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**Government polytechnic Vaishali**

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**Lecture plan (3rd sem)**

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| **NAME OF THE****Lecturer** | **Mr. Rambabu kumar** |
| **Department** | **Civil Engineering** |
| **INSTITUTE** | **Government Polytechnic Vaishali** |
| **Lecture plan** | **Third semester** |
| **Session** | **2019-22** |
| **Subject name and code** | **Surveying (1615302)** |

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| Unit | Topics | No of Period | Book |
| 1 | Types of survey | L=Lecture |  |
|  | Definition, Objects of surveying, principal of surveying, use of survey, classification of surveying | L1, L2 | N.N. Basak |
|  | Primary-Plain and GeodeticSecondary-based on instrument, method, Object and Nature of field | L3 | N.N. Basak |
| 2 | Chain & Cross Staff Survey  |  |  |
|  | 2.1 PRINCIPLE OF CHAIN SURVEY: STUDY AND USE OF INSTRUMENTS FOR LINEAR MEASUREMENTS – CHAIN, TAPE, RANGING ROD, ARROWS, PEGS, CROSS STAFF, OPTICAL SQUARE, LINE RANGER. | L4, L5 | N.N. Basak |
|  | 2.2 RANGING –DIRECT AND INDIRECT RANGING CHAINING – PLAIN AND SLOPING GROUNDS. Chain Triangulation – Survey Station and their Selections, Survey lines, Check lines, Tie lines, base line. Taking offsets .long and short offset, degree of offset. OBSTACLES IN CHAINING. | **L6, L7** | N.N. Basak |
|  | 2.3 CHAIN & CROSS STAFF SURVEY: FOR FINDING AREA OF A FIELD (NUMERICAL PROBLEMS) ERRORS IN CHAIN SURVEYING & APPLYING CORRECTIONS FOR CHAIN & TAPE (NUMERICAL PROBLEMS). CONVENTIONAL SIGNS RELATED TO SURVEY | L8, L9 | N.N. Basak |
| 3. | COMPASS SURVEY |  |  |
|  | 3.1 PRINCIPLE OF COMPASS SURVEY: BEARING OF LINES – MERIDIAN –TRUE, MAGNETIC, AND ARBITRARY. BEARING –FORE BEARING, BACK BEARING, WHOLE CIRCLE BEARING, QUADRANTAL BEARING SYSTEM AND REDUCED BEARING, CONVERSION OF BEARINGS, FINDING INCLUDED ANGLES FROM BEARINGS. | L10, L11, L12 | N.N. Basak |
|  | 3.2 PRISMATIC COMPASS – COMPONENT, CONSTRUCTION AND USE. | L13 | N.N. Basak |
|  | 3.3 LOCAL ATTRACTION, CAUSES, PRECAUTIONS TO BE TAKEN TO AVOID AND CORRECTION OF BEARINGS AFFECTED DUE TO LOCAL ATTRACTION, CALCULATION OF INCLUDED ANGLES. | L14, L15, L16 | N.N. Basak |
|  | 3.4 TRAVERSING – OPEN TRAVERSE, CLOSED TRAVERSE, CHECK ON OPEN AND CLOSED TRAVERSE. GRAPHICAL ADJUSTMENT FOR CLOSING ERROR. | L17, L18 | N.N. Basak |
|  | 3.5 NUMERICAL PROBLEMS ON CALCULATION OF BEARINGS, ANGLES AND LOCAL ATTRACTION. | L19 | N.N. Basak |
| 4. | Levelling |  |  |
|  | 4.1 Definitions – Level surface, Level line, horizontal line, Vertical line, Datum surface , Reduced level, Bench mark and its types | L20, L21 | N.N. Basak |
|  | 4.2 DUMPY LEVEL –COMPONENTS, CONSTRUCTION, LINE OF SIGHT, LINE OF COLLIMATION, BUBBLE TUBE AXIS, LEVELLING STAFF – TELESCOPIC AND FOLDING TYPE .FORESIGHT, BACK SIGHT, INTERMEDIATE SIGHT, CHANGE POINT, HEIGHT OF COLLIMATION . | L22, L23, L24 | N.N. Basak |
|  | 4.3 RECORDING IN LEVEL BOOK. TEMPORARY ADJUSTMENTS OF DUMPY LEVEL | L25 | N.N. Basak |
|  | 4.4 METHOD OF REDUCTION OF LEVELS – HEIGHT OF INSTRUMENT METHOD AND RISE AND FALL METHOD. ARITHMETICAL CHECKS, NUMERICAL PROBLEMS, COMPUTATION OF MISSING READINGS | L26, L27, L28 | N.N. Basak |
|  | 4.5 CLASSIFICATIONS OF LEVELLING - SIMPLE, DIFFERENTIAL, PROFILE, CROSS SECTIONAL, FLY AND CHECK LEVELLING. | L29 | N.N. Basak |
|  | 4.6 STUDY AND USE OF TILTING LEVEL & AUTO LEVEL | L30 | N.N. Basak |
|  | 4.7 SOURCES AND ERRORS IN LEVELLING, PRECAUTIONS AND DIFFICULTIES FACED IN LEVELLING. | L31 | N.N. Basak |
| 5. | CONTOURING |  |  |
|  | 5.1 DEFINITIONS – CONTOUR, CONTOUR INTERVAL, HORIZONTAL EQUIVALENT. | L32 | N.N. Basak |
|  | 5.2 CHARACTERISTICS OF CONTOURS .METHOD OF LOCATING CONTOURS. INTERPOLATION OF CONTOURS. ESTABLISHING GRADE CONTOURS. | L33 | N.N. Basak |
|  | 5.3 USES OF CONTOUR MAPS. INTERPRETATION OF TYPICAL CONTOUR SHEETS. | L34 | N.N. Basak |
| 6. | AREA AND VOLUME MEASUREMENTS |  |  |
|  | CONSTRUCTION AND USE OF POLAR PLANIMETER FOR MEASUREMENT OF AREA AND SIMPLE NUMERICAL PROBLEMS. | L35 | N.N. Basak |
|  | STUDY AND USE OF DIGITAL PLANIMETER .CONCEPT OF COMPUTATION OF VOLUME BY TRAPEZOIDAL AND PRISMOIDAL FORMULAE.(NO NUMERICAL PROBLEMS) | L36, L37 | N.N. Basak |