GEOINFORMATICS

Dr. Saba Hilal

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Preface

Welcome to 'Geoinformatics'. This book is designed to introduce you to Geoinformatics, the science that deals with the problems of geography, geosciences and engineering. The study of this subject falls at the crossroad of different areas of study for example mathematics, statistics, computer science, photography, physics, civil engineering, geospatial analysis and modeling, database management systems, information systems design, human-computer interaction, networking technologies, etc.

Geoinformatics as a subject is needed to learn the composition of spatial information, its capture, classification and abilities. It also includes the storage, processing, representation and distribution of the related geographical information.

Geoinformatics includes the study of remotely sensed images, their analysis by geographical information systems (GIS) and their effective presentation. The applications and uses of geoinformatics are in many areas including urban planning and land use management, navigation systems, health, environmental studies and analysis, network planning and management, agriculture, climate change, telecommunications, transport etc. With the advancement of Information and Communication Technologies, it is being realized by educational

bodies to introduce this as a needed area of study in the current curriculums.

In this book you will find all the important issues of Geoinformatics. You don't need to be a highly-skilled programmer or a qualified civil engineer in order to use this book, but you may find the understanding of the basic concepts of computer science, mathematics, physics etc. to be extremely helpful.

This book is organized in the following chapters:

Chapter - I is about Aerial Photographs. It includes basic terms and definitions. It introduces scales, relief displacements, flight planning, stereoscopy, characteristics of photographic images and aerial photographs and their interpretation.

Chapter - II is on Remote Sensing. It introduces the physics of remote sensing, describes the ideal remote sensing system, satellites and their data products, orbital characteristics and the sensors. It also introduces the Multi-concept approach, Spectral Reflectance etc.

Chapter - III is about the Satellite Images and their processing. It starts with their characteristics and formats, and goes to the steps of image processing. It includes special sections on Land Use/ Land Cover and FCC.

Chapter - IV is for the Geographic Data and GIS. It includes the basic concepts of GIS, its components,

data formats, models, input and output and GIS applications.

Chapter - V is on Satellite Navigation Systems. It introduces GPS satellite signals, Receivers and Survey Systems. It also describes Space, Control and User segments. It includes sections on Differential, Static and Kinematic GPS along with general Uses and Applications of GPS.

I thank the reviewers for their valuable time and suggestions for enhancement of this book. I will be grateful for any appraisal or constructive criticism by the readers.

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