WILLIAM RAINEY HARPER COLLEGE
BUSINESS AND SOCIAL SCIENCE DIVISION
GENERAL COURSE OUTLINE

Course Prefix	Course Number	Course Title	Lec-Lab	Semester Hours
GEG	150	GIS and Mapping Principles	(2 - 2)	3

COURSE DESCRIPTION

Provides an introduction to geospatial technologies, such as Geographic Information Systems (GIS), Global Positioning Systems (GPS), and Remote Sensing through hands-on computer based exercises. The essential principles of map use and design, and spatial analysis are also included in this course. Fundamental desktop computer skills assumed.

TOPICAL OUTLINE

I. Introduction to Geospatial Technologies
    A. History and contemporary uses
    B. Visualization and analysis tools
    C. Careers
II. Geographic Concepts
    A. Datums, coordinate systems, projection types
    B. Scale in GIS
    C. Geographic representation
    D. Spatial pattern recognition
    E. Geographic inquiry process
III. Map Design and Analysis
    A. Map types, uses, and interpretation
    B. Cartographic design principles
    C. Thematic maps of physical or human geography
    D. Interactive web maps
IV. Survey of Global Navigation Satellite Systems (GNSS)
    A. History of GNSS
    B. GNSS components
    C. Mission planning considerations
    D. GNSS systems around the world
V. GIS Fundamentals
    A. GIS software functionality
    B. GIS data types
    C. Spatial distribution and patterns
    D. Introduction to spatial databases
    E. Viewing and selecting data
    F. Georeferencing
    G. Geocoding
    H. Introduction to spatial analysis
VI. Remote Sensing Overview
    A. Aerial photograph interpretation
    B. Remote sensing overview
    C. Public sources of remote sensing data

METHODS OF PRESENTATION

1. Lecture
2. Cooperative learning

3. Discussion
4. Hands-on lab exercises

STUDENT OUTCOMES: *(The student should…)*
1. differentiate between and describe GIS, GPS, and remote sensing technologies.
2. understand the purpose of map projections, map scale, and coordinate systems.
3. differentiate between the representation of discrete and non-discrete phenomena in GIS systems.
4. demonstrate proficiency in the basic functions of geospatial software and hardware.
5. apply cartographic principles in designing and constructing maps for different purposes.
6. demonstrate and understanding of GNSS systems and mission planning considerations.
7. understand GIS data types and the basic structure of spatial databases.
8. apply GIS techniques, such as geocoding and georeferencing to data sets.
9. understand the basic concepts of spatial analysis, such as, recognizing spatial patterns in the cultural and/or physical world, extracting data using queries, and foundational overlay techniques.
10. demonstrate awareness of fundamental remote sensing concepts.

METHODS OF EVALUATION
Grades are based on demonstrated proficiency in subject matter. Proficiency is determined from:
1. Completion of laboratory exercises
2. Passing exams
3. Completion of various homework assignments

TEXTBOOK & INSTRUCTIONAL MATERIALS
Shellito, Introduction to Geospatial Technologies, 3rd ed., W H. Freeman, 2016
Gorr and Kurland, GIS Tutorial 1: Basic Workbook, 10.3.x ed., ESRI Press, 2016

Prepared by: Mukila Maitha
Fall, 2017