

## Curriculum at LAB University of Applied Sciences 2025-2026

### Circular Economy Solutions 25S, online studies

Code	Name	1 y	2 y	ECTS total
<b>TLTIYCES25SV-1001 Core competence</b>				<b>15</b>
YY00DF24	Circular Economy for Global Sustainable Transformation	5		5
YY00DF25	Circular Economy Research Methods and Case Studies	5		5
YY00DF26	Sustainable Processes and Product Development	5		5
<b>TLTIYCES25SV-1002 Complementary competence</b>				<b>15</b>
YT00DF27	Materials in Circular Economy	5		5
YT00DF28	Circular Economy Technologies and Data Management		5	5
YT00DF29	Climate Change Mitigation and Adaptation	5		5
YT00DF30	Impact Assessment of Circular Economy	5		5
YT00DF31	Managing Urban Sustainability Change	5		5
YT00DF19	Agile Innovating of Digital Solutions	5		5
YT00DF18	Emerging Technologies in Innovative Solutions	5		5
<b>TLTIYCES25SV-1003 Thesis</b>				<b>30</b>
YO00CF53	Thesis Planning	10		10
YO00CF54	Thesis Project and Reporting		20	20

#### TLTIYCES25SV-1001 Core competence: 15 ECTS

#### YY00DF24 Circular Economy for Global Sustainable Transformation: 5 ECTS

##### Learning outcomes

The student is able to

- understand the key principles of the circular economy and their significance in promoting sustainable development.
- understand and utilise circular economy strategies and roadmaps.
- apply circular economy concepts and strategies across various industrial sectors, identify business opportunities offered by the circular economy, and assess their environmental impacts.
- analyse and design circular economy solutions that support ecological, economic, and social sustainability.

#### YY00DF25 Circular Economy Research Methods and Case Studies: 5 ECTS

##### Learning outcomes

The student is able to

- understand quantitative and qualitative research methods.

- find and utilise scientific publications and research data responsibly, understand the field and practices of open professional and scientific publishing.
- understand research, development and innovation activities, and the roles of various stakeholders as well as examples of regional, national and international projects in circular economy.
- increase abilities in research, development and innovation project preparation skills based on strategic understanding, latest knowledge and innovation insights.

## **YY00DF26 Sustainable Processes and Product Development: 5 ECTS**

### **Learning outcomes**

The student is able to

- understand and apply key sustainability concepts and methods in process and product management.
- assess and develop organisational processes to align with sustainability and circular economy principles.
- optimize resource use to extend lifecycle and maintain value in production, product design, and organisational projects.
- understand and enhance utilisation of renewable energy solutions as a basis of sustainable development activity; wind, solar, geothermal, biofuels, biogas and hydrogen.
- identify the innovation opportunities of sustainable development and the development and business opportunities of intellectual property rights (IPR).

## **TLTIYCES25SV-1002 Complementary competence: 15 ECTS**

## **YT00DF27 Materials in Circular Economy: 5 ECTS**

### **Learning outcomes**

The student is able to

- understand the fundamentals of material circulation in the circular economy and its role in sustainability and resource efficiency,
- analyse the lifecycle impacts of materials and identify opportunities for reuse, recycling, and waste stream management, with an emphasis on polymer-based (e.g., plastics, textiles, and composites), as well as biobased materials.
- utilise material and energy audits, considering factors like material flows, energy use, water, land, and logistics.
- apply and utilise waste and by-product collection, sorting, and identification solutions, as well as recognise and maximise opportunities for product and material reuse. The student can consider the effects of extended producer responsibility (EPR) at the end of the products' life cycle.
- evaluate nutrient and critical material recovery and identify alternative, sustainable materials, especially biobased solutions.

## **YT00DF28 Circular Economy Technologies and Data Management: 5 ECTS**

### **Learning outcomes**

The student is able to

- understand the importance of technologies and data in promoting the circular economy.
- evaluate and apply technologies (e.g., AI, machine learning, sorting and identification) that support the circular economy, such as smart production systems, sensor technology, and digitalization,

across various industries.

- understand how to collect, analyse, and utilise data to optimize circular economy processes and value chains.
- design innovative solutions that enhance resource efficiency, promote material circulation, and support sustainable development through the use of digital tools and technologies, such as digital product passport (DPP).

## **YT00DF29 Climate Change Mitigation and Adaptation: 5 ECTS**

### **Learning outcomes**

The student is able to

- demonstrate an understanding of atmospheric processes, and critically evaluate the interaction between the urban environment, climate and extreme weather events.
- demonstrate technical ability to compare climate change mitigation strategies.
- identify and critically evaluate the effects of climate change in urban environments.
- analyse and assess climate change adaptation strategies in both rural and urban contexts.
- understand the principles of climate-smart governance and analytical methods and tools for climate change mitigation and adaptation.

## **YT00DF30 Impact Assessment of Circular Economy: 5 ECTS**

### **Learning outcomes**

The student is able to

- apply life cycle assessment (LCA), carbon footprint and handprint calculations, as well as assessments of nature impacts
- understand the significance of the EU's Corporate Sustainability Reporting Directive (CSRD) initiating a significant expansion of ESG reporting requirements for companies.
- apply environmental impact assessment (EIA) and social impact assessment (SIA) in their field and utilise the tools used in these assessments.
- utilise and develop circular economy metrics
- understand the principles of assessing the impacts of land use and transport solutions.

## **YT00DF31 Managing Urban Sustainability Change: 5 ECTS**

### **Learning outcomes**

The student is able to

- apply sustainable change management methods and circular economy principles at the community level, with a focus on proactive planning (e.g., circular city and urban mining).
- use forecasting techniques to promote circular economy, resilience, and supply security in society.
- recognise the role of sustainability strategies and smart city technologies in driving sustainability and support their adoption and implementation.

## **YT00DF19 Agile Innovating of Digital Solutions: 5 ECTS**

### **Learning outcomes**

The student is able to

- innovate solutions to meet business needs guided by strategy
- apply agility and Lean thinking in the development of digital solutions

- evaluate the added value generated by a digital solution

### **YT00DF18 Emerging Technologies in Innovative Solutions: 5 ECTS**

#### **Learning outcomes**

The student is able to

- examine the role of emerging technologies in enabling innovation
- consider scalability in the design of technology-enabled innovations
- apply technology-enabled innovations in developing business models for better value creation
- evaluate the potential impacts of emerging technologies on business and society

### **TLTIYCES25SV-1003 Thesis: 30 ECTS**

### **YO00CF53 Thesis Planning: 10 ECTS**

#### **Learning outcomes**

The student is able to

- describe the objectives and core contents of their thesis.
- plan and describe the stages of the thesis process.
- take into account the possible research permit and copyright issues.

### **YO00CF54 Thesis Project and Reporting: 20 ECTS**

#### **Learning outcomes**

The student is able to

- implement the thesis on the basis of an approved thesis plan.
- present the results or output of their thesis.
- report on their thesis in writing in accordance with the thesis guidelines of LAB University of Applied Sciences.
- as a maturity test, write a blog post, a press release or an article.