

Prerequisite status: Advanced geographic information system	Unit Type: Theoretical/practical	The number of units: 2	Name of the lesson: Database management
Type of additional practical training: Has it <input checked="" type="checkbox"/> does not have <input type="checkbox"/> Science travel <input type="checkbox"/> Laboratory <input checked="" type="checkbox"/> Workshop <input type="checkbox"/> Seminar <input type="checkbox"/>		The number of hours: 48	Expert professor to teach: GIS
Goals: Acquaintance with the basic concepts of databases and how to create updates and obtain output from them			
Headlines 1- The basics of information technology with the approach of recognizing data types and variables, application of discrete mathematics, set theory, and an overview of the position of geographic information in knowledge management issues. 2- Basics of databases (Features of geographic databases, types of databases and their construction, hierarchical, network, and relational structure, Hybrid, nested database, and object-oriented databases. 3- Detailed examination of the relational database, including the definition, relationships in it, ER Diagram 4- Database design (needs analysis, conceptual design, logical design, physical design, methods of organizing and editing data in the geographic database) 5- The methods of managing and retrieving information from the information database include: SQL, Indexing, and ... 6- Getting to know the geographic database and reviewing the items above in a specialized way in the fields of base location 7- Examining and learning methods of managing and retrieving geographic information from location-based databases and location SQLs 8- Getting to know and using the above items using open-source databases and comparing them with existing commercial databases 9- Familiarization and use of the location-based database in Client\Server architectures using open source software (GeoServer) 10- Practical work includes combining the discussed items in web-based software and creating a complete database chain. The server and the user interface are completely open source.			
Reference 1- CG Data, 2014, advanced database, translated by Ali Tofanzadeh Mojdehi, Ebrahim Alaei, Mahsa Mohammadi, Aurang Publications. 2- Rouhani Rankohi M. T., 2007, Fundamental Concepts of Databases, Jelveh Publications. 3- Lisa Friedrichsen, Lisa Ruffolo, et al., 2020, Concepts of Database Management, Cengage Learning 4- Spatial database with application to GIS, 2002, Morgan Kaufman Publishers Inc. San Francisco,			

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