Introduction to GIS and Remote Sensing

Course # EAES 3001

Credits 6

Prerequisites and/or Corequisites: Information Technology course

Course Description

This course provides a theoretical and practical introduction to the fundamental principles of Geographic Information Systems (GIS) and Remote Sensing digital image processing. It is focused on the essential skills of operating a functional GIS with ArcGIS software package, which is one of the most widely used desktop GIS applications in the world. This course analyses generic programming language concepts and techniques and demonstrates their implementation using Python in GIS. The fundamental principles and methods of introductory and intermediate geographic information science are explored as students practice ways to think spatially and develop ways to work with and apply new GIS knowledge to real world problems.

Course Learning Outcomes

Upon completion of this course, the students will be able to:

- Explain the main concepts that define Geographic Information Systems
- Explain how and why geographic data are entered, stored, and manipulated using GIS, and how to acquire, process, and analyze remotely sensed data.
- Conduct basic spatial analyses including clip analysis, slope analysis, and IDW tools.
- Explain how to properly use geospatial analysis for a wide range of applications, such as ESRI's ArcGIS software.
- Analyze spatial data, using GIS analysis tools such as Network and Buffer Analysis
- Apply Python programming language as a GIS computer language and using the special ‘arcpy’ package.
- Apply modern GIS and Remote Sensing Technologies like Raster Calculation, Map Algebra, Raster Vector Conversions, Surface Analysis, reclassified a slope raster etc.
- **Course Assessment and Grading**

Item	**Weight**
6 Home Assignments	60%
Class attendance and participation	10%

Final Project	30%