

## **Satellite Photogrammetry (EH 603)**

Historical perspective, Metric camera, Aerial photography; Statement of fundamental problem of Photogrammetry in state space formulation, Relation between Image and Object spaces; Space based platforms for Earth/Planetary observations, their classification; Satellite Orbits, their classification, formulation of orbital constraint, Space based imaging and ranging sensors, their geometric modeling; Platform attitude, platform stability, modeling of platform attitude with time; Formulation of observation equation for orbit constrained imaging;

Stereo Photogrammetry from Space, Single orbit multiple devices, Multiple Orbit- Single device, Single device-single orbit-multiple imagings, Formulation of stereo observation equations for these cases with examples; Bundle adjustment; Practical uses of Satellite Photogrammetry; Characterization of sources of error based on measurements on images; Characterization of platform stability from image measurements; Approximations of Photogrammetric model by Rational Polynomial Coefficients; Specific case studies based on Indian Earth and planetary observation satellites Cartosat 1, Chandrayaan 1; Digital Elevation Model of Earth/Planetary topography from Space based observations like Cartosat-1, ASTER, SRTM, Chandrayaan-1; its characteristics and limitations; Orthorectification of Space Imagery.

### References:

Manual of Photogrammetry, American Society for Photogrammetry and Remote Sensing (ASPRS) publication, 2000