AMEV-04 SURVEYING

OBJECTIVES:

1. To introduce the rudiments of surveying principles.
2. To learn the various methods of surveying to solve the real world problems.

UNIT I FUNDAMENTALS AND CHAIN SURVEYING

Definition- Classifications - Basic principles – Mistakes, errors and accuracy. Equipment and accessories for ranging and chaining – Methods of ranging - well conditioned triangles – Errors in linear measurement and their corrections - Obstacles - Traversing – Plotting - applications.

UNIT II COMPASS SURVEYING AND PLANE TABLE SURVEYING

Compass – Basic principles - Types - Bearing - Systems and conversions- Sources of errors - Local attraction - Magnetic declination-Dip-Traversing - Plotting - Adjustment of closing error –
applications - Plane table and its accessories - Merits and demerits - Radiation - Intersection -
Resection – Traversing- sources of errors – applications.

UNIT III THEODOLITE SURVEYING

Theodolite - Types - Description - Horizontal and vertical angles - Temporary and permanent adjustments – Heights and distances– Tangential and Stadia Tacheometry – Subtense method
- Stadia constants - Anallactic lens.

UNIT IV ROUTE SURVEYING

Reconnaissance - Route surveys for highways, railways and waterways - Simple curves – Compound and reverse curves - Setting out Methods – Transition curves - Functions and requirements - Setting out by offsets and angles - Vertical curves - Sight distances.

UNIT V HYDROGRAPHIC AND MINE SURVEYING

Tides - MSL - Sounding methods - Three-point problem - Strength of fix - Sextants and station pointer - River Surveys - Measurement of current and discharge – Mine Surveying Equipment - Weisbach triangle - Tunnel alignment and setting out - Transfer of azimuth - Gyro Theodolite - Shafts and Adits.

OUTCOMES:

At the end of the course the student will be able to understand

1. the use of various surveying instruments in mapping
2. the error and adjustments procedures associated with surveying and mapping
3. the applications of surveying in Route, Mine and Hydrography

TEXT BOOKS :

1. Chandra A.M., "Plane Surveying", New Age International Publishers 2002.
2. Alak De, "Plane Surveying", S. Chand & Company Ltd., 2000.

REFERENCES:

1 James M. Anderson and Edward M. Mikhail, Surveying, Theory and Practice, 7th Edition, McGraw Hill 2001.

2 Bannister and S. Raymond, Surveying, 7th Edition, Longman, 2004.

3 S.K. Roy, Fundamentals of Surveying, 2nd Edition, Prentice Hall of India, 2004.

4 Arora K.R., "Surveying Vol I & II", Standard Book house , 10th Edition Edition 2008.