

BOM210 Urban space and functions

Tätorter funktioner och utformning

Course information 2020

Civil Engineering Programme, TKSAM, Year 1
Civil and Environmental Engineering Programme, TISAM, Year 1
Business Development and Entrepreneurship Programme, TAFFS, Year 1
Chalmers University of Technology

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Aim

BOM210 is an introduction to the subject area Urban Planning and Infrastructure (samhällsplanering och infrastruktur) and the profile Infrastructure and Construction (Infrastruktur och anläggning). It aims therefore at providing the knowledge base in this area focusing especially on the built environment and technical systems in urban areas. It aims to give a professional-oriented insight on how socio-technical systems work and can be planned through a case study.

Learning outcomes

The aim of the course translates into the following learning outcomes, which provide further details of the objectives of the course. Students having passed the course are expected to be able to:

- Describe the objects, systems and actors relevant to urban planning, including the most important infrastructures (energy, transportation, water and wastewater, waste management and the urban environment).
- Describe the planning, construction and operation of urban developments and technical systems, as well as the most important rules, norms, laws and policies applicable in urban planning, infrastructure development and environment.
- Describe the different types of urban typologies, and explain how urban sprawl and densification affect infrastructure planning.
- Describe the need for sustainable infrastructures considering ecological, social and economic aspects, and use indicators to assess the effectiveness and sustainability of cities and infrastructures.
- Plan for temporal and spatial changes in socio-technical systems, and explain the significance of this for the sustainability of the built environment.
- Understand how the various technical and environmental characteristics of urban environments (e.g. air, soil, rock, groundwater, surface water) provide different conditions and requirements for construction.
- Describe the hydrological cycle in the urban environment and the need to avoid contamination of surface and ground water.
- Describe in general terms the city's water and wastewater systems and explain how to plan sustainable water supply and sewerage systems in the built environment.
- Describe in general terms how to plan mobility and transport in the city, and explain how different choices of transport infrastructure affect mobility and access to services.
- Understand traffic noise and ground vibrations from transportation, their effects on human health and wellbeing and their implications for urban planning.
- Motivate the importance of reducing CO₂ emissions and suggest climate adaptation measures for the built environment.
- Consider general ethical issues in urban planning and construction, e.g. cost vs. sustainable technologies.

- Read and use technical texts and scholarly articles in a conscious, critical and effective manner.
- Sift through, collate and summarize the information gathered, and explain and describe the subject content.
- Know the basic communication factors in English and adapt these to oral and written communication situations.
- Introduce and clearly explain in English a subject in a way which is adapted to the communication situation.

Sustainable development is a central aspect of city planning and a motivation for change; it is therefore also an important part of the course.

Course structure and learning moments

The course is based on a problem-based learning progression that aims at providing a broader understanding of urban planning and systems.

The course is designed as a case study with supporting lectures. The lectures aim to provide basic knowledge relevant to urban planning and infrastructures in urban areas. The case study, which is performed in groups and based on an existing area in the Gothenburg region, will provide an opportunity to develop basic skills needed for the development and operation of urban infrastructure and systems. The course also provides an opportunity for students to familiarize themselves with planning and systems in Gothenburg.

Problem-based learning

Problem-based learning is a student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem. Students learn both thinking strategies and domain knowledge. The goals of problem-based learning are to help students develop flexible knowledge, effective problem solving skills, self-directed learning, effective collaboration skills and intrinsic motivation. Problem-based learning is widely believed to result in improved learning and increased understanding.

Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to the resolution of the problem. Each group has a supervisor and the role of the supervisor is to facilitate learning by supporting, guiding, and monitoring the learning process.

Course Elements

The course introduction on 21/01 will provide general information on the course, including aims, learning moment, examination and schedule.

Lectures

A set of lectures was designed to cover the areas of planning in urban areas and operation of relevant systems for service provision. The lectures include on site lectures (Parts 1 and 2) and short inspiration films provided on Canvas (Part 3).

The lectures (Parts 1,2,3), as well as provided reading materials, will be the basis of the intermediate written examination.

Part 1. Planning urban areas

- | | |
|-----------------------------|----------------------------------|
| a. Course introduction | Sebastien Rauch, Leonardo Rosado |
| b. Planning 1 | Sebastien Rauch |
| - Urban planning | |
| - Comprehensive planning | |
| c. Planning 2 | Sebastien Rauch |
| - Detailed development plan | |
| - stakeholder participation | |
| d. Acoustics | Patrik Höstmad (in Swedish) |

Part 2. Operation of urban systems

- | | |
|--------------------|---|
| a. Urban Systems 1 | |
| - Introduction | Sebastien Rauch |
| - Waste management | Leonardo Rosado |
| b. Urban systems 2 | |
| - Traffic planning | Axel Persson, Lennart Persson (Trivector) |
| - Energy | Leonardo Rosado |
| c. Urban systems 3 | |
| - Urban Water | Sebastien Rauch, Zhenhua Sun |

Part 3. Inspiration lectures (online)

Building liveability: Copenhagen's sustainable urban development

<https://www.youtube.com/watch?v=BCYgajPrT64>

7 principles for building better cities | Peter Calthorpe

<https://www.youtube.com/watch?v=IFjD3NMv6Kw>

Complementary videos (online)

Älvstranden / River City

<https://www.youtube.com/watch?v=bW3p5Y-fPq4>

Kära Göteborg. Vart är du på Väg?

