehensive City Planning: Introduction and Explanation, Routledge. First Edition published in 1985.


**References**


1. Klosterman, R.E. (1985) Arguments for and Against Planning, Town Planning Review, Vol. 56, No. 1, pp. 5-20.
2. Baer, W.C. (2007) General Plan Evaluation Criteria: An Approach to Making Better Plans, Journal of the American Planning Association, Vol. 63, Issue 3, pp. 329-344.
3. Weinstein, J. and Pillai, V.K. (2017) Demography: The Science of Population, Second Edition, Rawat Publications, Jaipur.
4. Kasarda, J.D. and Crenshaw, E.M. (1991) Third World Urbanization: Dimensions, Theories, and Determinants, Annual Review of Sociology, Vol. 17, pp. 467-501.
5. King, A. (1976) Colonial Urban Development: Culture, Social Power, and Environment, Routledge and Kegan Paul, New York.

**CO-PO Mapping**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 1 | | 3 | 3 | | 1 | 1 | | 1 |
| CO2 | 3 | 2 | 2 | 1 | | 3 | 3 | | 1 | 1 | | 1 |
| CO3 | 2 | 2 | 1 | 1 | | 3 | 2 | | 1 | 1 | | 1 |
| CO4 | 3 | 2 | 2 | 1 | | 3 | 2 | | 1 | 1 | | 1 |
| CO5 | 3 | 2 | 2 | 1 | | 3 | 3 | | 1 | 1 | | 1 |
| CO6 | 3 | 2 | 2 | 1 | | 3 | 3 | | 1 | 1 | | 1 |
| Average | 3 | 2 | 2 | 1 | | 3 | 3 | | 1 | 1 | | 1 |

3-High 2-Moderate 1-Low

| PL23019 | HUMAN SETTLEMENTS AND URBAN HOUSING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To expose the history of human settlements by tracing the civilizational development.
- To familiarize the settlement system and its classification
- To understand the morphology of settlements
- To expose the concept of housing and its demand with respect to Indian conditions.
- To educate on the need for social housing in connection with the increasing urbanization trends.

**UNIT I INTRODUCTION AND CLASSIFICATION 9**

Introduction to planning as a discipline and brief evolution of the profession. Elements of human settlements. Origin of human settlement; Society: concepts and institutions; Social stratification: concept and bases social stratification: concept and bases; Agrarian classes; Industry and labor; Tribe: profile and location Village: structure and change; Forms- caste, class, power & gender.

**UNIT II CLASSFICATION AND SETTLEMENTS SYSTEM 9**

Classification - Rural urban dichotomy; Classification of rural and urban settlements by function, census, culture etc.; Ranking of settlements; Site and situation patterns; Settlement size; Peri urban areas; Rurbanisation; Settlement system models and theories: Rank Size rule and Primate City model; Functional hierarchy and settlement system: The Central Place theory, range of goods, area of influence

**UNIT III - MORPHOLOGY OF SETTLEMENTS 9**

Morphology of rural settlements: factors affecting settlement pattern, village form and house typologies; Morphology of urban settlements: major morphological factors – natural and manmade; Slum and squatter settlements; Central Business District (CBD): delineation ofCBD and its internal structure

**UNIT IV HOUSING 9**

Housing: definition, housing as a verb and noun; Housing in relation to planning; Concepts of housing stock, need, demand, shortage; An overview of housing situation; Urban and rural housing scenario in India; Housing as a component of social and economic development; Key challenges of housing provision including housing for the poor, emergence of slums, unauthorized colonies, gentrification, displacement.

**UNIT IV URBANISATION AND SOCIAL HOUSING 9**

Urbanization and housing – housing needs in context to changing family structure and life style, social segregation, and integration; Social impact assessment of urban development, social problems in urban community -informal settlements, and inclusion issues, resettlement, and rehabilitation

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** To describe the history of human settlements from the perspective of urban planning
**CO2** To understand the classification of settlements and its settlement hierarchy
**CO3** To recognize the Morphology of human settlements
**CO4** To define the concept of housing and it need with respect to a developing country like India.
**CO5** To express the need for social housing and its relation to the current urbanization trends.
**CO6** To understand the history of human settlements and the concept of social housing for the betterment of society.

