Course Data:
Day/Hours: TBA
Place: Kandilli Campus

Course Description:

Course Objectives:
• learn fundamental concepts of GIS and IT
• understand and apply simple to complex analyses of geospatial data
• make maps and present findings
• gain familiarity with capabilities of IT in GIS

Ref. Books:
• GIS fundamentals : a first text on geographic information systems / Paul Bolstad (BOUN Library)
• Datums and map projections for remote sensing, GIS, and surveying / Jonathan C. Iliffe (BOUN Library)
• GIS : a sourcebook for schools / David R. Green (electronic book – BOUN)

Computer Usage: Students are required to use software for process and analysis geospatial data.

Evaluation Method: Exercises+Presentations : 50 % of the assignments
Final Exam: 50 % of the final grade

Contribution of the Course to Program Outcomes:
This course is intended to contribute to the following program outcomes:
✓ (a) An ability to apply knowledge of mathematics, science and engineering
✓ (b) An ability to design and conduct experiments, as well as to analyze and interpret data
✓ (c) An ability to design a system, component, or process to meet desired needs
✓ (d) An ability to function on multi-disciplinary teams
✓ (e) An ability to identify, formulate and solve engineering problems
✓ (f) An understanding of professional and ethical responsibility
✓ (g) An ability to communicate effectively
✓ (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
✓ (i) A recognition of the need for, and ability to engage in life-long learning
✓ (j) A knowledge of contemporary issues
✓ (k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
Course Content:

**Weeks 1-2**
Introduction and Planning

**Weeks 3-4**
Discussion Topics: What is a GIS?
Conceptual Overview
Overview of the Applications of GIS
Introduction to GIS Software
Lab Exercise 1: Spatial Analysis of Data

**Week 5-6**
Discussion Topics: Displaying Themes, Working with Tables
GIS Data, Data Models, Databases
Lab Exercise 2: Data Entering and Mapping

**Week 6-7**
Discussion Topics: Creating and Editing Vector Data
Raster Data Model
Georeferencing
Lab Exercise 3: Georeferencing a Raster Dataset

**Week 8-9**
Discussion Topics: Querying and Analyzing Themes
Lab Exercise 4: Creating Topology / Defining a Projection / Buffering

**Week 10-11**
Discussion Topics: Spatial Selection
Reclassification, Dissolve, Overlay
Statistics
Lab Exercise 5: Spatial Joins

**Week 12-13**
Discussion Topics: Creating Layouts
Scales-Labels-Annotations-Measuring
Mapping Numerical Data
Symbolization
Lab Exercise 6: Making Maps for Presentation