7CE157 Advanced Surveying

L-T-P-Cr: 3-0-0-3

Prerequisite: Surveying course should be studied. Objective: To impart knowledge and skill of advanced surveying techniques and tools

Theory: 1. Astronomical Survey: Terms, Spherical triangle, spherical trigonometry, Time, sidereal time, apparent time, mean solar time, equation of time, universal time, standard time, conversion of time, determination of time, determination of azimuth, Latitude, Longitude 8 Lectures

2. Triangulation: Triangulation figure or systems, System of framework, Station marks, signals and towers, Base line measurement, Measurements of angles, Field check in Triangulation, Trilateration 8 Lectures

3. Theory of Errors and Triangulation Adjustments: Definitions, Laws of weight, Laws of accidental errors, Principle of least squares, Distribution of error to the field measurement, Normal Equation, Triangulation adjustments, Adjustment of a Geodetic Quadrilateral 6 Lectures

4. Trigonometrically leveling: Correction for curvature and Refraction, Axis Signal Correction, Difference of elevation of two stations by single observation, Difference of elevation of two stations by reciprocal observations, Determination of coefficient of refraction 4 Lectures

5. Hydrographic Surveying: Scope, methods of sounding, locating of sounding, threepoint problem, and shoreline survey. 4 Lectures

6. Remote Sensing(RS):Introduction, Remote sensing in India, Electromagnetic energy(EME) and spectrum, Interaction of EME with matters, Sensor systems and platforms, Data acquisition and interpretation 6 Lectures

7. GIS and GPS:GIS &GPS overview, Subsystems of GIS, Data for GIS(Vector $ Raster),GPS Surveying techniques and accuracy, Uses and applications of GPS

6 Lectures

Scheme of Examination: Class test I/Assignment : 5Marks Class test II/Assignment : 5Marks Mid Semester Examination : 20Marks End Semester Examination : 70 Marks Text Books: 1. B.C. Punmia, A.K. Jain and A.K. Jain, Surveying, Vol. II and III, Laxmi Publications (P) Ltd., New Delhi 2. S.K. Duggal, Surveying, Vol-II, TMH Publications, New Delhi 3. Textbook of Surveying by C. Venkatramaiah, University Press

Reference Books: 1. K.R. Arora, Surveying, Vol. II and III, Standard Book House, Delhi. 2. R. Subramanian, Surveying and Levelling, Oxford University Press, New Delhi 3. A. M. Chandra, Higher Surveying, New age international Publications, Delhi

Expected Outcome: The students would be able to understand about astronomical survey, triangulation, geodetic leveling, and hydrographic survey, remote sensing, GIS and GPS.