**TEXT BOOKS**


1. Banga, I. (1991) The City in Indian History, Manohar Publishers and Distributors, New Delhi.
2. Introduction to Settlement Geography, Sumita Ghosh, Orient Black Swan, 1998.
3. Social Change and Problems of Development in India, G. R. Madan, Allied Publisher Pvt. Ltd., 1978.
4. Verma, G.D. (2001) Slumming India, Penguin, New Delhi
5. Kohli, V.K. (2007) Housing Finance Agencies in India, Deep and Deep, New Delhi


**REFERENCES**


1. History of Human Settlements, Sengupta, B.K., New Delhi, Institute of Town Planners, India 2002.
2. Bosselmann, P. (2008) Urban Transformation, Island Press, Washington, D.C.
3. Jain, A.K. (2019) Housing for All, Khanna Book Publishing Co., New Delhi
4. Hardoy, J.E. and Satterthwaite, D. (1989) Squatter Citizen: Life in the Urban Third World, Routledge, London.
5. Cedric, P. (1990) Housing and Urbanization: A Study of India, Sage, New Delhi.


**CO-PO Mapping – HUMAN SETTLEMENTS AND URBAN HOUSING**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 1 | | 3 | 3 | | 1 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 1 | 1 | | 3 | 3 | | 1 | 1 | 2 | 2 |
| CO3 | 3 | 2 | 1 | 1 | | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO4 | 3 | 3 | 2 | 1 | | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 1 | 1 | | 3 | 3 | | 1 | 1 | 3 | 3 |
| CO6 | 3 | 2 | 1 | 1 | | 3 | 3 | | 1 | 1 | 3 | 3 |
| Average | 3 | 2 | 1 | 1 | | 3 | 3 | | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

| PL23020 | ENVIRONMENTAL PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To introduce the changing perspectives in the relationship between man and environment
- To expose on the environmental approach in planning which is currently needed for the sustainable urban development.
- To familiarize on the Environmental Impact Assessment being carried out and its implications in the urban development.
- To educate on the concept and need for the Environmental Management Plan in today's changing urban scenario.
- To expose on the various successful case studies where Environmental Impact Assessment made a significant impact in the outcome of the urban development.

**UNIT I INTRODUCTION – MAN AND ENVIRONMENT 9**

Changing perspectives in man-environment relationship with focus on resource depletion and pollution; Eco-systems and their relevance to environment, resources and human settlements; Ecosystem services

**UNIT II ENVIRONMENTAL APPROACH IN PLANNING 9**

Environmental Concepts – Sustainability and Environmental Carrying Capacity – Environmental Strategies in Land use, Transportation, Infrastructure Planning and Management - Legislative Requirements, Public Awareness and Community Participation – Environmental Management Option.

**UNIT III ENVIRONMENTAL IMPACT ASSESSMENT 9**

The Need for EIA, Indian Policies Requiring EIA, The EIA Cycle and Procedures, Screening, Scoping, Baseline Data, Impact Prediction, Assessment of Alternatives, Delineation of Mitigation Measure and EIA Report, Public Hearing, Decision Making, Monitoring the Clearance Conditions, Components of EIA, Roles in the EIA Process. Government of India Ministry of Environment and Forest Notification (2000), List of projects requiring Environmental clearance, Application form, Composition of Expert Committee, Ecological sensitive places, international agreements

**UNIT IV ENVIRONMENTAL MANAGEMENT PLAN 9**

EMP preparation, Monitoring Environmental Management Plan, Identification of Significant or Unacceptable Impacts Requiring Mitigation, Mitigation Plans and Relief & Rehabilitation, Stipulating the Conditions, Monitoring Methods, Pre- Appraisal and Appraisal.

**UNIT- V CASE STUDIES 9**

Preparation of EIA for developmental projects- Factors to be considered in making assessment decisions. Case studies on the Indian and International context.

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** To recognize the changing, the perspectives in the relationship that exist between man and environment.

