# KIIT POLYTECHNIC, BHUBANESWAR

## LESSON PLAN

## Session (2022-2023)

| **Discipline** Civil Engg. | **Semester**: 4th sem. Summer/2023 | **Name of the Teaching Faculty: Suchismita Padhi(Lecturer)**<br>**Email ID:** Suchismita.padhifce@kp.kiit.ac.in |
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| Subject: Land survey- l (Th.3) | Nos of days per week class allotted: 05 | Start Date :13/02/23<br>End Date:23/05/23 |
| **Week** | **Class day** | **Theory topics** |
| 1st | 1ST | Surveying: Definition<br>Aims and objectives |
| | 2ND | Principles of survey-Plane surveying-<br>GeodeticSurveying- Instrumental surveying. |
| | 3RD | Precision and accuracy of measurements, instrumentsused for measurement of distance, |
| | 4th | Types of tapes and chains. |
| | 5th | Errors and mistakes in linear measurement –classification, Sources of errors and remedies. |
| 2nd | 1ST | Corrections to measured lengths due to-incorrect length,temperature variation, pull, sag, |
| | 2ND | numerical problem applying corrections |
| | 3RD | **CHAINING AND CHAIN SURVEYING :**<br>Equipment and accessories for chaining |
| | 4TH | Ranging – Purpose, signaling, direct and indirect ranging,Line ranger – features and use, error due to incorrect ranging. |
| | 5TH | Methods of chaining –Chaining on flat ground, Chainingon sloping ground – stepping method, Clinometer-features and use, slope correction |
| 3rd | 1ST | Setting perpendicular with chain & tape, |

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| | 2ND | Chaining across different types ofobstacles – |
| | 3rd | Numerical problems on chaining across obstacles |
| | 4th | Purpose of chain surveying, Its Principles, concept of fieldbook |
| | 5th | Selection of survey stations, base line, tie lines, Check Lines |
| 4th | 1ST | Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square. |
| | 2ND | Errors in chain surveying – compensating andaccumulative errors causes & |

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| | | remedies, Precautions to be taken during chainsurveying. |
| | 3RD | **ANGULAR MEASUREMENT AND COMPASSURVEYING :** Measurement of angles with chain, |
| | 4TH | Measurement of angles tape & compass |
| | 5TH | Compass – Types, features, parts, merits & demerits,testing & adjustment of compass |
| 5th | 1ST | Designation of angles- concept of meridians – Magnetic,True, arbitrary; Concept of bearings |
| | 2ND | Whole circle bearing, Quadrantal bearing, Reducedbearing, suitability of application |
| | 3RD | Quiz Test |
| | 4TH | Use of compasses – setting in field-centering, leveling,taking readings, concepts of Fore bearing, Back Bearing |
| | 5TH | Numerical problems on computation of interior & exterior angles from bearings. |
| 6th | 1ST | Effects of earth's magnetism – dip of needle |
| | 2ND | magnetic declination, variation in declination, numerical problems on application ofcorrection for declination. |
| | 3RD | Errors in angle measurement with compass – sources &remedies. |
| | 4TH | Principles of traversing – open & closed traverse |

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| | 5TH | Local attraction – causes, detection, errors, corrections |
| 7th | 1ST | Numerical problems of application of correction due to local attraction. |
| | 2ND | Errors in compass surveying – sources & remedies |
| | 3RD | Plotting of traverse – check of closing error in closed &open traverse, |
| | 4th | Bowditch's correction, Gales table |
| | 5th | **MAP READING CADASTRAL MAPS &NOMENCLATURE:** Study of direction, Scale, |
| 8th | 1ST | Grid Reference and Grid SquareStudy of Signs and Symbols |
| | 2ND | Cadastral Map Preparation Methodology |

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| | 3RD | Positions of existing Control Points and its types |
| | 4TH | Adjacent Boundaries and Features, Topology Creationand verification |
| | 5TH | **PLANE TABLE SURVEYING :** Objectives, principles and use of plane tablesurveying |
| 9th | 1ST | Instruments & accessories used in plane table surveying. |
| | 2ND | Methods of plane table surveying |
| | 3RD | Statements of TWO POINT and THREE POINTPROBLEM. |
| | 4TH | Errors in plane table surveying and their corrections,precautions in Plane table surveying |
| | 5th | Quiz test |
| 10th | 1ST | **THEODOLITE SURVEYING AND TRAVERSING:** Purpose and definition of theodolite surveying |
| | 2ND | Transit theodolite- Description of features, componentparts |
| | 3RD | Concept of transiting –Measurement horizontal and vertical angles |

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| | 4th | Measurement of magnetic bearings, deflection angle,direct angle |
| | 5th | Quiz Test |
| 11th | 1ST | Methods of theodolite traversing with – inclined anglemethod, deflection angle method, bearing method, |
| | 2ND | Checks for open and closed traverse. |
| | 3RD | Traverse computation – consecutive coordinates, latitudeand departure, Gale's traverse table, Numerical problems on omittedmeasurement of lengths & Bearings |
| | 4TH | Closing error – adjustment of angular errors, adjustmentof bearings, numerical problems |
| | 5TH | Balancing of traverse – Bowditch's method |
| 12th | 1ST | transit method, graphical method, axis method, calculation of area of closedtraverse |
| | 2ND | **LEVELLING AND CONTOURING :** Definition and Purpose and types of leveling–concepts of level surface, |
| | 3RD | Horizontal surface, vertical surface, datum, R. L., B.M |
| | 4TH | Instruments used for leveling, concepts of line ofcollimation, axis of bubble tube, axis of telescope, Vertical axis. |
| | 5TH | Levelling staff – Temporary adjustments of level, taking |

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| | | reading with level,concept of bench mark, BS, IS, FS, CP, HI |
| 13th | 1ST | height of collimation method and Rise and fall method, comparison, Numerical problems on reduction oflevels applying both methods, Arithmetic checks. |
| | 2ND | Effects of curvature and refraction numerical problems onapplication of correction. |
| | 3RD | Reciprocal levelling |
| | 4th | Errors in leveling and precautions, Permanent andtemporary adjustments of different types of levels. |
| | 5th | Quiz test |
| 14th | 1ST | Definitions, concepts and characteristics of contours |
| | 2ND | Methods of contouring, plotting contour maps,Interpretation of contour maps, |

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| | 3RD | Use of contour maps on civil engineering projects |
| | 4TH | Map Interpretation: Interpret Human and EconomicActivities (i.e.: Settlement, Communication, Land use etc |
| | 5TH | Interpret Physical landform (i.e.: Relief, Drainage Pattern etc.), Problem Solving andDecision Making |
| 15th | 1ST | **COMPUTATION OF AREA & VOLUME:** Determination of areas, computation of areas fromplans. |
| | 2ND | Calculation of area by using ordinate rule, trapezoidalrule, Simpson's rule. |
| | 3RD | Calculation of volumes by prismoidal formula andtrapezoidal formula |
| | 4TH | Revision |
| | 5TH | Revision |