SET 403 - 102, Remote Sensing for Geomatics

COURSE NUMBER	**SET 403**
COURSE DESCRIPTION	Remote Sensing with Application to Geospatial Data Acquisition and Mapping
COURSE STRUCTURE	(3-1-4) (lecture hr/wk - lab hr/wk – course credits)
COURSE DESCRIPTION	Lectures are designed to develop techniques of data processing from various remote sensing data acquisition systems including image spectrometry, LiDAR, and RADAR. Analytic methods include pre-processing, calibration and vailidation, data reductions & classification, and integration with Geographic Information Systems.
PREREQUISITE(S)	CE 200 or equivalent, SET 302
CO REQUISITE(S)	
TEXTBOOK(S)/ REQUIRED MATERIALS	1. None Required – Instructor provided notes 2. Remote Sensing and Image Interpretation by Lillesand & Keifer - Wiley (2009) - ISBN 00471-84517-5
COMPUTER USAGE	ArcGIS, ENVI, Word, Excel
CLASS TOPICS	Topics in **image spectrometry** using **optical** and **radiometic** properties of the electro-magnetic wave spectrum including refraction, absorption, reflectance, and backscatter. Comparision and definitions of various imaging systems. **Sensor** characteristics include look angle, beam angle, data resolution and coverage, georeferencing and datum transformation and principles of LiDAR and RADAR. Topics on **data processing** include pre-processing methods of calibration and data reductions, data classification methods. Topics on data integration with **GIS** include geospatial data types, data integration, elements of database design, and GIS analysis for environmental and civil infrastructure projects. Ground truthing and coordinate transformation. Image processing including data reductions and corrections, data classification. Application of remote sensing to Geomatics including environmental engineering and civil infrastructure management projects.
COURSE LEARNING OUTCOMES	By the end of the course students should be able to: 1. Demonstrate understanding on the principals of image spectrometry data acquition in a GIS 2. Demonstrate knowledge of data attributes such as spectral and spatial resolution give a properties of a sensor and its platform. 3. Demonstrate knowledge of data errors for any give the characeristics of the remote sensor platform. 4. Demonstrate the proper use of coordinate transformation and georeferencing using traditional surveying methods 5. Download and upload files with Moodle, as well as utilize other aspects of this learning management application

6. Understand the theoretical principles of LiDAR for high resolution topography and CAD 3-D models

ACADEMIC INTEGRITY

NJIT hasa zero-tolerance policy regarding cheating of any kind and studet behaviour tat is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishment range from a minimum failure in the course plus disciplinary probation up to expulsion from NJIT with notations on the students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code go to http://www.njit.edu/academics/honorcode.php

MODIFICATION TO COURSE

The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

COURSE COORDINATED BY

Dr. L. Potts