**CO2** To explain the need for environmental approach in planning for the sustainable urban development.

**CO3** To recognize the importance of Environmental Impact Assessment being out in our country.

**CO4** To explain on the need for Environmental Management Plan in today's scenario.

**CO5** To appreciate on the various successful case studies where Environmental Impact Assessment made a considerable contribution in its outcome.

**CO6** To expose the need and importance of Environmental Impact Assessment in a developing country like India.

**TEXT BOOKS**


1. Gilbert M. Masters, Wendell P. Ela, "Introduction to Environmental Engineering and Science, Pearson, 3rd Edition, 2007.
2. Benny Joseph, "Environmental Studies", Tata Mc Graw Hill Publishing Co. Ltd, New Delhi, 1st Edition, 2006.
3. Shrivastava A.K., Baxter Nicola, Grimm Jacob, "Environmental Impact Assessment", APH Publishers, 2003
4. Marriott B., "Environmental Impact Assessment: A Practical Guide",McGraw-Hill Publication,1997
5. Shrivastava A.K., Baxter Nicola, Grimm Jacob, "Environmental Impact Assessment", APH Publishers, 2003


**REFERENCES**


1. Glasson J., Therivel Riki, Chadwick Andrew, "Introduction to Environmental Impact Assessment", Oxford Brookes University 2012/ 4th edition
2. Anjaneyulu Y., Manickam Valli, "Environmental Impact Assessment Methodologies", CRC Press 2011
3. Keith Pezzoli, "Human Settlements and Planning for Ecological Sustainability: The case of Mexico", The MIT Press, 2000.
4. Ministry of Environment and Forests EIA Notification and Sectoral Guides, Government of India, New Delhi, 2010.
5. Erach Bharucha, "Textbook of Environmental Studies for Under Graduate Courses", Orient Black Swan, 2nd Edition, 2013.


**CO-PO Mapping – ENVIRONMENTAL PLANNING**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 1 | 1 | 3 | 1 | 3 | 3 | | 1 | 1 | 1 | 2 |
| CO2 | 3 | 1 | 2 | 3 | 2 | 3 | 3 | | 1 | 1 | 2 | 2 |
| CO3 | 3 | 1 | 1 | 3 | 2 | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO4 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO5 | 3 | 1 | 2 | 3 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO6 | 3 | 1 | 2 | 3 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 |
| Average | 3 | 1 | 2 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

| PL23021 | URBAN PLANNING AND DEVELOPMENT | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To expose on the concept of urban planning and development and its complexities in Indian context.
- To create awareness about the concept of land use and its implication in the urban development.
- To introduce the principles and characteristics of real estate development.
- To familiarize on the regulatory measures being carried out by the development authority for the orderly development of an urban area.
- To understand the concept of sustainability and its relationship with the current globalization trends.

**UNIT I INTRODUCTION 9**

Introduction to urban, city, metropolis and related concepts, growth and scale. Complexities - social, economic, physical and administrative. Issues and problems in urban planning, its management and development.

**UNIT II LAND USE 9**

Land Use elements and components, implications and inter-relationship of various land uses on urban development, implications of land use planning on spatial quality of neighborhood / city – defining how people live work and play, understanding density implications, zoning and influence of zoning on shaping the city, land use decision making process, development plans and implementation strategies

**UNIT III LAND PRICING 9**

Definition, principles of real estate value concepts, The status of land and property ownership in the Constitution of India, types of land, ownership and various land tenure options. Land valuation techniques, land pricing, subsidies, auctions; type of development, land price index, land Information System (LIS), land records

**UNIT IV LAND DEVELOPMENT REGULATIONS 9**

Introducing Act relating to Town Planning- Need for regulatory measures – Tools for regulating the development - Master plan and development regulations. Norms governing residential and industrial layouts - Linkage, Hierarchy of roads, Plot size, Frontage, and Open Space Reservations – Reservation of land for EWS - Allocation of land for public purposes - Classification of buildings - Building Height, Number of floors, Floor space index – Parking requirements - Provision of utilities and services.

