**LESSON PLAN**

Discipline: Civil Engg. , UGMIT Rayagada
Semester: 4TH
Subject: SURVEY-1 (TH-3)
class allotted: 05 P/week
Session: 2024 (S)

| Week | Class Day | Theory Topics | Remarks |
|---|---|---|---|
| 1 | 1-5 | **1.0 Introduction to Surveying, Linear Measurements:**<br>1.1 Surveying: Definition, Aims and objectives<br>1.2 Principles of survey-Plane surveying- Geodetic Surveying-Instrumental surveying.<br>1.3 Precision and accuracy of measurements<br>1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies. | |
| 2 | 6-10 | 1.5 Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.<br>**2.0 Chaining and Chain Surveying :**<br>2.1 Equipment and accessories for chaining<br>2.2 Ranging – Purpose, signaling, direct and indirect ranging.<br>2.3 Methods of chaining | |
| 3 | 11-15 | 2.4 Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles.<br>2.5 Purpose of chain surveying, Its Principles, concept of field book<br>2.7 Offsets – Necessity, Instruments for setting offset.<br>2.8 Errors in chain surveying –causes & remedies, Precautions.<br>**3.0 Angular Measurement and Compass Surveying :**<br>3.1 Measurement of angles with chain, tape & compass | |
| 4 | 16-20 | 3.2 Compass – Types, & adjustment of compass<br>3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings.<br>3.4 Use of compasses<br>3.5 Effects of earth's magnetism, magnetic dip. | |
| 5 | 21-25 | 3.6 Errors in angle measurement with compass – sources & remedies.<br>3.7 Principles of traversing – open & closed traverse, Methods of traversing.<br>3.8 Local attraction – causes, detection, errors, corrections.<br>3.9 Errors in compass surveying – sources & remedies. | |
| 6 | 26-30 | 3.9 Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table.<br>**4.0 Map Reading Cadastral Maps & Nomenclature:**<br>4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols<br>4.2 Cadastral Map Preparation Methodology<br>4.3 Unique identification number of parcel | |

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| 7 | 31-35 | 4.4 Positions of existing Control Points and its types<br>4.5 Adjacent Boundaries and Features, Topology Creation and verification.<br>**5.0 Plane Table Surveying :**<br>5.1 Objectives, principles and use of plane table surveying.<br>5.2 Instruments & accessories used in plane table surveying. | |
| 8 | 36-40 | 5.3 Methods of plane table surveying:<br>5.3.1 Radiation<br>5.3.2 Intersection<br>5.3.3 Traversing<br>5.3.4 Resection.<br>5.4 Statements of two point and three point problem. | |
| 9 | 41-45 | **6.0 Theodolite Surveying And Traversing:**<br>6.1 Purpose and definition of theodolite surveying<br>6.2 Transit theodolite<br>6.3 Concept of transiting | |
| 10 | 46-50 | 6.4 Measurement of magnetic bearings<br>6.5 Methods of theodolite traversing with | |
| 11 | 51-56 | 6.6 Traverse computation -Numerical problems.<br>6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems.<br>6.8 Balancing of traverse. | |
| 12 | 45-48 | **7.0 Leveling and Contouring :**<br>7.1 Definition and Purpose and types of leveling.<br>7.2 Instruments used for leveling.<br>7.3 Leveling staff<br>7.4 Height of collimation method and Rise & Fall method, comparison. | |
| 13 | 49-52 | 7.5 Effects of curvature and refraction, numerical problems on application of correction.<br>7.6 Reciprocal leveling<br>7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.<br>7.8 Definitions, concepts and characteristics of contours. | |
| 14 | 53-56 | 7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps.<br>7.10 Use of contour maps on civil engineering projects<br>7.11 Map Interpretation: Interpret Human and Economic Activities. | |
| 15 | 57-60 | **8.0 Computation of Area & Volume:**<br>8.1 Determination of areas, computation of areas from plans.<br>8.2 Calculation of area<br>8.3 Calculation of volumes | |

Chinmaya Maharana
D-13/1/24
Signature of Faculty:

13/1/2024
Signature of HOD: