

PROGRAMME NAME: DIPLOMA IN LAND SURVEYING
INDUSTRY LINKED: Land Survey, Salem

COURSE CODE: DLS1	COURSE TITLE : BASIC SURVEYING: THEORY AND PRACTICE	L	T	P	C
		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Explain Basic surveying instruments and techniques.
- 2) Apply skills in using basic surveying instruments and analyze data.
- 3) Apply skills to conduct traverse survey & to find the area

COURSE CONTENTS

Theory (L): Classifications and basic principles of surveying – Equipment and accessories for ranging and chaining – Methods of ranging – Compass – Types of Compass – Basic Principles- Bearing – Types – True Bearing – Magnetic Bearing. Plane Table Surveying- Parts and accessories. Methods of surveying. Two-point and three-point problems.

Practical (P):

- 1) **Introduction-** Surveying instruments; chains, tapes, steel bands, their types & uses.
- 2) **Chain Surveying-** Ranging & Chaining of Survey lines. Field work & Plotting of Chain survey Compass Surveying- Prismatic Compass & Surveyor compass Uses, Bearings, Local attraction, Fieldwork & Plotting.

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE CODE: DLS2	COURSE TITLE : THEODOLITE AND TACHOMETRIC SURVEYING	L	T	P	C
		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Use theodolite for the measurement of horizontal and vertical angle.
- 2) Describe the principles and various methodologies involved in tachometry
- 3) Identify the various parts of equipment used in theodolite and Tachometer.

COURSE CONTENTS

Theory (L): Horizontal and vertical angle measurements – Temporary and permanent adjustments – Heights and distances – Tachometer – Stadia Constants – Analytic Lens - Tangential and Stadia Tachometry surveying – Contour – Contouring – Characteristics of contours – Methods of contouring – Tachometric contouring – Contour gradient – Uses of

contour plan and map

Practical (P):

- 1) **Theodolite**- Types and uses of theodolites. Temporary and permanent adjustments. Measurement of horizontal and vertical angles.
- 2) **Tachometric surveying**- Methods of Tachometric surveying. Field work and computation

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE CODE: DLS3	COURSE TITLE : BASIC LEVELLING : THEORY AND PRACTICE	L	T	P	C
		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Apply the knowledge of levelling in different operations in civil engineering projects.
- 2) Summarize the principles and purpose of basic levelling in surveying.
- 3) Formulate the Trigonometric and leveling methods.

COURSE CONTENTS

Theory (L): Levelling- Principles and theory of Levelling – Datum- – Bench Marks – Temporary and Permanent Adjustments- Methods of Levelling- Booking – Reduction – Sources of errors in Levelling – Curvature and refraction.

Practical (P):

- 1) **Levelling**- General principle. Types of levels and their temporary and permanent adjustments. Methods of levelling. Reduction of levels, Precise levelling and Trigonometric Levelling.

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE CODE: DLS4	COURSE TITLE : TOTAL STATION SURVEYING	L	T	P	C
		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Define the advantage and disadvantage of Total Station surveying
- 2) Define the vertical and horizontal angle measurement mechanism of Total Station instrument.

3) Use total station in the field of civil engineering land survey.

COURSE CONTENTS

Theory (L): Total Station : Advantages – Fundamental quantities measured – Parts and accessories – working principle – On board calculations – Field procedure – Errors and Good practices in using Total Station

Practical (P):

Total station-general commands used- instrument preparation and setting-reading distances and angles, Measurement of distances and coordinates of given points, using EDM and Total station, Measurement of altitudes of given elevated points, using total station.

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE		L	T	P	C
CODE:	COURSE TITLE : GLOBAL POSITIONING SYSTEM	3	0	2	4
DLS5					

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Apply optimal insights into land surveying using GPS
- 2) Demonstration of GPS surveying followed by processing of collected data.
- 3) Summarize the basic principles of GPS in civil engineering.

COURSE CONTENTS

Theory (L): GPS Surveying: Different segments – space, control and user segments – satellite configuration – signal structure – Orbit determination and representation – Anti Spoofing and Selective Availability – Task of control segment – Hand Held and Geodetic receivers – data processing – Traversing and triangulation.

Practical (P):

- 1) Introduction- GPS System
- 2) GPS Positioning, GPS Observables
- 3) GPS Data Processing
- 4) GPS Field Surveying, GPS Field Data Processing

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE CODE: DLS6	COURSE TITLE : MODERN SURVEYING: THEORY AND PRACTICE	L	T	P	C
		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Diverse knowledge of surveying practices applied for real life problems.
- 2) Work with various surveying equipment's, like, Theodolite, Total station, etc. in order to apply the theoretical knowledge to carry out practical field work.
- 3) Obtain The knowledge of limits of accuracy will be obtained by making measurements with various surveying equipment employed in practice.