**UNIT V SUSTAINABILITY AND GLOBALIZATION 9**

Sustainable urban development; evolution of the concept, components and processes; weak and strong sustainability; sustainable development goals; millennium development goals; Globalization and components of sustainable urban and regional development; globalization, modernism and postmodernism debate; pragmatism in planning; networked cities.

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** To recognize the need for urban planning and development and its complexities in Indian context.

**CO2** To describe the concept of land use planning and its implications in the urban development

**CO3** To define the principles and characteristics of real estate development and its impact in land value.

**CO4** To recognize the need for regulatory measures and its impact in the orderly development of an urban area.

**CO5** To define the concept and impact of sustainability and globalization in urban development.

**CO6** To understand the essence of urban planning and development happening in our country.

**TEXT BOOKS**


1. Patel, S.B. (1997) Urban Planning by Objectives, Economic and Political Weekly, Vol. 32, No. 16, pp. 822-826.
2. Krueckeberg, D.A. and Silvers, A.L. (1974) Urban Planning Analysis: Methods and Models, Wiley, London.
3. Mathur, O.P. (2005) 'Impact of Globalization on Cities and City-Related Policies in India', in H. Richardson, W. Harry, and C. Chang-Hee (eds.) Globalization and Urban Development (pp. 43–58), Springer, Berlin
4. Evan, A. (2004) Economics and Land Use Planning, Wiley-Blackwell, Hoboken, New Jersey.
5. Church, R.L. and Murray, A.T. (2009) Business Site Selection, Location Analysis, and GIS, Wiley, Hoboken, New Jersey.


**REFERENCES**


1. Evenson, N. (1989) Indian Metropolis: A View toward the West, Yale University Press, Yale.
2. Baer, W.C. (2007) General Plan Evaluation Criteria: An Approach to Making Better Plans, Journal of the American Planning Association, Vol. 63, Issue 3, pp. 329-344.
3. Sethuraman, S.V. (1976) Jakarta: Urban Development and Employment, ILO, Geneva.
4. Ministry of Urban Development (2015) The Urban and Regional Development Plan Formulation and Implementation (URDPFI) Guidelines, Government of India, New Delhi.
5. David W.Owens, "Introduction to Zoning and Development Regulation", UNCS School of Government, 2014.


**CO-PO Mapping – URBAN PLANNING AND DEVELOPMENT**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 1 | 1 | 2 | 1 | 3 | 3 | | 1 | 1 | 1 | 2 |
| CO2 | 3 | 1 | 2 | 3 | 2 | 3 | 3 | | 1 | 1 | 2 | 2 |
| CO3 | 2 | 1 | 1 | 3 | 2 | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO4 | 3 | 1 | 1 | 3 | 1 | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |
| CO6 | 3 | 1 | 1 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |
| Average | 3 | 1 | 1 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

| PL23022 | INFRASTRUCTURE PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To familiarize on the concept of physical and social Infrastructure Planning and its levels.
- To expose on various technical and non-technical features of water supply system being adopted in urban areas.
- To familiarize on the various facets of storm water system and its management being adopted in urban areas.
- To introduce the characteristics of sanitation and sewer system including its disposal methods being adopted in urban areas.
- To educate on the need for solid waste management and the methods in urban areas.

**UNIT I INTRODUCTION TO PHYSICAL AND SOCIAL INFRASTRUCTURE 8**

Infrastructure and its concepts, Role of physical planner in planning of utilities and services, objectives of utilities and services planning and its implications for public health and environmental protection. Level and types of social infrastructure- education, health, safety, security, and other public services.

**UNIT II WATER SUPPLY SYSTEM 9**

Water supply source, treatment system and types, Distribution system and types, Pressure requirements, water requirement for domestic and non-domestic purposes of settlements, firefighting, seasonal variation in demand and factors affecting water demand, standard of water demand per capita, variation of water demand and consumption, requirement of distribution and storage, pipe network analysis.

