

## **Industrial and Urban Symbiosis, 4.0 credits**

Industriell och urban symbios, 4.0 hp

Third-cycle education course

6FIEI33

Department of Management and Engineering

Valid from: Second half-year 2023

**Approved by**  
Head of Department

**Approved**  
2020-05-19

**Revised by**  
Head of Department

**Revised**  
2023-11-13

**Registration number**  
IEI-2023-00597

## Entry requirements

Enrollment in a PhD education program and having an interest in IUS. PhD students at IEI have priority for the course.

## Specific information

**This is only a translation. The Swedish approved curriculum applies.**

Industrial and urban symbiosis (IUS) involves partnerships that improve resource productivity and foster eco-innovations. The purpose of this PhD course is to improve knowledge on IUS with specific focus on importance and impacts, development factors and dynamics, facilitation and impacts of IUS, as well as appropriate research methods for studying IUS processes.

## Learning outcomes

Upon successfully completing the course, the participants shall be able to:

- Describe and critically discuss key characteristics and elements of IUS;
- Describe and discuss different forms through which IUS methods can be applied to businesses, cities and regions;
- Describe and critically discuss the consequences of IUS for business competitiveness, for urban and rural development, and for the development of more bio-based and circular economies.
- Describe and critically discuss methods for assessing impacts of IUS;
- Clarify and analyse the importance and impact of technical, managerial, social, economic and institutional factors for the emergence and development of IUS.
- Describe and critically analyse techniques for facilitating IUS-developments – including contextual strategies for effective IUS-facilitation;

Reflect over interplay between IUS and own research areas and discuss how these can

## Contents

Following themes are included in the course:

- Background, characteristics, forms and definitions of IUS
- Environmental-, business- and regional development-impacts of IUS
- How IUS can contribute to more bio-based and circular economies;
- Development factors and dynamics related to emergence and development of IUS with focus on technical, social, economic, managerial and institutional factors.
- Tools and techniques for facilitating IUS
- Example research methods for studying phenomena within IUS.

## **Educational methods**

Course activities include lectures, seminars, critical analyses of selected literature, group discussions, and preparation, presentation, and peer-assessment of a shortly-written research output on a relevant specific topic.

## **Examination**

Performance in the course is evaluated as "Pass" or "Fail" based on active participation and performance in lectures, seminars, literature discussions (2 hp) as well as the preparation, presentation, peer-review of a scientific research output in the form of a document that can fulfill the requirements of "introduction" and "methods" part of a scientific article (2 hp).

## **Grading**

Two-grade scale

## **Course literature**

Provided at the course start.

## **General information**

The course attends to different circumstances of the students – in terms of background, living conditions and competencies – and strives to provide equal opportunities. On-line participation in a limited number of course instances is possible.