ENV-444

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Theory | Exercises | Time for group work

	Period 1 **Monday 8^{15} à 9^{00}**	Period 2 **Monday 9^{15} à 10^{00}**	Period 3 **Monday 10^{15} à 11^{00}**	Period 4 **Monday 11^{15} à 12^{00}**
Week 1 **Introduction** September 8, 2025	**S. Joost** – Introduction to exploratory spatial data analysis and environmental health	**S. Joost** – Description of the course, explanations about requirements	**Exercise 1a** – Introductory readings (Morgenthaler and Anselin)	**Exercise 1b** – Introductory readings (Morgenthaler and Anselin) + short report writing = answer questions
Week 2 **Exploratory Spatial Data Analysis** September 15, 2025	**S. Joost** – Typical exploratory approach - Structuring spatial data analysis	**S. Joost** – Cognitive processes for geodata exploration	**Exercice 2a** – Basic data handling in Geoda	**Exercice 2b** – Histograms and other plots in Geoda + short report writing (include parts a and b)
Week 3 **Population epidemiology** September 29, 2025	**S. Joost** – Study of the relationship between health and place – The concept of exposome	**M. Nehme** – Introduction to population epidemiology	**Exercice 3** – Environmental dataset for Lausanne	**Exercice 3** – Environmental dataset for Lausanne + short report writing
Week 4 **Spatial epidemiology** October 6, 2025	**S. Joost** – Introduction to spatial epidemiology **P. Voruz** – Geoneuropsychology and description of mental health variables	**Exercice 4** – Health data handling and aggregation	**Exercice 4** – Health data handling and aggregation + short report writing	Start discussing the constitution of groups
Week 5 **Order stats and rate smoothing** October 13, 2025	**S. Joost** – Order statistics and rate smoothing	**S. Joost** – Confounding factors and variable adjustment	**Exercice 5** – Confounding factors and variable adjustment + short report writing	Constitution of ~5 groups Finalize group composition in Moodle
Holiday				
Week 6 **Writing of a scientific paper** October 27, 2025	**S. Joost** – Structure of a scientific paper – Instructions for the description of the group semester project	**Vincenzo Palatella (EPFL Library)** – Collaborative writing, storing references, open data publication (1)	**Vincenzo Palatella (EPFL Library)** – Collaborative writing, storing references, open data publication (2)	**Exercice 6** – Prepare and upload open dataset to Zenodo
Week 7 **Medical cohort studies** November 3, 2025	**S. Joost** – Geographically Weighted Regressions (GWR)	**S. Joost** – Exploratory Spatial Data Analysis for the analysis of cancer screening participation rate	**Exercice 7** – Geographically weighted Regression (GWR)	Submission of **description of the semester project** **Deadline**: Nov 8, 23h59
Week 8 **Spatial clustering** November 10, 2025	**S. Joost** – Hierarchical Ascendant Classification (HAC) and Principal Component Analysis (PCA)	**M. Nehme** – Medical cohorts, presentation of Specchio and Bus santé studies	**Exercise** 8 – PCA and HAC with GeoDa	Time for group discussion and work on project
Week 9 **Relative risk** November 17, 2025	**S. Joost** – Spatial Relative Risk (SPARR)	**Exercice 9** – Spatial Relative Risk (SPARR)	**Exercice 9** – Spatial Relative Risk (SPARR)	Time for group discussion and work on project
Week 10 **Metabolic syndrome** November 24, 2025	Time for group discussion and work on project	Time for group discussion and work on project	**M. Nehme** – Environmental pollution and metabolic syndrome	Time for group discussion and work on project
Week 11 **Thematic mapping** December 1, 2025	**S. Joost** – Thematic mapping, synthetic reminder and analytical design (how to improve thematic maps)	**A. Ladoy** (DGS Vaud) – How geographic information can be used in the domain of public health policies application and elaboration	Time for group discussion and work on project	Time for group discussion and work on project
Week 12 **Work on semester project** December 8, 2025	Time for group discussion and work on project	Time for group discussion and work on project	Time for group discussion and work on project	Time for group discussion and work on project
Week 13 **Presentation semester projects** December 15, 2025	Presentation of semester projects (collective presentation)	Presentation of semester projects (collective presentation)	Presentation of semester projects (collective presentation)	Presentation of semester projects (collective presentation)

Deadline : submission of collective scientific paper on January 5 (Monday), 2026, at 23h59

*For all exercises, a one page individual short report (compte-rendu) must be uploaded on Moodle. The submission of 7/9 short reports (9 exercices) gives 20% of the total grade. In case of fraud or cheating the 20% are lost.