**UNIT III STORM WATER SYSTEMS 9**

Estimating storm run-off, Dry Weather Flow, and Storm weather, run-off coefficient, rainfall intensity, time of concentration; Gravity flow, hydraulic gradient line, full flow and partial flow; layout and design of storm water system, General considerations, inlets, self-cleansing velocity non-scoring velocity, physical layout-design principles, data requirement; Rain Water Harvesting.

**UNIT IV SANITATION AND SEWER SYSTEMS 9**

Methods of sanitations; On-site detention, Off-site and on-site technology up gradation; Low-cost appropriate technologies; standards for Indian cities; Sanitary sewer system network and layout planning, Sewage disposal methods, location criteria and capacity; sewerage Treatment system and technologies, DEWATS, Case study of innovative approaches; financing and cost recovery for sewer system.

**UNIT V SOLID WASTE MANAGEMENT 9**

Solid waste and types Municipal, solid waste Management Rules, Stages of solid waste management and current practices, Methods of solid waste management, collection, transportation and disposal; Land filling and composting, pre and post treatment, location and cost aspects of different methods of solid waste disposal systems; New methods in solid waste treatment, Community participation and involvement of NGOs in efficient solid waste management, Case study of innovative approaches.

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** To recognize the various level of physical and social infrastructure development happening around the world.

**CO2** To identify the various features of water supply system being adopted in an urban area.

**CO3** To identify the characteristics of storm water system and its management in an urban area.

**CO4** To identify the features of sanitation and sewer system being adopted in an urban area including its management aspects.

**CO5** To identify the solid waste management methods and its importance in an urban area.

**CO6** To understand the various aspects of physical and social infrastructure development including its levels in an urban area.

**TEXT BOOKS**


1. Larry W. Mays, Urban Water Supply Handbook, Mc Graw Hill, 2014.
2. W.R. Hudson, R.C.G. Hass, W. Uddin, Infrastructure Management, Mcgraw Hill, 1997.
3. J. Parkin and D. Sharma, Infrastructure Planning, Thomas Jelford Publishing, 1999 London.
4. A. Goodman and M. Hartak, Infrastructure Planning Handbook, ASCE Press. 2000.
5. Bawa, V.K, Indian Metropolis: Urbanization, Planning and Management, Inter-India Publications, New Delhi, 1987.


**REFERENCES**


1. Infrastructure Planning and Management: An Integrated Approach by Virendra Proag
2. Infrastructure Planning by james parking, D Sharma
3. "Public Infrastructure Asset Management, Second Edition (P/L Custom Scoring Survey)" by Waheed Uddin and W Ronald Hudson.
4. "Risk Analysis, Dam Safety, Dam Security and Critical Infrastructure Management" by Ignacio Escuder-Bueno and Enrique Matheu.
5. Infrastructure Planning and Finance: A Smart and Sustainable Guide" by Vicki Elmer and Adam Leigland.


## CO-PO Mapping – INFRASTRUCTURE PLANNING

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 1 | 2 | 1 | 3 | 3 | | 1 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | | 1 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO4 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | | 1 | 1 | 3 | 3 |
| CO5 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |
| CO6 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |
| Average | 3 | 2 | 1 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

| PL23023 | TRANSPORTATION PLANNING | L | T | P/S | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**OBJECTIVES**

- To expose on the basics of transportation planning, its socio-economic significance and current trends of development.
- To familiarize on the need for public transportation system and its various features.
- To introduce the concept of Intelligent Transportation Systems, its evolution and impact.
- To educate on the need and importance of sustainable urban transportation system in today's context.
- To introduce the various modes of financing available for transportation projects across the globe.

**UNIT I BASICS OF TRANSPORTATION PLANNING 9**

Definition, scope and components of transportation planning; Importance of transportation in economic, political and social development; Characteristics and role of various forms of transport - roadways, railways, waterways and airways; Current trends in road development; Socio economic significance of transport planning

**UNIT II PUBLIC TRANSPORT SYSTEM 9**

Urban passenger transport system characteristics, public transport modes, genesis of public transport system, mass transit system, Para transit system, technological features, Intermodal connection, Demand for public transport, public transport demand and supply indicators, determinants of public transport supply and demand. Public transport-based city forms and structure, Transit Oriented Development (TOD); Impact of city density, size, activity concentration.

