Surveying Engineering Program
Department of Civil Engineering
College of Engineering
King Saud University

SE 466 Spatial Analysis in Geographic Information Systems

Credit and Contact hours	4 / 3 (Lectures), 0 (Tutorials), 2 (Laboratory)
Required, or Elective	Required for a BSCE degree
Course Description	Definitions; queries in GIS; relation between GIS and other sciences; projection systems and mutual transformation using GIS; concept of data base; methods of tables connection and spatial analysis in GIS; DEM production using GIS; Selective applications in GIS.
Prerequisites or Co-requisites	SE 423, SE 453.
Course Learning Outcomes	Students completing this course successfully will be able to

Course Learning Outcomes	***Related Student Outcomes (SO)***
CLO1: Discuss how to design queries and form data base;	**SO7**
CLO2: Develop spatial databases, queries and table connections for spatial analysis in GIS.	**SO2**
CLO3: Solve problems of spatial relevance like mutual transformation using analytical GIS.	**SO1**
CLO4: Use computer software in GIS applications.	**SO6**

Student Outcomes

SO1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics, and using modern engineering tools

SO2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety

SO6an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions

SO7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

<table>
<tr><td>Topics Covered</td><td>
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<tr><th>List of Topics</th><th>Related CLOs</th></tr>
<tr><td>1. Definitions.</td><td>CLO1</td></tr>
<tr><td>2. Queries in GIS; relation between GIS and other sciences</td><td>CLO1</td></tr>
<tr><td>3. Projection systems and mutual transformation using GIS.</td><td>CLO2</td></tr>
<tr><td>4. Concept and Creation of data base</td><td>CLO3</td></tr>
<tr><td>5. Methods of tables connection</td><td>CLO1</td></tr>
<tr><td>6. Spatial analysis in GIS</td><td>CLO2</td></tr>
<tr><td>7. DEM production using GIS</td><td>CLO4</td></tr>
<tr><td>8. Selected GIS applications using computer.</td><td>CLO4</td></tr>
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<tr><td>Textbook(s) and Other Required Material</td><td>Textbook: P. Longley, Micheal, F. Goodchid, David J. Maguire and David W. Rhind, 2015. "Geographic Information Systems and Science", 4th edition 2015, John Wiley</td></tr>
<tr><td>Grading System</td><td>Tutorials problems and attendance 20%
Mid-Term 1 20%
Mid-Term 2 20%
Final Exam 40%</td></tr>
<tr><td>Instructors</td><td>Dr. Bashar Kamal Bashir (2A19); e-mail: bbashir@ksu.edu.sa - (2nd Semester 20-21)</td></tr>
<tr><td>Date of Review</td><td>Nov, 2020</td></tr>
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