URB-405

# Ecological contributions to cities in transformation

| Cursus | Sem. | Type |
|---|---|---|
| Architecture | MA1, MA3 | Opt. |
| Environmental Sciences and Engineering | MA1, MA3 | Opt. |
| Managmt, dur et tech | MA3 | Opt. |
| Systèmes urbains | MA1, MA3 | Opt. |

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|---|---|
| Language of teaching | English |
| Credits | 3 |
| Withdrawal | Unauthorized |
| Session | Winter |
| Semester | Fall |
| Exam | During the semester |
| Workload | 90h |
| Weeks | 14 |
| **Hours** | **3 weekly** |
| Courses | 2 weekly |
| Exercises | 1 weekly |
| **Number of positions** | |

**It is not allowed to withdraw from this subject after the registration deadline.**

## Remark

Pas donné en 2026-27

## Summary

The course highlights the role of ecology in the sustainable transformation of cities. It starts from an understanding of cities as ecosystems, describes ecological functions and processes in urban areas, and provides knowledge for implementation by giving insights into relevant fields of action.

## Content

The course covers the fundamentals, knowledge, and concepts with which ecology can contribute to the transformation of our cities. It provides the basics for analyzing cities as systems from an ecological perspective and for integrating ecological considerations into the planning and management of urban systems.

The course content is divided into three main sections, with the first describing cities as ecosystems and analyzing the metabolism of cities from an ecological perspective. The second section takes two different perspectives on cities: On the one hand, it shows the extent to which cities are drivers of global and local environmental change and cause corresponding ecological impacts that need to be mitigated. On the other hand, it presents cities as habitats and shows how ecology can contribute to making them livable. Thirdly, a broad space is given to the presentation of various concepts and transformative fields of action in which ecological knowledge may be applied in different ways.

Students will engage in analyzing a selected example, applying the knowledge gained in the course to critically reflect on and derive their own proposals for how ecological knowledge and ecological concepts can be integrated into the future development of urban systems.

## Keywords

Urban transitions, Urban ecology, Ecosystems, Landscapes, Environmental justice, Urban resilience, Nature, Biodiversity, Health and well-being, Socio-ecological interactions

## Learning Prerequisites

### Required courses

None

## Learning Outcomes

By the end of the course, the student must be able to:

- Recognize the ecological perspective of urban transitions
- Discuss the contributions of urban ecology to address the challenges urban areas and their citizens are facing in the 21st century
- Analyze ecological characteristics of urban landscapes
- Anticipate the concept of cities as complex and resilient socio-ecological systems
- Apply ecological knowledge to support the planning and management of urban systems
- Develop strategies to reduce the ecological impact of urban areas and improve the urban environment

## Transversal skills

- Use a work methodology appropriate to the task.
- Access and evaluate appropriate sources of information.
- Collect data.
- Make an oral presentation.
- Write a scientific or technical report.
- Demonstrate the capacity for critical thinking
- Take feedback (critique) and respond in an appropriate manner.

## Teaching methods

Lectures presenting theoretical concepts and applications, project/exercise

## Assessment methods

Active and continuous participation in the course discussions and exercises (30%), presentation of the results of the project/exercises (30%), serving as the basis for a written report (40%).

## Resources

### Moodle Link

- https://go.epfl.ch/URB-405