Al al-Bayt University
Institute of Earth and Environmental Sciences
Applied Geology and Environmental Sciences Department
Course Syllabus

Course Title: Geographic Information System (GIS)	**Instructor**: Dr. Ibraheem Hamdan
Course Number: 0801467	**Credit hours:** 3 h (2 lectures)
Term: Second semester 2019/2020	**Class Meeting Hours**: 09.00-10.00/ ع.ر 1
Class Meeting Days: Sunday and Tuesday	**Email**: ibraheem.hamdan@aabu.edu.jo

---

Course Aims and Objectives:
Course aim to provide students with the knowledge about Geographic Information System (GIS), GIS components, coordinate systems, spatial and descriptive data in GIS, spatial relations in GIS, data and maps processing and analyzing, GIS applications in geology, in addition to other topics regarding Geographic Information Systems.

Course Outlines:

- **An Introduction to Geographic Information System**: general introduction to GIS, definition of GIS, GIS description and purpose, GIS advantages, relation between GIS and other software systems, historical background of GIS, GIS applications, GIS software products (list of GIS software producers and their main products), difference between GIS and other systems, sectors are using GIS, sources of GIS inputs (how we get data into GIS).
- **GIS components:** users, hardware's, software's, software architecture and functionality of a GIS (data capture, entry; data storage and preparation; querying; data maintenance and spatial analysis; data output and visualization).
- **Maps projection and coordinate systems:** introduction to coordinate systems, spatial locations and reference, geographic coordinate systems, approximation of earth, datum's, maps projections, maps projections,
- **Types of data in GIS:** spatial data and descriptive data**,** types of spatial data: vector data (points, lines, polygons) and raster data, types of descriptive data.
- **Spatial data accuracy in GIS (data quality and errors):** errors and uncertainty, accuracy and precision, error sources.
- **Data management in GIS:** database definition, database management system, database and GIS, type of databases.
- **Vector data analysis:** buffer, map overlay, overlay types, methods of map overlay, maps manipulation.
- **Data visualization:** maps and digital cartography, purpose of maps, maps types, basic map elements, map scale.

Text Book:
The recommended textbook for this course is **Introduction to Geographic Information System**, by Kang-Tsung Chang. In addition to other sources.

Grading Policy:
Determination of the final grade for this course will be based upon the following:
First exam 25%
Second exam 25%
Final 50%
Quizzes and other activities are available during the course.