Introduction to Photogrammetry

ECE 6400

Credit Hours:
3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture
Lab

Course Description:
Analytical and digital photogrammetry, bundle block adjustment, analytical camera calibration, aerotriangulation, image acquisition systems, GPS controlled aerotriangulation, quality control and network design, DEMs and orthophotography.

Prerequisites and Co-requisites:
Graduate level enrollment in the College of Engineering; or permission of instructor. Knowledge of linear algebra expected.

Course Goals / Objectives:
- Introduce students to image acquisition techniques and modeling of sensors
- Perform sensor calibration, pose estimation, 3D scene modeling from extracted image features
- Using redundancy through bundle block adjustment
- Introduce image processing method
**Course Topics:**
- Introduction to analytical and digital photogrammetry
- Sensor models (frame and line cameras)
- Sensor calibration
- Image resection
- Object space intersection
- Electromagnetic imaging systems
- Scanners
- Digital signals and systems for photogrammetry
- Feature extraction and grouping
- Radiometry and photometry
- Introduction to multiple view geometry
- Digital elevation maps
- Multiple view bundle block adjustment

**Designation:**
Elective