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COURSE SYLLABUS

# Urban Information Management, 7.5 credits

*Urban Information Management, 7.5 högskolepoäng*

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|---|---|---|---|
| Course Code: | TUIS23 | Education Cycle: | Second-cycle level |
| Confirmed: | Oct 15, 2024 | Disciplinary domain: | Technology |
| Valid From: | Jan 18, 2027 | Subject group: | Building Technology |
| | | Specialised in: | A1F Second cycle, has second-cycle course/s as entry requirements |
| | | Main field of study: | Built Environment |

## Intended Learning Outcomes (ILO)

On completion of the course the student shall:

## Knowledge and understanding

- show familiarity with creating urban models closer to reality, thus helping in the reliable management of urban environments
- demonstrate comprehension of how to apply BIM and GIS interoperability in the management of urban assets in a planned and integrated way

## Skills and abilities

- demonstrate the ability to model and integrate data for BIM and GIS
- demonstrate the ability to compose the GIS modeling in ArcGIS Pro and CityEngine (or similar systems)
- demonstrate the ability to formulate data analysis in a UIM environment
- demonstrate the ability to communicate results to the stakeholders

## Judgement and approach

- demonstrate the ability to judge holistic and interdisciplinary approach to the generation of spatial data models through the integration, application, and visualization of city data
- demonstrate the ability to establish connections with relevant urban infrastructure information to administration and human activity

## Content

The course aims to give the students knowledge about BIM and GIS integration and data modeling and analysis at urban scale.

The course includes the following elements:

- BIM and GIS modeling and data integration methods
- GIS modeling in ArcGIS Pro and CityEngine platforms (or similar systems)
- Data analysis in a UIM environment from road, waste collection, water and sewage supply, electricity, and gas infrastructure, to health care, security, and recreation buildings
- Practical info-graphical communication to the results visualization for the stakeholders

## Type of instruction

The course consists of weekly lectures, exercises, and seminars. Occasionally, the course may be given on a distance base.

Language of instruction is English.

## Entry requirements

Passed courses at least 90 credits within the major subject in construction engineering, civil engineering, architecture engineering, lighting design or equivalent and 15 credits in mathematics, and taken course BIM - Requirements and Specifications, 7.5 hp, or equivalent. Proof of English proficiency is required.

## Examination and grades

The course is graded 5, 4, 3 or U.

Some course components, such as lectures, labs, or seminars, may be mandatory due to their unique and non-repeatable nature.

The final grade for the course is based upon a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

| Name of the Test | Value | Grading |
|---|---|---|
| Project | 5 credits | 5/4/3/U |
| Examination | 2.5 credits | 5/4/3/U |

## Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

Laurini, R. (2001). Information Systems for Urban Planning: A Hypermedia Cooperative Approach (1st ed.). CRC Press. https://doi.org/10.1201/9781315274713

Cicirelli, F., Guerrieri, A., Mastroianni, C., Spezzano, G., & Vinci, A. (Eds.). (2019). The Internet of Things for smart urban ecosystems. Cham: Springer.

Svitek, M., Kozhevnikov, S., Tencar, J., Bhattacharjee, S., & Benes, V. (2023). Smart City 5.0 as the Digital Ecosystem of Smart Services: Practical Applications. In Smart Cities and Digital Transformation: Empowering Communities, Limitless Innovation, Sustainable Development and the Next Generation (pp. 327-354). Emerald Publishing Limited.