| Discipline:<br>**CIVIL** | Semester: 6th | Name of the Teaching Faculty:<br>**JYOTI PRAKASH BEHERA** |
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| Subject:<br>**LAND SURVEY – 2** | No. of Days/per week class allotted: 05 | Semester From Date:02-01-2024 To Date: 23-04-2024<br>No. of Weeks: **15** |
| **Week** | **Class Day** | **Theory Topics** |
| 1st | 01 | TACHEOMETRY:<br>(Only concepts; applications without derivation) |
| | 02 | Principles |
| | 03 | stadia constants determination |
| | 04 | Stadia tacheometry with staff held vertical |
| | 05 | line of collimation horizontal |
| 2nd | 01 | inclined |
| | 02 | numerical problems |
| | 03 | Elevations and distances of staff stations |
| | 04 | numerical problems |
| | 05 | CURVES:<br>compound, reverse and transition curve, Purpose & use of different types of curves in field |
| 3rd | 01 | Elements of circular curves |
| | 02 | numerical problems |
| | 03 | Preparation of curve table for setting out |
| | 04 | Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc |
| | 05 | (iii) offsets from tangents, (iv) offsets from chord produced |
| 4th | 01 | (v) Rankine's method of tangent angles (No derivation) |
| | 02 | Obstacles in curve ranging – point of intersection inaccessible |
| | 03 | BASICS ON SCALE AND BASICS OF MAP:<br>Fractional or Ratio Scale, Linear Scale, Graphical Scale |
| | 04 | What is Map, Map Scale |
| | 05 | Map Projections |
| 5th | 01 | How Maps Convey Location and Extent |
| | 02 | How Maps Convey characteristics of features |
| | 03 | How Maps Convey Spatial Relationship |
| | 04 | Classification of Maps<br>Physical Map |
| | 05 | Topographic Map |
| 6th | 01 | Road Map |
| | 02 | Political Map |
| | 03 | Economic & Resources Map |
| | 04 | Thematic Map |
| | 05 | Climate Map |
| 7th | 01 | SURVEY OF INDIA MAP SERIES |
| | 02 | Open Series map |
| | 03 | Defense Series Map |
| | 04 | **Map Nomenclature** |
| | 05 | **Quadrangle Name** |
| 8th | 01 | Latitude, Longitude, UTM's |

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| | 02 | Contour Lines |
| | 03 | Magnetic Declination |
| | 04 | Public Land Survey System |
| | 05 | Field Notes |
| 9th | 01 | BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:<br>Aerial Photography:<br>Film, Focal Length, Scale |
| | 02 | Types of Aerial Photographs (Oblique, Straight) |
| | 03 | Photogrammetry:<br>Classification of Photogrammetry |
| | 04 | Aerial Photogrammetry |
| | 05 | Terrestrial Photogrammetry |
| 10th | 01 | Photogrammetry Process:<br>Acquisition of Imagery using aerial and satellite platform |
| | 02 | Control Survey |
| | 03 | Geometric Distortion in Imagery<br>Application of Imagery and its support data<br>Orientation and Triangulation<br>Stereoscopic Measurement<br>X-parallax<br>Y-parallax |
| | 04 | DTM/DEM Generation |
| | 05 | Ortho Image Generation |
| 11th | 01 | MODERN SURVEYING METHODS:<br>Principles, features and use of |
| | 02 | Micro-optic theodolite |
| | 03 | digital theodolite |
| | 04 | Working principles of a Total Station |
| | 05 | Set up and use of total station to measure angles, distances of points under survey from total station |
| 12th | 01 | the co-ordinates (X, Y& Z or northing, easting, and elevation) |
| | 02 | surveyed points relative to Total Station position using trigonometry and triangulation |
| | 03 | BASICS ON GPS & DGPS AND ETS:<br>GPS: - Global Positioning |
| | 04 | Working Principle of GPS, GPS Signals |
| | 05 | Errors of GPS, Positioning Methods |
| 13th | 01 | DGPS: - Differential Global Positioning System<br>Base Station Setup |
| | 02 | Rover GPS Set up<br>Download, Post-Process and Export GPS data |
| | 03 | Sequence to Post-Process GPS data<br>Sequence to export post process GPS data<br>Sequence to export GPS Time tags to file |
| | 04 | ETS: - Electronic Total Station<br>Distance Measurement<br>Angle Measurement |
| | 05 | Leveling<br>Determining position<br>Reference networks<br>Errors and Accuracy |
| 14th | 01 | BASICS OF GIS AND MAP PREPARATION USING GIS |

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| | | Components of GIS, Integration of Spatial and Attribute Information |
| | 02 | Three Views of Information System<br>Database or Table View, Map View and Model View |
| | 03 | Spatial Data Model<br>Attribute Data Management and Metadata Concept |
| | 04 | Prepare data and adding to Arc Map. |
| | 05 | Organizing data as layers |
| 15th | 01 | Editing the layers |
| | 02 | Switching to Layout View |
| | 03 | Change page orientation |
| | 04 | Removing Borders |
| | 05 | Adding and editing map information.<br>Finalize the map |