

Introduction to Geographic Information Systems, 9e

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Detailed List of New Features

Updates to the Ninth Edition The ninth edition covers GIS concepts, operations, and analyses in 18 chapters. Chapters 1 to 4 explain GIS concepts and vector and raster data models. Chapters 5 to 8 cover geospatial data acquisition, editing, and management. Chapters 9 and 10 include data display and exploration. Chapters 11 and 12 provide an overview of core data analysis. Chapters 13 to 15 focus on surface mapping and analysis. Chapters 16 and 17 examine linear features and movement. And Chapter 18 presents GIS models and modeling. Designed to meet the needs of students from different disciplines, this book can be used in a first or second GIS course.

Instructors may follow the chapters in sequence. They may also reorganize the chapters to suit their course needs. As an example, exercises on geometric transformation (Chapter 6) and topological editing (Chapter 7) require standard or advanced license levels of ArcGIS, and they can perhaps be covered in a second GIS course. On the other hand, geocoding (Chapter 16) is a topic familiar to many students and can be introduced early as an application of GIS. The revision of the ninth edition has focused on three areas: new developments in GIS, changes in acquisition of geospatial data, and careful interpretation of important GIS concepts. New developments in GIS include open source and free GIS, integration of GIS with Web2.0 and mobile technology, new horizontal datums, animated maps, quality of geocoding, and regression analysis with spatial data. Acquisition of free geospatial data, such as very high resolution satellite images, LiDAR data, LiDAR-based DEMs, and global-scale data, is now possible from websites maintained by the U.S. Geological Survey, National Aeronautics and Space Administration, and other organizations. Basic concepts, such as datum shift, topology, spatial database, spatial join, and map algebra, are closely linked to GIS operations and analyses and must be firmly grasped by beginning GIS users. The revision of the ninth edition covers every chapter. This ninth edition continues to emphasize the practice of GIS. Each chapter has problem-solving tasks in the applications section, complete with data sets and instructions. With the addition of four new tasks in Chapters 2, 11, 12, and 13, the number of tasks in the new edition totals 87, with two to seven tasks in each chapter. The instructions for performing the tasks correlate to ArcGIS 10.5. All tasks in this edition use ArcGIS and its extensions of Spatial Analyst, 3D Analyst, Geostatistical Analyst, Network Analyst, and ArcScan. In addition, a challenge task is found at the end of each applications section. The ninth edition retains task-related questions and review questions, which have proved to be useful to readers of the earlier editions. Finally, references and websites have been

updated in this edition. The website for the ninth edition, located at www.mhhe.com/changgisge, contains a password protected instructor's manual. Contact your McGraw-Hill sales representative for a user ID and password.

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