**UNIT III INTELLIGENT TRANSPORTATION SYSTEMS 9**

Introduction to Intelligent Transportation Systems (ITS) – Definition of ITS and Identificationof ITS Objectives, Historical Background, Benefits of ITS - ITS Data collection techniques – Detectors, Automatic Vehicle Location (AVL), Automatic Vehicle Identification (AVI), Geographic Information Systems (GIS), video data collection.

**UNIT IV SUSTAINABLE URBAN TRANSPORTATION 9**

Preferential treatment for high occupancy modes, promoting non-motorized modes of transport - Integrated land use and transport planning – Demand management techniques - Integrated public transport planning; case studies- Smart Cities.

**UNIT V MODELS OF TRANSPORT INFRASTRUCTURE FINANCING 9**

Models of Infrastructure Financing, PPP model for infrastructure financing, BOT, BOOT, BOO, LDOT, BDOT, Problems and Issues emerging in PPP models, LDOT models, Fully Privatized model, partially privatized models.

**TOTAL: 45 PERIODS**

**OUTCOMES**

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

**CO1** To describe the basics of transportation planning system and its socio-economic dimension in today's scenario.

**CO2** To recognize the need for public transportation system and its characteristics.

**CO3** To appreciate the concept of Intelligent Transportation System and its impact in urban areas.

**CO4** To appreciate the importance of sustainable urban transportation system and its impacts.

**CO5** To recognize the various financing modes available for the development of transport infrastructure facilities.

**CO6** To understand the importance and features of urban transportation planning system.

**TEXT BOOKS**


1. L. R. Kadiyali, Traffic Engineering and Transport Planning, Khanna Publications, 2010.
2. A K Jain, Urban Transport: Planning and Management, APH Publications, 2013.
3. Black, William R. Sustainable transportation: problems and solutions, The Guilford Press, 2010
4. Vukan, R. Vuchic, Urban Transit Systems and Technology, John –Wiley & Sons, New Jersey, 2007.
5. Hutchinson, B.G., Principles of Urban Transport Systems Planning, Scripta, McGraw-Hill, New York, 1974.


**REFERENCES**


1. Pradip Kumar Sarkar, Vinay Maitri , G. J. Joshi, Transportation Planning: Principles, Practices And Policies, PHI Learning; 3rd edition, 2021.
2. John W. Dickey Metropolitan Transportation Planning, Taylor and Francis, 1983.
3. B. G. Hutchinson, Principles of Urban Transport Systems Planning, McGraw Hill Publications, 1974
4. Hutton, Barry. 2013. Planning Sustainable Transport. Routledge, Taylor & Francis Books India Pvt Ltd, New Delhi.
5. Black, Alan, Urban Mass Transportation Planning, McGraw- Hill, Inc., New York,1995.


**CO-PO Mapping – TRANSPORTATION PLANNING**

| Course Outcomes | Programme Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | | 1 | 1 | 1 | 2 |
| CO2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | | 1 | 1 | 2 | 2 |
| CO3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | | 1 | 1 | 3 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 |
| CO6 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 |
| Average | 3 | 3 | 2 | 3 | 3 | 3 | 3 | | 1 | 1 | 3 | 3 |

3-High 2-Moderate 1-Low

**UC23E01 ENGINEERING ENTREPRENEURSHIP DEVELOPMENT L T P C**
**2 0 2 3**

**COURSE OBJECTIVES:**

1. Learn basic concepts in entrepreneurship, develop mind-set and skills necessary to explore entrepreneurship
2. Apply process of problem - opportunity identification and validation through human centred approach to design thinking in building solutions as part of engineering projects
3. Analyse market types, conduct market estimation, identify customers, create customer persona, develop the skills to create a compelling value proposition and build a Minimum Viable Product
4. Explore business models, create business plan, conduct financial analysis and feasibility analysis to assess the financial viability of a venture ideas & solutions built with domain expertise
5. Prepare and present an investible pitch deck of their practice venture to attract stakeholders

**MODULE – I: ENTREPRENEURIAL MINDSET 4L,8P**

Introduction to Entrepreneurship: Definition – Types of Entrepreneurs – Emerging Economies – Developing and Understanding an Entrepreneurial Mindset – Importance of Technology Entrepreneurship – Benefits to the Society.

