

## 2.2 Spatial Data Collection & Analysis

**Length:** 8 hours

**Requirements:**

- Equipments:
  - Laptops
  - Access to internet
- Softwares: QGIS - QField

**Prerequisite:**

**Introduction:** Collection of spatial and survey data using innovative tools downloadable on smartphone or tablets.

**Learning outcomes:** By the end of this module, participants will be able to:

- learn how to create data collection form on Qgis
- learn how to import collected data from Qfield to Qgis
- introduction to vector data analysis
- learn about types of vector measurements and how to apply overlay analysis and neighbourhood operations in Qgis
- introduction to raster data analysis
- Perform different types of Raster operation

### Summary Agenda

Min utes	Example Time	Activity	Description	Presenter
30	08:30 – 09:00	Registration	Participants signing up	
60	09:00 – 10:00	Demo	<b>Open Data Collection Tools - Q-field</b>	Fatima
60	10:00 – 11:00	Exercise	<b>Q-field</b> - Import data from Q- field to QGIS	Fatima
30	11:00 – 11:30	BREAK	Breakfast	
30	11:30 – 12:00	Lecture	<b>Introduction to Vector Data Analysis</b>	Mustafa
60	12:00– 13:00	Exercise	<b>Vector Analysis using QGIS</b>	Mustafa
30	13:00– 13:30	BREAK	Coffee Break + Pray	
30	13:30 – 14:00	Lecture	<b>Introduction to Raster Data Analysis</b>	Fatima
90	14:00 – 15:30	Exercise	<b>Raster Data Analysis using QGIS</b>	Fatima
15	15:30 – 15:45	BREAK	Break	
60	15:45 – 16:45	Exercise	<b>Raster Data Analysis using QGIS</b>	Fatima

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Date: 3 to 6 -October -2022




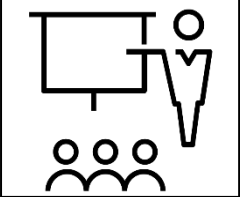
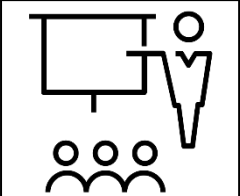
15	16:45 – 17:00	Wrap-up	
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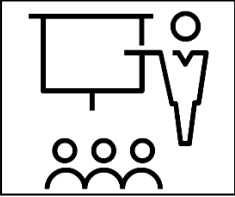
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## Guide

Activity / Time	Description	Resources / Materials
<b>Registration</b> 30 minutes	<b>Participants signing up</b>	<b>Appendix 1</b>
	Record the name, contact, and signature of each participant so that you can stay in touch.	
<b>Lecture</b> 20 minutes	<b>Vector data analysis</b>	<b>datacollection.ppt</b>
	<ul style="list-style-type: none"> <li>- A brief introduction about spatial analysis.</li> <li>- Knowing the vector measurements including (Loctional, length, Distance and area size measurements).</li> <li>- Vector Operations (Single and Multi layers Analysis).</li> <li>- A general overview of Network analysis.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Lecture</a></li> <li>• Projector</li> <li>• Flipchart or whiteboard</li> </ul>
<b>Exercise</b> 60 minutes	<b>Vector Analysis using QGIS</b>	<b>vectoranalysis.ppt</b>
	<ul style="list-style-type: none"> <li>- Perform different Geometric measurements.</li> <li>- Apply the Overlay and Proximity Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Exercise</a></li> <li>• QGIS software</li> <li>• Data: <a href="#">vector_analysis.zip</a></li> <li>• Laptops</li> </ul>
<b>Lecture</b> 20 minutes	<b>Introduction to Network Analysis</b>	<b>vectoranalysis.ppt</b>
	<ul style="list-style-type: none"> <li>- Relation between Accessibility and Network Analysis.</li> <li>- Network Types (direct &amp; indirect, single &amp; Multi Model, planner &amp; Non planner)</li> <li>- Understand the Cost function</li> <li>- Network Operations (Optimal path finding, Network partitioning) .</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Lecture</a></li> <li>• Projector</li> <li>• Flipchart or whiteboard</li> </ul>
<b>Exercise</b>	<b>Network Analysis using QGIS</b>	
	<ul style="list-style-type: none"> <li>- Perform Several Network Analysis operations include : <ul style="list-style-type: none"> <li>- Optimal path analysis to find shortest path</li> <li>- Origin/ Destination (OD Matrix)</li> <li>- Network Allocation for network segmentation &amp; Service area</li> <li>- Trace Analysis</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Exercise</a></li> <li>• QGIS software</li> <li>• Data: <a href="#">Network_analysis.zip</a></li> <li>• Laptops</li> </ul>

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<p><b>Lecture</b></p> 	<p><b>Introduction to Raster Data Analysis</b></p> <ul style="list-style-type: none"> <li>- Introduction about Raster data analysis.</li> <li>- Analytical operation on raster data(Arithmetic overlay operators,Comparison and logical operators,Conditional expressions)</li> <li>- Measuring raster distance</li> <li>- Neighbourhood functions .</li> </ul>	<p><b>rasteranalysis.ppt</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Lecture</a></li> <li>• Projector</li> <li>• Flipchart or whiteboard</li> </ul>
<p><b>Exercise</b></p>	<p><b>Raster Data Analysis using QGIS</b></p> <p>Perform Multi criteria overlay analysis include :</p> <ul style="list-style-type: none"> <li>○ Rasterize vector data</li> <li>○ perform patch process</li> <li>○ how to use raster calculator</li> <li>○ Generate proximity Rasters</li> </ul>	<p><b>rasteranalysis.ppt</b></p> <p><a href="#">Exercise</a>                  QGIS software                  Data: <a href="#">Multi criteria analysis.zip</a>                  Laptops</p>
<p><b>Wrap-up</b> 15 minutes</p>		