

| UNIT | TOPIC | PERIOD |
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| INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS | Surveying: Definition, Aims and objectives | 1 |
| | Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying. | 2 |
| | Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains. | 3 |
| | Errors and mistakes in linear measurement – classification, Sources of errors and remedies. | 4 |
| | Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections. | 5 |
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| | Revision | 7 |
| CHAINING AND CHAIN SURVEYING | Equipment and accessories for chaining. Ranging – Purpose, signaling, direct and indirect ranging, Line ranger – features and use, error due to incorrect ranging. | 8 |
| | Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction. | 9 |
| | Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles. | 10 |
| | Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines. | 11 |
| | Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square. | 12 |
| | Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying. | 13 |
| | Numerical practice. | 14 |
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| ANGULAR MEASUREMENT AND COMPAS SURVEYING | Measurement of angles with chain, tape & compass Compass – Types, features, parts, merits & demerits, testing & adjustment of compass | 15 |
| | Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application, numerical problems on conversion of bearings | 16 |
| | Use of compasses – setting in field-centering, leveling, taking readings, concepts of Fore bearing, Back Bearing, Numerical problems on computation of interior & exterior angles from bearings. | 17 |
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| | Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination | 19 |
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| | Errors in angle measurement with compass – sources & remedies. Principles of traversing – open & closed traverse, Methods of traversing. | 21 |
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| | Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction. | 23 |
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| | Errors in compass surveying – sources & remedies. | 25 |

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| | Plotting of traverse – check of closing error in closed & open traverse, Bowditch’s correction, Gales table | 26 |
| MAP READING CADASTRAL MAPS & NOMENCLATURE | Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols | 27 |
| | Cadastral Map Preparation Methodology | 28 |
| | Unique identification number of parcel | 29 |
| | Positions of existing Control Points and its types | 30 |
| | Adjacent Boundaries and Features, Topology Creation and verification. | 31 |
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| PLANE TABLE SURVEYING | Objectives, principles and use of plane table surveying. | 34 |
| | Instruments & accessories used in plane table surveying. | 35 |
| | Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection | 36 |
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| | Purpose and definition of theodolite surveying. | 41 |
| | Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier, Temporary adjustment of theodolite | 42 |
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| | Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations. | 46 |
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| | Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method, Plotting the traverse by coordinate method, Checks for open and closed traverse. | 48 |
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| | Traverse computation – consecutive coordinates, latitude and departure, Gale’s traverse table, Numerical problems on omitted measurement of lengths & bearings | 50 |
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| SLEVELLING AND CONTOURING | Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M. | 56 |
| | Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis. | 57 |
| | Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI. | 58 |
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