<https://www.youtube.com/watch?v=Ha3VPkSKIZY>

In addition lectures on technical language, poster making and writing will be provided.

Project work

The project work deals with the planning and design of actual building projects in Gothenburg. Groups of ca. 6 students will be given the task to study a topic (e.g. energy, water) for a specific construction project and will be asked to make suggestions. The final presentation is in the form of posters. In addition, each student is expected to provide an individual assignment.

Detailed information will be provided at the Group Project Introduction on 04/02. The groups, as well as the topic and project for each group, are selected by the teaching team.

Examination and grading

The entire course corresponds to 6.0 credits, including 3.0 credits for an intermediate exam (Part 1) and 3.0 credits for project work (Part 2). The final grade is F (fail), 3, 4, 5 with 5 being the highest grade. The final grade for the entire course is calculated using the actual, non-rounded grade for Part 1 and Part 2.

Table. Requirements for passing the course

	PART 1	PART 2
CREDITS	3.0	3.0
REQUIREMENTS	<ul style="list-style-type: none"> - Attendance at lectures - Passing written examination - Completing wordlist 	<ul style="list-style-type: none"> - Participation in group project - Presentation of group project in the form of a poster - Individual assignment
GRADING	Individual, based on written examination	Group, based on poster presentation

To pass Part 1 students are required to attend the lectures, pass the intermediate written examination and complete the wordlist. The intermediate examination, which takes place on 19/02 (course week 5), comprises multiple choice questions (60% of the grade) and open questions (40% of the grade). The examination in course week 5 covers knowledge provided in all lectures as well as the compulsory literature. Exams from previous years will be provided before the actual exam. In addition, students are expected to complete a wordlist assignment; the wordlist is graded pass/fail and does not contribute to the grade for Part 1.

To pass Part 2 students are required to participate in the presentation of the group work, as well as provide an individual report concerning the group project. You are expected to actively participate and contribute in the group work. The grade for Part 2 is based on the project for the poster presentation; the individual report will be graded pass/fail. We intend to provide a single grade for all students in a group, but keep the possibility to grade or fail students individually if issues arise in the group work.

Teachers and contacts

The course is principally given by researchers and lecturers at the Department of Architecture and Civil Engineering.

Course leaders

Sebastien Rauch (Examiner), *Professor, Water Environment Technology*,
Sebastien.rauch@chalmers.se

Leonardo Rosado, *Associate Professor, Water Environment Technology*,
Rosado@chalmers.se

Course administrator

Alexandra Westin, *PhD candidate, Water Environment Technology*
Alexandra.westin@chalmers.se

Project supervisors

(in addition to Sebastien and Leonardo)

Anna Kaczorowska, *Researcher, Urban Design and Planning*

Anna Norén, *PhD candidate, Water Environment Technology*

Marie Abadikhah, *PhD candidate, Water Environment Technology*

Jorge Gill, *Assistant Professor, Urban Design and Planning*

Jesper Knutsson, *Researcher, Water Environment Technology*

Technical language support

Fia Börjeson, *Senior Lecturer, Communication and Learning in Science*

Carl Johan Carlsson, *Senior Lecturer, Communication and Learning in Science*

Information and contacts

A weekly email will be sent to all students to provide information and describe expectations for the following week. This email will be sent on Friday afternoons throughout the course.

For questions, please follow the guidelines below. Frequently asked questions (and answers) will be added to the Canvas page. Please use email for communication.

Questions dealing with course administration

Please email the course examiner (sebastien.rauch@chalmers.se) and the course administrator (alexandra.westin@chalmers.se).

Example of administration questions:

- I am away during the examination, what shall I do?
- I missed a compulsory moment because I was sick, what shall I do?

Questions dealing with course content

For questions dealing with course content, please contact relevant teachers or the course examiner (sebastien.rauch@chalmers.se).

Example of questions dealing with content:

- How is the planning process initiated?
- Where can I find information on energy supply in Gothenburg?

Questions dealing with project work

Please contact your group supervisor (provided at the project introduction)

Example of questions dealing with supervision:

- I cannot join a supervision meeting, what shall I do?

Teaching language

The main language of the course is English. Parts of the course and course literature are in Swedish. The written examination and the final poster presentation will be in English.

The choice of language for the course reflects an intention to introduce students to learning and working in English. The Department of Communication and Learning in Science at Chalmers will provide language support during the course. It is important to note that you will not be assessed for your language skills and that language support will be provided. It is also important to note that some of the reading material provided during the course is in Swedish (e.g. reports from municipalities).

A compulsory 'wordlist' individual assignment is included in the course to support language development. The assignment will be introduced during the lecture on 'Technical language' on 31/01 and the deadline for submitting the assignment is 07/02.

