PhD-course in GIScience spring 2020, 5 hp (NAGE005)

Target group: The main target group is the PhD-student in GIScience at LU; i.e., the course is designed to fit to their interest. Other PhD-students are welcome if they have studied GIS courses on master level.

The course contains four themes. All themes should correspond to 4 days full time work (i.e., correspond to 1.25 credits). Each theme contains a lecture, a writing/practical exercise and a final seminar.

Course coordinator: Lars Harrie, lars.harrie@nateko.lu.se

Application: Last day for application to the course is 24 February.

1) Terrain modelling

Responsible: Petter Pilesjö / Andreas Person / David Tenenbaum

Content: Will discuss data capture, interpolation, and analyses of digital elevation data with a focus on hydrological modelling.

Includes: One lecture, one practical exercise (where all students will carry out a number of hands-on steps, link these to relevant literature, and report reflections in the form of a written report), and a feedback session in the form of a seminar, plus individual feedback on the reports.

2) Ontology and semantic web

Responsible: Ali Mansourian

Content: starts by describes heterogeneities in spatial datasets, with emphasize on semantic heterogeneity, and continues with ontology and semantic web to achieve semantic interoperability

Includes: One lecture, a writing exercise (where all students should write a text describing how the semantic heterogeneities may be handled in their PhD-projects), and a feedback session in form of a seminar plus individual feedback on the reports.

3) Temporal representations in GIS

Responsible: Lars Harrie

Content: Will include the main theories of representing time in geographic data as well as temporal analysis.

Includes: One lecture, a writing exercise (where all students should write a text describing how the temporal dimension should be handled in their PhD-projects), and a feedback session in form of a seminar plus individual feedback on the reports.

4) **Network analyses**

Responsible: Jonathan Seaquist

Content: Will provide an overview of complex networks as applied to 'big data' drawn from social, economic, and ecological systems. Basic methods will be presented for characterizing the structural properties of such systems.

Includes: One lecture, a writing exercise (where all students should write a text describing about networks in the context of their PhD-projects), and a feedback session in form of a seminar plus individual feedback on the reports.

Schedule

Date	Time	Teaching form	Teacher	Room
4 March	9-10	Introduction	LH	Incus
4 March	10-12	Lecture	PP	Incus
4 March	13-17	Exercise	DT, AP	Incus
17 March	10-12	Feedback session	PP, DT, AP	Gotland
17 March	13-15	Lecture	AM	Gotland
27 March	8-10	Seminar	AM	Gotland
27 March	10-12	Feedback session	AM	Gotland
27 March	13-15	Lecture	LH	Incus
14 April	8-10	Seminar	LH	Incus
14 April	10-12	Feedback session	LH	Gotland
14 April	13-15	Lecture	JS	Incus
28 April	8-10	Seminar	JS	Gotland
28 April	10-12	Feedback session	JS	Gotland
28 April	12-13	Common lunch	All	Gotland

Student requirements

To fulfill the course all the students have to:

- Attend all lectures and seminars
- Complete the exercise in terrain modelling
- Hand in a report in each of the themes: (a) ontology and semantic web, (b) temporal representations in GIS and (c) Network analysis.
- Give one oral presentation in a one seminar in either: (a) ontology and semantic web, (b) temporal representations in GIS and (c) Network analysis.

If a student cannot attend a lecture or seminar he/she will either be given an extra assignment or there will be a reduction in the number of credits on the course.