GIS for Public Health

**Facilitator**

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**Description**

The physical and social environment that surrounds us plays an important part in our health and wellbeing. The geography concept of ‘place’ thus cannot be ignored in public health. Whether investigating the level of environmental pollution, access to recreation or health services, or the patterns or spread of disease, Geographic Information Systems (GIS) provide the standard platform for exploring spatial attributes and relationships between our environment and health.

This course offers an introduction to GIS and how it is used in public health and epidemiological research. It will introduce students to the basics including: working with and integrating spatial and non-spatial data; geographic scale and spatial precision; projections; geocoding; visualisation; thematic mapping; and understanding spatial relationships. Specific skills and tools will also be introduced in relation to methods for route analysis and for spatial linkage of exposure, contextual and confounder information for epidemiological or health risk assessment studies. Students will apply their new skills in a case study based on available datasets for defined topics.

This course will be a mix of lectures, demonstrations and practical time for hands-on data analysis in ArcGIS and QGIS (emphasis on ArcGIS).

No prior knowledge of GIS is required, though completion of pre-course work is essential preparation for this intensive course.

**Objectives**

Students will gain knowledge in the fundamentals of GIS for spatial data handling and analysis. By the end of the course, students will

- Understand how GIS can be used to enhance public health and research;
- Be able to acquire, add, manipulate, visualise and map spatial data in a GIS; and
- Be able to perform basic spatial analyses in ArcGIS and QGIS.
Dates

**Part 1 Basic training:** 2 – 6 November 2020 (class will be split in half, thus 2 days in person for each group. Group A: Monday, Tuesday; Group B: Wednesday, Friday. See attached schedule)

**Part 2 Project:** Online project partner work (anytime during 9-27 November). Scheduled help sessions, per group, will be given week of 9-13 November 2020. Written report due 27 November 2020.

Eligibility

Open to PhD students of SSPH+ public health program; other students and external participants are welcome to apply for limited spaces

Course Structure

5-days hands on experience on GIS software, spread over 2 weeks to facilitate social distancing. Main lectures will be pre-recorded and available in advance.

Part 1 (1 ECTS) includes exercises, in class discussion and pre-course and homework assignments. Your preference for group, if specified, will be considered. Desktop computers with GIS software installed will be used.

Part 2 (1 ECTS) is conducted online via zoom (break out rooms). It involves working in pairs to conduct a project selected from available topics. Each pair will receive several scheduled help sessions spaced throughout the week. Assessment will be based on a short written report with well-designed and executed maps, due 2 weeks later (27 November 2020). Participants will use their own laptops in Part 2, and can decide which GIS software to use for the project. Basic software installation instructions will be provided for ArcGIS (proprietary, most universities have license) and QGIS (open source), but installation is the responsibility of the participant (in consultation with your IT service if needed).

Assessment

Part 1 assignments; Part 2 written report (see above)

Credits

Max 2 ECTS (1 ECTS for each part; N.B it is possible to only take Part 1, but not Part 2)

Preparation/homework 8 h, Contact 45 h

(1 ECTS corresponds to appr. 25-30 hours workload)
Location
Part 1 Basic training: University of Basel, Biozentrum Room 105
Part 2 Project: Zoom breakout groups

Course Fees
SSPH+ PhD Students 30.- CHF (processing fee)
PPHS PhD Students 30.- CHF (processing fee)
External MD/PhD Students 600.- CHF
External Academics 1700.- CHF
Other Participants 2500.- CHF
(The cost scheme depends on the Number of ECTS. Per ECTS participants are asked to pay 300,- CHF, 850,- CHF or 1250,- CHF, respectively)

Registration
Please register online on our website

Registration date
2 October 2020
<table>
<thead>
<tr>
<th>Time</th>
<th>Duration</th>
<th>Day 1</th>
<th>Day 2</th>
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<tbody>
<tr>
<td>0900-1045</td>
<td>1h45</td>
<td>Course Intro (KdH, 15min)</td>
<td>4. Projections and geocoding Intro (DV, 15min) Exercise 4 (1h30)</td>
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<td></td>
<td>1. Quick start to GIS Intro (DV, 15min) Exercise 1 (1h15)</td>
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<td>1045-1100</td>
<td>15min</td>
<td>Break</td>
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<tr>
<td>1100-1200</td>
<td>1h</td>
<td>1. Quick start to GIS continued (30min)</td>
<td>4. Projections and geocoding continued (30min)</td>
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<td>2. Spatial relationships and analysis Intro (KdH, 15min)</td>
<td>Discuss Part 2 (30min)</td>
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<td>1200-1300</td>
<td>1h</td>
<td>Lunch</td>
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<tr>
<td>1300-1500</td>
<td>2h</td>
<td>2. Spatial relationships and analysis Exercise 2 (2h)</td>
<td>5. Open source GIS Intro (KdH, 15min) Exercise 7 (1h45)</td>
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<td>1500-1515</td>
<td>15min</td>
<td>Break</td>
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<td>1515-1700</td>
<td>1h45</td>
<td>3. Working with raster data Intro (KdH, 15min) Exercise 3 (1h30)</td>
<td>6. Decision making with Route Analysis Intro (KdH, 15min) Exercise 6 (1h30)</td>
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