A glossary with words or terms relevant to the course in English or Swedish is provided by the National Board of Housing, Building and Planning (Boverket).

<https://www.boverket.se/globalassets/publikationer/dokument/2016/ordlista-glossary-pbl-och-pbf.pdf>

Course literature

Literature for this course will be provided. A number of documents will be provided and should be read to pass the written exam. Complementary literature will be suggested.

Compulsory reading

The following document should be read. Questions related to this documents might be asked at the written examination.

Development strategy – Gothenburg 2035, Göteborg Stad (pages 6-29)

http://goteborg.se/wps/wcm/connect/9c52d58d-af74-4494-89e0-759d852a528e/ENG_UP_kap1-4.pdf?MOD=AJPERES

Recommended complementary reading

The Planning and Building Act (PBL) provides detailed information on the planning legislation in Sweden.

<https://www.boverket.se/globalassets/publikationer/dokument/2018/legislation-edition-3.pdf>

The following websites are potential sources of information.

- Göteborg Stad. <https://stadsutveckling.goteborg.se>
- Göteborg Stad <http://goteborg.se/wps/portal/start/byggande--lantmaterier-och-planarbete/kommunens-planarbete/>
- Boverket <http://www.boverket.se/sv/>
- Yes in my backyard forum <http://gbg.yimby.se/>

Course schedule – BOM210

Week	Date	Time	Moment	Room	Present teacher
1	21/01	13.15-15.00	Lecture – Introduction	HA1	SR, LR, AW
	23/01	8.00-9.45	Lecture – Planning 1 (urban planning + comprehensive plan)	HA1	SR
	24/01	8.00-9.45	Lecture – Planning 2 (detailed development plan + participatory planning)	HA1	SR
	24/01	10.00-11.45	Lecture - Urban systems 1 (introduction + Waste management)	HA1	SR, LR
2	28/01	13.15-15.00	Lecture - Urban systems 2 (Mobility + Energy system)	HA1	AP, LP, LR
	29/01	10.00-11.45	Lecture – Acoustics	HA1	PH
	30/01	8.00-9.45	Lecture – Urban systems 3 (Urban water management)	HA1	SR, ZS
	31/01	10.00-11.45	Lecture – Technical language	HA1	FB, CJC, SR
3	04/02	13.15-15.00	Group project introduction	HA1	SR, LR
	07/02	17.00	Word list (Individual submission)	-	-
4	13/02	8.00-09.45	Lecture – Poster making and writing	HA1	FB, CJC, SR
	14/02	15.00	Group project submission 1	-	-
5	17/02	13.15-17.00	Group supervision	SB-L227, SB-L285, SB-L308, SB-L408	SR, LR, AK, AN, MA, JK, JG
	19/02	8.00-11.45	Written examination	Multisal (SB-III)	SR, LR
6	24/02	17.00	Group project submission 2	-	-
	26/02	9.00-17.00	Group supervision	SB-L200, SB-L208, SB-L308, SB-L316	SR, LR, AK, AN, MA, JK, JG
	02/03	17.00	Group project submission 3 (optional)	-	-
7	02/03	13.15-17.00	Group supervision + poster support	SB-L200, SB-L208, SB-L308, SB-L316	SR, LR, AK, AN, MA, JK, JG
	06/03	15.00	Final group submission for printing	-	-
8	9/03	13.15-17.00	Group supervision (optional)	SB-L200, SB-L208, SB-L308, SB-L316	SR, LR, AK, AN, MA, JK, JG, FB, CJC
	12/03	17.00	Individual project submission	-	-
	13/03	9.00-16.00	Poster presentation	Ljusgården	SR, LR, AK, AN, MA, JK, JG, FB, CJC

SR: Sebastien Rauch, LR: Leonardo Rosado, AK: Anna Kaczorowska, AN: Anna Norén, MA: Marie Abadikhah, JK: Jesper Knutsson, JG: Jorge Gil, FB: Fia Börjesson, CJC: Carl Johan Carlsson, PH: Patrik Höstmad, ZS: Zhenhua Sun, LP: Lennart Persson (Trivector), Axel Persson (Trivector).

Detailed schedules for group supervision and poster presentation will be provided in addition to the above schedule.

Attendance to all items on the schedule is compulsory. In addition, you should watch the online inspiration lectures and read provided reading material. Anyone who cannot make it to a supervised group session or presentation should contact the supervisor of the group. If you are not able to attend the written examination or the

final presentation, please contact the course examiner (Sebastien.rauch@chalmers.se) and the course administrator (Alexandra.westin@chalmers.se).

Additional times booked on the schedule are listed below. These times are for you to watch the lectures, read the material or work on your group project. You are free to choose how to organize yourselves and decide how you use these times, as individuals or groups.

Week	Date	Time
2	31/01	13.15-16.00
3	07/02	13.15-16.00
4	12/02	08.00-11.45
	14/02	13.15-15.00
5	21/02	13.15-16.00
6	24/02	10.00-11.45
	24/02	13.15-17.00
	28/02	13.15-15.00
7	06/03	09.00-11.45
	06/03	13.15-17.00