COURSE CONTENTS

Theory (L): Curve Surveying-Curves – Necessity – Types, Simple curves, Elements, Designation of curves, Setting out simple curves by linear methods, Transition curves Characteristics, Vertical curves –Types. Introduction to Geodetic Surveying, Principal & classification of triangulation system, Selection of base line and stations, Orders of triangulation-triangulation figures, Station marks. Field Astronomy Introduction & Instruments purpose, Astronomical terms, Time & conversion of time, Abbreviations, Determination of azimuth, Latitude and longitude Photogrammetric Surveying-Introduction, principle, uses Aerial camera, aerial photographs Definitions, scale of vertical and tilted photograph Ground coordinates, ground control

Practical (P): Special Survey Instruments- Electromagnetic Distance Measurement, Electronics Theodolite, Total station, Site square, Penta Graph, Auto set Level, Transit level, Special Compasses, Brunton Universal Pocket Transit, Mountain Compass Transit

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE CODE: DLS7	COURSE TITLE : ADVANCED LEVELLING	L	T	P	C
		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Apply the knowledge of Advanced levelling in different operations in civil engineering projects.
- 2) Summarize the principles and purpose of Advanced levelling in surveying.
- 3) Formulate the setting out of curve by linear and angular methods.

COURSE CONTENTS

Theory (L): Curve Surveying-Curves – Necessity – Types, Simple curves, Elements, Designation of curves, Setting out simple curves by linear methods, Transition curves Characteristics, Vertical curves –Types. Introduction to Geodetic Surveying, Principal & classification of triangulation system, Selection of base line and stations, Orders of triangulation-triangulation figures, Station marks. Field Astronomy Introduction & Instruments purpose, Astronomical terms, Time & conversion of time, Abbreviations, Determination of azimuth, Latitude and longitude Photogrammetric Surveying-Introduction, principle, uses Aerial camera, aerial photographs Definitions, scale of vertical and tilted photograph Ground coordinates, ground control

Practical (P): Special Survey Instruments- Electromagnetic Distance Measurement, Electronics Theodolite, Total station, Site square, Penta Graph, Auto set Level, Transit level, Special Compasses, Brunton Universal Pocket Transit, Mountain Compass Transit

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE		L	T	P	C
CODE:	COURSE TITLE : DRONES SURVEYING				
DLS8		3	0	2	4

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Identify Drone Mapping and Photogrammetry
- 2) Acquire Knowledge on Data Extraction and Data Processing
- 3) Apply Technical skills on Topographical and Mapping Surveying

COURSE CONTENTS

Theory (L): Introduction to Drone Mapping and Photogrammetry ,Digital Photogrammetry Theory, Photography Principles in Photogrammetric Surveys, Controlling a Survey, Photo Capture, Data Processing, Data Extraction, Data Accuracy, Quality Assurance, Equipment, Planning Your Photogrammetry Survey

Practical (P):

- 1) Topographical and Mapping Surveying
- 2) 3D BIM Surveying

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE		L	T	P	C
CODE:	COURSE TITLE : GLOBAL INFORMATIVE SYSTEM	3	0	2	4
DLS9					

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Solve the geospatial problems using programming tools
- 2) Compute geometric measurements and perform spatial analysis
- 3) Create high-quality maps and associated graphics

COURSE CONTENTS

Theory (L): introduction to modeling in ArcGIS, Modeling basics and exercise, Geo Data Base basic advantages, elements. Spatial Analyst basics –local, zonal and global functions, raster calculations Simple suitability analysis –need-supply analysis Building Geo Data Base Schema developing a model for suitability analysis, Automating GIS procedures ,Geostatistical Analyst – Auto Correlation and Interpolation Methods, Web GIS- Definition, concept of Web GIS, History of Web GIS, components of web GIS, internet, web GIS v/s Internet GIS, users and stake holders of web GIS

Practical (P):

- 1) Digitization of Points and Lines
- 2) Editing Map Elements
- 3) Attribute Data Entry and Manipulation
- 4) Cleaning, Building and Transformation

TOTAL: (45 T+ 30P) 75 PERIODS

COURSE		L	T	P	C
CODE:	COURSE TITLE : FIELD TRAINING	2	0	4	4
DLS10					

COURSE OUTCOMES (On completion of the course, the students will be able to):

- 1) Apply the principle of surveying for civil Engineering Applications
- 2) Calculation of areas, Drawing plans and contour maps using different measuring equipment at field level
- 3)Write a technical laboratory report

COURSE CONTENTS

Theory: Introduction to conventional surveying, Levelling .Theodolite surveying. Total Station survey. Heights and Distance. Area computation. Downloading, Study of instruments – Automatic level, digital level, Handheld GPS

Practical (P):

List of Experiments

1. Surveying of an area by chain, and compass survey (closed traverse) & plotting.
2. Determine of distance between two inaccessible points with compass
3. Radiation method, intersection methods by plane table survey.
4. Levelling – Longitudinal and cross-section and plotting
5. Measurement of Horizontal and vertical angle by theodolite
6. Trigonometric leveling using theodolite
7. Height and distances using principles of tachometric surveying
8. Determination of height, remote elevation, distance between inaccessible points using total station
9. Determination of Area using total station and drawing map
10. Traversing using total station for drawing contour map
11. Stake out using total station
12. Setting out Curve using total station

TOTAL: (30 T+ 60P) 90 PERIODS