

DISCOVER QGIS

THE WORKBOOK FOR THE AWARD WINNING
GEOACADEMY CURRICULUM

PART 1 – INTRODUCTION TO GEOSPATIAL
TECHNOLOGY

KURT MENKE, GISP

Credits & Copyright

Discover QGIS

PART 1 – INTRODUCTION TO GEOSPATIAL TECHNOLOGY

by Kurt Menke, GISP

Published by Locate Press LLC

COPYRIGHT © 2016 LOCATE PRESS LLC

ISBN: 978-0989421775

ALL RIGHTS RESERVED.

Direct permission requests to info@locatepress.com or mail:

Locate Press LLC, PO Box 671897, Chugiak, AK, USA, 99567-1897

Editor Gary Sherman

Cover Design Julie Springer

Interior Design Based on Memoir-L^AT_EXdocument class

Publisher Website <http://locatepress.com>

Book Website <http://locatepress.com/dqw>

No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage or retrieval system, without the prior written permission of the copyright owner and the publisher.

Contents

Editor's Note	5
Foreword	7
About this Book	9
I Introduction to Geospatial Technology	11
1 Spatial Data Models	13
1.1 Introduction	13
1.2 Objective: Explore and Understand Geospatial Data Models	13
1.3 Task 1 - Learn to Work with QGIS Browser	14
1.4 Task 2 - Become Familiar with Geospatial Data Models	16
1.5 Task 3 - Viewing Geospatial Data in QGIS Desktop	19
1.6 Conclusion	27
1.7 Discussion Questions	27
2 Displaying Geospatial Data	29
2.1 Introduction	29
2.2 Objective: Create a Map that Meets the Customer's Requirements	29
2.3 Task 1 - Add Data, Organize Map Layers, Set Coordinate Reference...	30
2.4 Task 2 - Style Data Layers	36
2.5 Task 3 - Compose Map Deliverable	44
2.6 Conclusion	51
2.7 Discussion Questions	51
2.8 Challenge Assignment (optional)	51
3 Creating Geospatial Data	53
3.1 Introduction	53
3.2 Objective: Digitize Information from a Scanned Hard Copy Source	53
3.3 Task 1 - Create a New Shapefile	54
3.4 Task 2 - Transforming Coordinate System of Source Data	56
3.5 Task 3 - Heads-up Digitizing From Transformed Source Data	63
3.6 Task 4 - Editing Existing Geospatial Data	67
3.7 Conclusion	68
3.8 Discussion Questions	68
3.9 Challenge Assignment (optional)	68
4 Understanding Remote Sensing and Analysis	71
4.1 Introduction	71
4.2 Objective: Learn the Basics of using QGIS Desktop for Image Analysis	71
4.3 Task 1 - Display and Inspection of Image Data	71

4.4	Task 2 - Unsupervised Classification	77
4.5	Conclusion	80
4.6	Challenge Assignment (optional)	80
5	Basic Geospatial Analysis Techniques	81
5.1	Introduction	81
5.2	Objective: Use Basic Spatial Analysis Techniques to Solve a Problem	81
5.3	Task 1 - Data Preparation	82
5.4	Task 1.1 - Obtain Shapefiles of NGS Monuments	82
5.5	Task 1.2 - Obtain the Municipal Boundaries	82
5.6	Task 1.3 - Obtain the Census Tract Boundaries	83
5.7	Task 1.4 - Obtain Road Data	83
5.8	Task 2 - Querying and Extracting Subsets of Data	83
5.9	Task 2.1 - Working with coordinate reference systems	83
5.10	Task 2.2 - Dissolving Tract Boundaries into a County boundary	85
5.11	Task 2.3 - Select Monuments	87
5.12	Task 3 - Buffering and Clipping Data	89
5.13	Task 4 - Preparing a Map	95
5.14	Conclusion	97
5.15	Discussion Questions	97
5.16	Challenge Assignment (optional)	97
	Conclusion	99
	Index	101
	Books from Locate Press	103

Editor's Note

This book contains content covering the first topic of the full *Discover QGIS* book.

Discover QGIS has 472 pages, covering five topics:

1. Introduction to Geospatial Technology (this book)
2. Spatial Analysis
3. Data Acquisition and Management
4. Cartographic Design
5. Remote Sensing

You can learn more about *Discover QGIS* and other titles at <http://locate.press>.