

SARDAR RAJA COLLEGE OF ENGINEERING, ALANGULAM

DEPARTMENT OF CIVIL ENGINEERING

MICRO LESSON PLAN



SUBJECT : SURVEYING II

CODE : CE2254

CLASS : II Year / IV SEM

**STAFF: T.PONMALAR,
DEPT. OF CIVIL ENGG**

OBJECTIVE

At the end of the course the student will possess knowledge about Tachometric surveying, Control surveying, Survey adjustments, Astronomical surveying and Photogrammetry.

UNIT I TACHEOMETRIC SURVEYING**6**

Tacheometric systems - Tangential, stadia and subtense methods - Stadia systems – Horizontal and inclined sights - Vertical and normal staffing - Fixed and movable hairs - Stadia constants - Anallactic lens - Subtense bar.

UNIT II CONTROL SURVEYING**8**

Working from whole to part - Horizontal and vertical control methods - Triangulation - Signals - Base line - Instruments and accessories - Corrections - Satellite station - Reduction to centre - Trigonometric levelling - Single and reciprocal observations - Modern trends – Bench marking

UNIT III SURVEY ADJUSTMENTS**8**

Errors - Sources, precautions and corrections - Classification of errors - True and most probable values - weighted observations - Method of equal shifts - Principle of least squares – Normal equation - Correlates - Level nets - Adjustment of simple triangulation networks.

UNIT IV ASTRONOMICAL SURVEYING**11**

Celestial sphere - Astronomical terms and definitions - Motion of sun and stars – Apparent altitude and corrections - Celestial co-ordinate systems - Different time systems - use of Nautical almanac - Star constellations - calculations for azimuth of a line.

UNIT V HYDROGRAPHIC AND ADVANCE SURVEYING**12**

Hydrographic Surveying - Tides - MSL - Sounding methods - Location of soundings and methods - Three point problem - Strength of fix - Sextants and station pointer - River surveys - Measurement of current and discharge - Photogrammetry - Introduction – Basic concepts of Terrestrial and aerial Photographs - Stereoscopy – Definition of Parallax. Electromagnetic distance measurement – Basic principles - Instruments – Trilateration. Basic concepts of Cartography and Cadastral surveying.

TOTAL : 45 PERIODS**TEXT BOOKS:**

1. Bannister A. and Raymond S., Surveying, ELBS, Sixth Edition, 1992.
2. Punmia B.C., Surveying, Vols. I, II and III, Laxmi Publications, 1989.
3. Kanetkar T.P., Surveying and Levelling, Vols. I and II, United Book Corporation, Pune, 1994.

REFERENCES:

1. Clark D., Plane and Geodetic Surveying, Vols. I and II, C.B.S. Publishers and Distributors, Delhi, Sixth Edition, 1971.
2. James M. Anderson and Edward M. Mikhail, Introduction to Surveying, McGraw-Hill Book Company, 1985.
3. Wolf P.R., Elements of Photogrammetry, McGraw-Hill Book Company, Second Edition, 1986.
4. Robinson A.H., Sale R.D. Morrison J.L. and Muehrche P.C., Elements of Cartography, John Wiley and Sons, New York, Fifth Edition, 1984.
5. Heribert Kahmen and Wolfgang Faig, Surveying, Walter de Gruyter, 1995.

MICRO LESSON PLAN

HOURS	LECTURE TOPICS	READINS
UNIT I TACHEOMETRIC SURVEYING		
1	Tacheometric systems - - Stadia systems -----	T2 (VOL-I)
2	Tangential, stadia and subtense methods	
3	Stadia systems	
4	Horizontal and inclined sights	
5	Vertical and normal staffing	
6	Fixed and movable hairs	
7	Stadia constants	
8	Anallactic lens	
9	Subtense bar.	
UNIT II CONTROL SURVEYING		
10	Working from whole to part	T2 (VOL-II)
11	Horizontal and vertical control methods	
12	Triangulation	
13	Signals	
14	Base line - Instruments and accessories - Corrections	
15	Satellite station, Reduction to centre	
16	Trigonometric levelling	
17	Single and reciprocal observations, Modern trends	
18	Bench marking	
UNIT III SURVEY ADJUSTMENTS		
19	Errors - Sources, precautions and corrections - - - - -	T2 (VOL-II)
20	Classification of errors	
21	True and most probable values	
22	weighted observations	
23	Method of equal shifts	
24	Method of equal shifts -Problems	
25	Principle of least squares	
26	Normal equation	
27	Correlates	
28	Level nets, Adjustment of simple triangulation networks	
UNIT IV ASTRONOMICAL SURVEYING		
29	Celestial sphere	T2 (VOL-II & III)
30	Astronomical terms and definitions	
31	Motion of sun and stars	
32	Apparent altitude and corrections	
33	Corrections-problems	
34	Celestial co-ordinate systems	
35	Different time systems	
36	Different time systems-problems	
37	Use of Nautical almanac	
38	Star constellations	
39	calculations for azimuth of a line	
UNIT V HYDROGRAPHIC AND ADVANCE SURVEYING		
40	Hydrographic Surveying	T2 (VOL-II)
41	Tides, MSL	

42	Sounding methods	T2 (VOL-II)
43	Location of soundings and methods	
44	Three point problem	
45	Strength of fix, Sextants and station pointer	
46	River surveys -Measurement of current and discharge	
47	Photogrammetry, Introduction, Basic concepts of Terrestrial and aerial Photographs	
48	Stereoscopy, Definition of Parallax	
49	Electromagnetic distance measurement	
50	Basic principles - Instruments	
51	Trilateration, Basic concepts of Cartography and Cadastral surveying.	

SUBJECT DESCRIPTION & OBJECTIVES

OBJECTIVES

At the end of the course the student will possess knowledge about Tachometric surveying, Control surveying, Survey adjustments, Astronomical surveying and Photogrammetry.

On successful completion of this subject students should be able to:

- (i) demonstrate a knowledge of the principles and techniques of basic surveying;
- (ii) be able to identify appropriate equipment required for tasks in basic surveying;
- (iii) show how to reduce data obtained from fieldwork to a useable form;
- (iv) demonstrate an understanding of accuracy of measurement required in surveying.

SUBJECT DESCRIPTION

This course will introduce the student to the various methods and applications of land surveying to the real estate, and land development industries. Students will also be introduced to the various technologies employed by Professional Land Surveyors in accomplishing their work including differential leveling, electronic distance measurement (EDM), electronic data collection, computer-aided design (CAD), the global positioning system (GPS) and geographical and land information systems (GIS/LIS).