

**BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK**  
**DEPARTMENT OF CIVIL ENGINEERING**



**LESSON PLAN**

SUBJECT: LAND SURVEY– II (TH-1)

FACULTY: MANISHA PRIYADARSINI TRIPATHY

ACCADEMIC SESSION: 2023-24(SUMMER)

SEMESTER: 6<sup>TH</sup>, SEC: B

Sd/-  
H O D (Civil Engg.)

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|----------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Discipline: Civil Engineering</b>   | <b>Semester: 6<sup>th</sup> / B</b>                                                                  |                               | <b>Name of the teaching faculty: MANISHA PRIYADARSINI TRIPATHY</b>                                                                                                    |
| <b>SUBJECT: LAND SURVEY– II (TH-1)</b> | <b>No. of Days/ per week class allotted: 05 period per week. (Mon-1, Tue-1, Thu-2, Fri-1 period)</b> |                               | <b>Semester From Date: 16-01-2024<br/>To Date: 26-04-2024<br/>No. of weeks: 16 weeks</b>                                                                              |
| <b>Week</b>                            | <b>Class Day</b>                                                                                     | <b>No of period available</b> | <b>Theory Topics</b>                                                                                                                                                  |
| 1ST                                    | 16/01/24                                                                                             | 1                             | <b>1 TACHEOMETRY: 1.1 Principles.</b>                                                                                                                                 |
|                                        | 18/01/24                                                                                             | 1                             | 1.1. stadia constants determination                                                                                                                                   |
|                                        | 19/01/24                                                                                             | 1                             | 1.2. Stadia tacheometry with staff held vertical and with line of collimation horizontal.                                                                             |
| 2ND                                    | 22/01/24                                                                                             | 1                             | 1.2. Stadia tacheometry with staff held vertical and with line of collimation inclined, numerical problems.                                                           |
|                                        | 25/01/24                                                                                             | 1                             | 1.3. Elevations and distances of staff stations – numerical problems                                                                                                  |
| 3RD                                    | 29/01/24                                                                                             | 1                             | 2.1. compound, reverse and transition curve, Purpose & use of different types of curves infield                                                                       |
|                                        | 30/01/24                                                                                             | 1                             | 2.2. Elements of circular curves                                                                                                                                      |
|                                        | 01/02/24                                                                                             | 2                             | Numerical problems                                                                                                                                                    |
|                                        | 02/02/24                                                                                             | 1                             | 2.3. Preparation of curve table for setting out<br>2.4. Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord |

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| 4TH | 05/02/24 | 1 | 2.4. Setting out of circular curve by (ii) Successive bisection of arc,<br>(iii) Offsets from tangent           |
|     | 06/02/24 | 1 | 2.4. Setting out of circular curve by (iv) offsets from chord produced, (v) Rankine's method of tangent angles. |
|     | 08/02/24 | 2 | 2.5. Obstacles in curve ranging – point of intersection inaccessible.                                           |
|     | 09/02/24 | 1 | 2.5. Obstacles in curve ranging – point of intersection inaccessible.                                           |
| 5TH | 12/02/24 | 1 | 3.1. Fractional or Ratio Scale, Linear Scale, Graphical Scale<br>3.2. What is Map                               |
|     | 13/02/24 | 1 | 3.3. Map Scale and Map Projections.<br>3.3 How Maps Convey Location and Extent                                  |
|     | 15/02/24 | 2 | 3.4. How Maps Convey characteristics of features<br>3.5. How Maps Convey Spatial Relationship                   |
|     | 16/02/24 | 1 | 3.6. Classification of Maps<br>3.6.1. Physical Map 3.6.2 Topographic Map<br>3.6.3. Road Map                     |
| 6TH | 19/02/24 | 1 | 3.6.4. Political Map<br>3.6.5. Economic & Resources Map                                                         |
|     | 20/02/24 | 1 | 3.6.6. Thematic Map<br>3.6.7. Climate Map                                                                       |

