GSEN 5386.W01- PROBLEMS IN REMOTE SENSING OF THE ENVIRONMENT

Course: GSEN 5386.W01, Problems in Remote Sensing of the Environment
Instructor: Dr. Peter Kuntu-Mensah,
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Class Meetings: Online
Office Hours: 9:00 a.m. -12:00 p.m. M, W (or by appointment),

Course Description: Advanced problems in photo interpretation and remote sensing within a GIS. Topics include utilization of expert systems computer systems, knowledge-based environmental modeling, macro and spatial modeling languages. Operations and laboratories will cover mathematical operations on raster layers, convolution filtering, neighborhood analysis, principal components, proximity, contiguity and descriptor table manipulation. Capstone project includes the development of a remote sensing of the environment software program with a graphical user interface.

Course Outcomes:
1. Students will understand principles and concepts of remote sensing,
2. Get familiar with properties and potential application areas of major sensor systems,
3. Gain experience and skills in using remote sensing data and software in support of geo-scientific analysis and modeling
4. Utilize RS principles in research/projects in environmental assessment and modeling

Required Textbook:

Recommended:

Course Requirements:
1. Complete readings/ written assignments.
2. Complete tutorial/laboratories.
3. Complete midterm and final exams.
4. Complete capstone project

**Course Outline**:  
- Remote Sensing Process: - review
- Energy Interactions,
- Data Acquisitions, Aerial photography, Photographic systems
- Elements of Visual Interpretation
- Characteristics of Remote Sensing Systems –
- Digital Image Processing System Considerations;
- Initial Statistics Extractions – histogram, univariate, multivariate
- Image preprocessing: Radiometric and Geometric corrections
- Digital Image Analysis - preprocessing
- Feature Extraction
- Image Classification
- Earth Resource Satellites – Imagery and applications (LULC, Archaeology, Agricultural, forestry, Geology, Engineering, Urban-industrial

**May be subject to change**

**Evaluation**: Final grade will be based on the weighted average of the following:

A. Reading/Written Assignments 20%
B. Tutorial and Lab Assignments) 25%
C. Project 15%
D. Mid-term Exam 20%
E. Exam 20%

Total 100%