GIS for Public Health

Facilitator	**Dr. Danielle Vienneau,** Swiss TPH, University of Basel **Dr. Kees de Hoogh,** Swiss TPH, University of Basel
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, visualize and map spatial data in a GIS; and • Be able to perform basic spatial analyses in ArcGIS and QGIS.

Ann Walser
Graduate Campus Manager
awalser@ssphplus.ch
+41 31 631 58 94
https://ssphplus.ch/en/graduate-campus

Dates	**8 – 12 November 2021** **Part 1 Basic training:** 8 – 10 November 2021 **Part 2 Project: 11**-12 November 2021 online project partner work
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, interspersed with real-time lectures. The course includes pre-course and homework assignments, and a written report on the practical case study. Part 1 (1 ECTS) includes exercises, in class discussion and pre-course and homework assignments. Part 2 (1 ECTS) involves working in pairs to conduct a project selected from available topics. Assessment will be based on a short written report including well-designed and executed maps, due 2 weeks later. Participants will use their own laptops. Software and install instructions will be provided for ArcGIS and QGIS (separate instructions will be sent). Please note installation is the responsibility of the participant, in consultation with your IT service if needed.
Assessment	Part 1 assignments; Part 2 written report. All assignments due 29 November 2021
Credits	**Max 2 ECTS (1 ECTS for each part**; N.B it is possible to only take Part 1, but not only Part 2**)** Preparation/homework 8 h, Contact 45 h (1 ECTS corresponds to appr. 25-30 hours workload)
Location	Part 1 Basic training: Online in zoom Part 2 Project: Online in zoom breakout rooms

SSPH+ Inter-university Graduate Campus

Ann Walser
Graduate Campus Manager
awalser@ssphplus.ch
+41 31 631 58 94
https://ssphplus.ch/en/graduate-campus

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	**8 October 2021**

Ann Walser
Graduate Campus Manager
awalser@ssphplus.ch
+41 31 631 58 94
https://ssphplus.ch/en/graduate-campus

Schedule

Time	Duration	Mon 8 November	Tues 9 November	Wed 10 November	Thurs 11 November (KdH, DV, BF)	Fri 12 November (KdH, DV, BF)
0900-1045	1h45	Course Intro (KdH) **Quick start to GIS** Intro (DV) Exercise 1 (1h15)	**Projections and geocoding** Intro (DV) Exercise 4 (1h30)	**Open source GIS** Intro (KdH) Exercise 7 (1h30)	Group work: Case study	Group work: Case study
1045-1100	15	Break				
1100-1200	1h	**Quick start to GIS continued** (30min) **Lecture 1** **GIS in Epidemiology** (DV 30min)	**Lecture 2** **Exposure assessment using GIS** (KdH 30min) **Recap** (30min)	**Lecture 3** **Mapping and Communication** (ME 30min) Time to finish off earlier exercise (30min)	Group work: Case study	Group work: Case study
1200-1300	1h	Lunch				
1300-1500	2h	**Spatial relationships and analysis** Intro (KdH) Exercise 2 (1h45)	**Health risk assessment** Intro (DV) Exercise 5 (1h45)	**Automation in GIS** Intro (KdH) Exercise 8 (1h45)	Group work: Case study	Group work: Case study
1500-1515	15	Break				
1515-1700	1h45	**Working with raster data** Intro (KdH) Exercise 3 (1h30)	**Decision making with Route Analysis** Intro (KdH) Exercise 6 (1h30)	**Recap** (1h45)	Group work: Case study	Group work: Case study

DV: Danielle Vienneau; KdH: Kees de Hoogh; Marloes Eeftens (ME) ; Benjamin Flueckiger (BF)

Ann Walser
Graduate Campus Manager
awalser@ssphplus.ch
+41 31 631 58 94
https://ssphplus.ch/en/graduate-campus