Case Analysis: Study cases of successful & failed engineering entrepreneurs - Foster Creative Thinking: Engage in a series of Problem-Identification and Problem-Solving tasks

**MODULE – II: OPPORTUNITIES 4L,8P**

Problems and Opportunities – Ideas and Opportunities – Identifying problems in society – Creation of opportunities – Exploring Market Types – Estimating the Market Size, - Knowing the Customer and Consumer - Customer Segmentation - Identifying niche markets – Customer discovery and validation; Market research techniques, tools for validation of ideas and opportunities

Activity Session: Identify emerging sectors / potential opportunities in existing markets - Customer Interviews: Conduct preliminary interviews with potential customers for Opportunity Validation - Analyse feedback to refine the opportunity.

**MODULE – III: PROTOTYPING & ITERATION 4L,8P**

Prototyping – Importance in entrepreneurial process – Types of Prototypes - Different methods – Tools & Techniques.

Hands-on sessions on prototyping tools (3D printing, electronics, software), Develop a prototype based on identified opportunities; Receive feedback and iterate on the prototypes.

**MODULE – IV: BUSINESS MODELS & PITCHING 4L,8P**

Business Model and Types - Lean Approach - 9 block Lean Canvas Model - Riskiest Assumptions in Business Model Design – Using Business Model Canvas as a Tool – Pitching Techniques: Importance of pitching - Types of pitches - crafting a compelling pitch – pitch presentation skills - using storytelling to gain investor/customer attention.

Activity Session: Develop a business model canvas for the prototype; present and receive feedback from peers and mentors - Prepare and practice pitching the business ideas- Participate in a Pitching Competition and present to a panel of judges - receive & reflect feedback

**MODULE – V: ENTREPRENEURIAL ECOSYSTEM** **4L,8P**

Understanding the Entrepreneurial Ecosystem – Components: Angels, Venture Capitalists, Maker Spaces, Incubators, Accelerators, Investors. Financing models – equity, debt, crowdfunding, etc, Support from the government and corporates. Navigating Ecosystem Support: Searching & Identifying the Right Ecosystem Partner – Leveraging the Ecosystem - Building the right stakeholder network

Activity Session: Arrangement of Guest Speaker Sessions by successful entrepreneurs and entrepreneurial ecosystem leaders (incubation managers; angels; etc), Visit one or two entrepreneurial ecosystem players (Travel and visit a research park or incubator or makerspace or interact with startup founders).

**TOTAL: 60 PERIODS**

**COURSE OUTCOMES:**

Upon the successful completion of the course, students will be able to:

CO1: Develop an Entrepreneurial Mind-set and Understand the Entrepreneurial Ecosystem Components and Funding types

CO2: Comprehend the process of opportunity identification through design thinking, identify market potential and customers

CO3: Generate and develop creative ideas through ideation techniques

CO4: Create prototypes to materialize design concepts and conduct testing to gather feedback and refine prototypes to build a validated MVP

CO5: Analyse and refine business models to ensure sustainability and profitability Prepare and deliver an investible pitch deck of their practice venture to attract stakeholders

**REFERENCES:**


1. Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd, Sabyasachi Sinha (2020). Entrepreneurship, McGrawHill, 11th Edition
2. Bill Aulet (2024). Disciplined Entrepreneurship: 24 Steps to a Successful Startup. John Wiley & Sons.
3. Bill Aulet (2017). Disciplined Entrepreneurship Workbook. John Wiley & Sons.
4. Ries, E. (2011). The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Crown Business
5. Blank, S. G., & Dorf, B. (2012). The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company. K&S Ranch
6. Osterwalder, A., & Pigneur, Y. (2010). Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. John Wiley & Sons
7. Marc Gruber & Sharon Tal (2019). Where to Play: 3 Steps for Discovering Your Most Valuable Market Opportunities. Pearson.