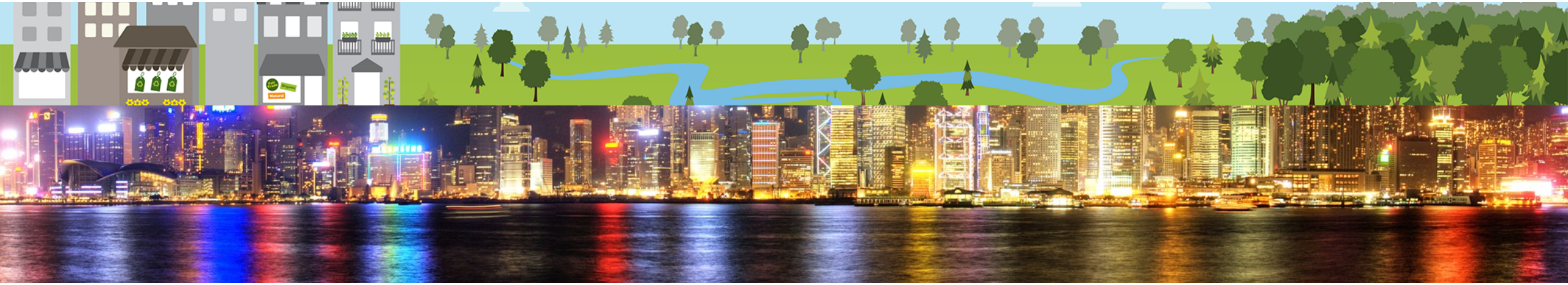
GEOG-325
Applied Spatial Statistics and Urban Modelling



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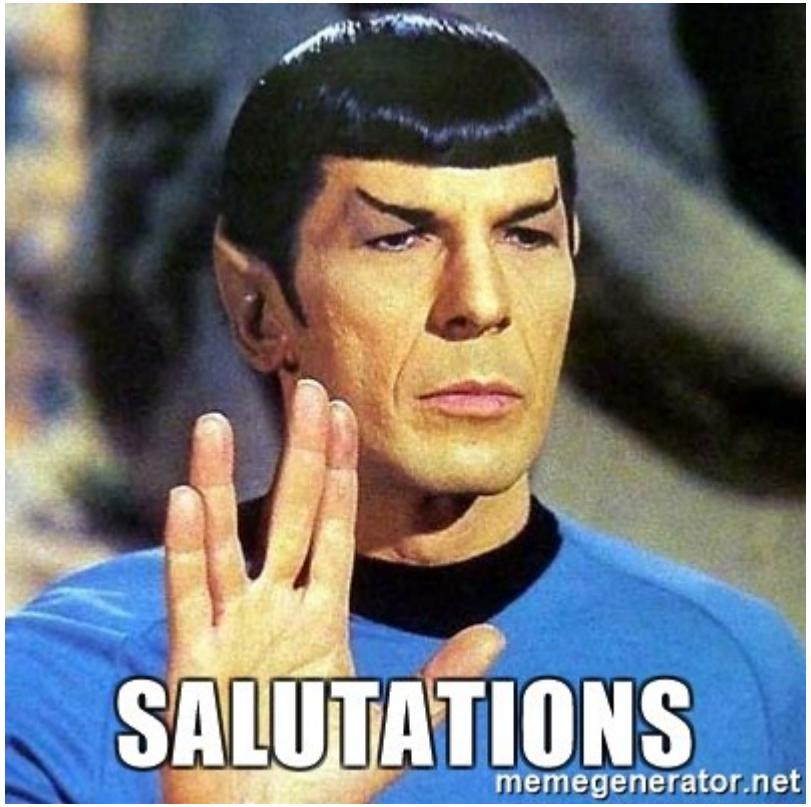
Period I 2018, University of Helsinki

Welcome to the course!

- What is your name?
- What are you studying and what interests you?
- What do you hope to get from this course?



Learning outcomes

1. Understand the basic processes behind the spatial behavior of cities and urban regions.

2. Be familiar with the basics of empirical modelling and simulation of urban spatial processes.

3. Be able to use spatial statistics software and implement spatial statistical models.

4. Be familiar with alternative computational methods that model and simulate urban spatial processes.

5. Be able to interpret data and models in the context of real-world problems.

Class schedule

1. [16.1, 14:15-16:00, PHY E206]: Fundamentals of cities; course expectations
2. [18.1, 9:15-12:00, PHY A113+A114]: Spatial statistics: introduction; spatial weights; clustering analysis
3. [25.1, 9:15-12:00, PHY A113+A114]: Spatial statistics: spatial dependence, spatial regression models
4. [01.2, 9:15-12:00, PHY A113+A114]: Spatial statistics: spatial heterogeneity, geographically weighted regression
5. [08.2, 9:15-12:00, PHY A113+A114]: Cellular automata: connection to spatial statistics, theory and applications
6. [15.2, 9:15-12:00, PHY A113+A114]: Agent based models: theory and applications
7. [22.2, 9.15-12:00, PHY A113+A114]: Expert based models: fuzzy cognitive maps
8. [27.2, 14:15-16:00, PHY E206]: Integrated urban models; future directions of urbanism and urban modelling
9. [01.3, 9:15-12:00, PHY A113+A114]: Student seminar (free-form presentation and discussion of take-home exam)

https://courses.helsinki.fi/en/GEOG-325/120326103

Class requirements

DISCUSSION OF READINGS IN URBAN MODELLING [50% GRADE]

- During five of the course's nine sessions, we'll be discussing well-known readings related to city dynamics, applied urban models, spatial statistics, and the future directions of urban research.
- The discussions are free-form: in addition to familiarizing you with key topics in applied urban modelling, they are also meant to give you the chance to identify interesting topics for your own studies or career, as well as to discuss those topics on your own terms, including problems that well-known theories and models have.
- These in-class discussions are complemented by answering (in brief, and in the your own time) one to two questions on each session's topics, and returning the answers at the end of the course.

INTERACTIVE BUILDING OF A DYNAMIC URBAN MODEL

- In the seventh session, we will build a dynamic model of urban processes. Development will be interactive and its contents are built jointly by the students and the teacher.

STUDENT SESSION: PRESENTING YOUR OWN WORK [50% OF GRADE]

- At the beginning of the course, you will select a spatial statistics topic and will produce a small report around this topic, by applying the techniques taught during sessions 2-4 on data of your choice. This is the take-home exam and can be carried out in small groups or individually. The final session of the course is reserved for presenting and discussing the results.

Activities of each session

1. [16.1] Discussion: drivers of cities
2. [18.1] Reading: Brooks (2012) *Teaching urban economics to planners and the role of urban planning to economists*
3. [25.1] Reading: Miller (2004) *Tobler's First Law and Spatial Analysis*
4. [01.2] Reading: LeSage (2008) *An Introduction to Spatial Econometrics*
5. [08.2] Reading: Batty (1997) *Cellular Automata and Urban Form: A Primer*
6. [15.2] Reading: Macey & Willer (2002) *From factors to actors: Computational sociology and agent-based modeling*
7. [22.2] Flinga: interactive drawing of urban drivers
8. [27.2] Discussion: future of urban planning and urban research
9. [01.3] Free-format discussion of assignments

Sign up for readings and groupwork…

…at: http://muistio.tieke.fi/p/GEOG325

1. Write your name next to the article you'd like to discuss (max. 2 names/article) *(by 25.1.2018)*

2. Make teams by writing your name(s) and proposing a theme for the final report *(by 2.2.2018)*