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|     | 22/02/24 | 2 | <b>4 SURVEY OF INDIA MAP SERIES:</b><br>4.1. Open Series map<br>4.2. Defense Series Map                                       |
|     | 23/02/24 | 1 | Class Test 1                                                                                                                  |
| 7TH | 26/02/24 | 1 | 4.3. Map Nomenclature                                                                                                         |
|     | 27/02/24 | 1 | 4.3.1 Quadrangle Name                                                                                                         |
|     | 29/02/24 | 2 | 4.3.2. Latitude, Longitude & UTM                                                                                              |
|     | 01/03/24 | 1 | 4.3.3. Contour Lines<br>4.3.4. Magnetic Declination                                                                           |
| 8TH | 04/03/24 | 1 | 4.3.5. Public Land Survey System<br>4.3.6. Field Notes                                                                        |
|     | 07/03/24 | 2 | <b>5.1. Aerial Photography:</b><br>5.1.1. Film, Focal Length, Scale<br>5.1.2. Types of Aerial Photographs (Oblique, Straight) |
| 9TH | 11/03/24 | 1 | 5.2. Photogrammetry:                                                                                                          |
|     | 12/03/24 | 1 | 5.2.1. Classification of Photogrammetry                                                                                       |
|     | 14/03/24 | 1 | 5.2.2. Aerial Photogrammetry                                                                                                  |

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|      | 15/03/24 | 1 | 5.2.3. Terrestrial Photogrammetry<br><br>5.3. <b>Photography process</b><br><br>5.3.1. Acquisition of Imagery using aerial and satellite platform                                                                                                                                                                                                                                                                                                                                                                                  |
| 10TH | 18/03/24 | 1 | 5.3.2. Control Survey<br><br>5.3.3. Geometric Distortion in Imagery, Application of Imagery and its support data orientation and triangulation stereoscopic measurement                                                                                                                                                                                                                                                                                                                                                            |
|      | 19/03/24 | 1 | Class test 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|      | 21/03/24 | 2 | 5.4.DTM/DEM Generation<br><br>5.5. Ortho Image Generation                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|      | 22/03/24 | 1 | 6.1. Principles, features and use of (i) Micro-optic theodolite, digital theodolite                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 11TH | 28/03/24 | 2 | 6.2.Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation. |
| 12TH | 02/04/24 | 1 | Internal Assesment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|      | 04/04/24 | 2 | 6.2 Continue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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|      | 05/04/24 | 1 | 7.1.GPS: - Global Positioning<br>7.1.1. Working Principle of GPS, GPS Signals,<br>7.1.2. Errors of GPS, Positioning Methods                                                                            |
| 13TH | 08/04/24 | 1 | 7.2. DGPS: - Differential Global Positioning System<br>7.2.1. Base Station Setup<br>7.2.2. Rover GPS Setup 7.2.3. Download, Post-Process and Export GPS data                                           |
|      | 09/04/24 | 1 | 7.2.4. Sequence to download GPS data from flashcards<br>7.2.5. Sequence to Post-Process GPS data<br>7.2.6. Sequence to export post process GPS data<br>7.2.7. Sequence to export GPS Time tags to file |
|      | 12/04/24 | 1 | <b>7.3.ETS: - Electronic Total Station</b><br>7.3. 1..1DistanceMeasurement                                                                                                                             |
| 14TH | 15/04/24 | 1 | 7.3.2. Angle Measurement<br>7.3.3. Leveling<br>7.3.4. Determining position                                                                                                                             |
|      | 16/04/24 | 1 | 7.3.5. Reference networks<br>7.3.6. Errors and Accuracy                                                                                                                                                |

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|------------------|----------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | 18/04/24 | 2 | 8.1. Components of GIS, Integration of Spatial and Attribute Information<br>8.2 Three Views of Information System<br>8.2.1 Database or Table View, Map View and Model View |
|                  | 19/04/24 | 1 | 8.3. Spatial Data Model<br>8.4. Attribute Data Management and Metadata Concept                                                                                             |
| 15TH             | 22/04/24 | 1 | 8.5. Prepare data and adding to Arc Map.<br>8.6. Organizing data as layers.                                                                                                |
|                  | 23/04/24 | 1 | 8.7. Editing the layers.<br>8.8. Switching to Layout View.<br>8.9. Change page orientation.                                                                                |
|                  | 25/04/24 | 2 | 8.10. Removing Borders.<br>8.11. Adding and editing map information Previous year question discussion<br>8.12. Finalize the map                                            |
|                  | 26/04/24 | 1 | Previous year question discussion                                                                                                                                          |
| 16 <sup>th</sup> | 29/04/24 | 1 | Revision                                                                                                                                                                   |
|                  | 30/04/24 | 2 | Revision                                                                                                                                                                   |