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# FReINDs

**Future-ready industries: Smart,  
sustainable, and circular  
resource management through  
Industrial Symbiosis (IS)**



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# International Course on Smart Industrial Symbiosis

## Kick-off Lecture



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# Agenda Overview

TIME	SESSION	PRESENTER
16:00–16:05	Welcome & Opening	Thomas Laudal, Norway
16:05–16:15	Course Structure	Natālija Cudečka-Puriņa, Latvia
16:15–16:25	Learning Platform Demo	Valerij Dermol, Slovenia
16:25–16:30	Italy Knowledge Camp	Valeria Lavano, Italy
16:30–16:35	IS Toolkit Overview	Łukasz Fedycki, Poland
16:35–16:50	Q&A	Thomas Laudal, Norway



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2/17/2026



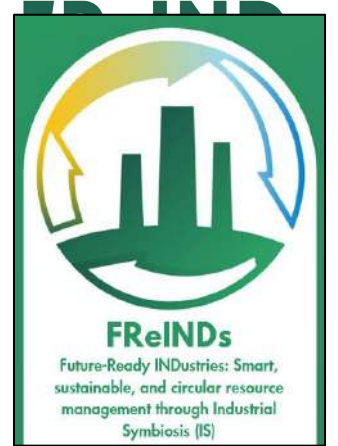
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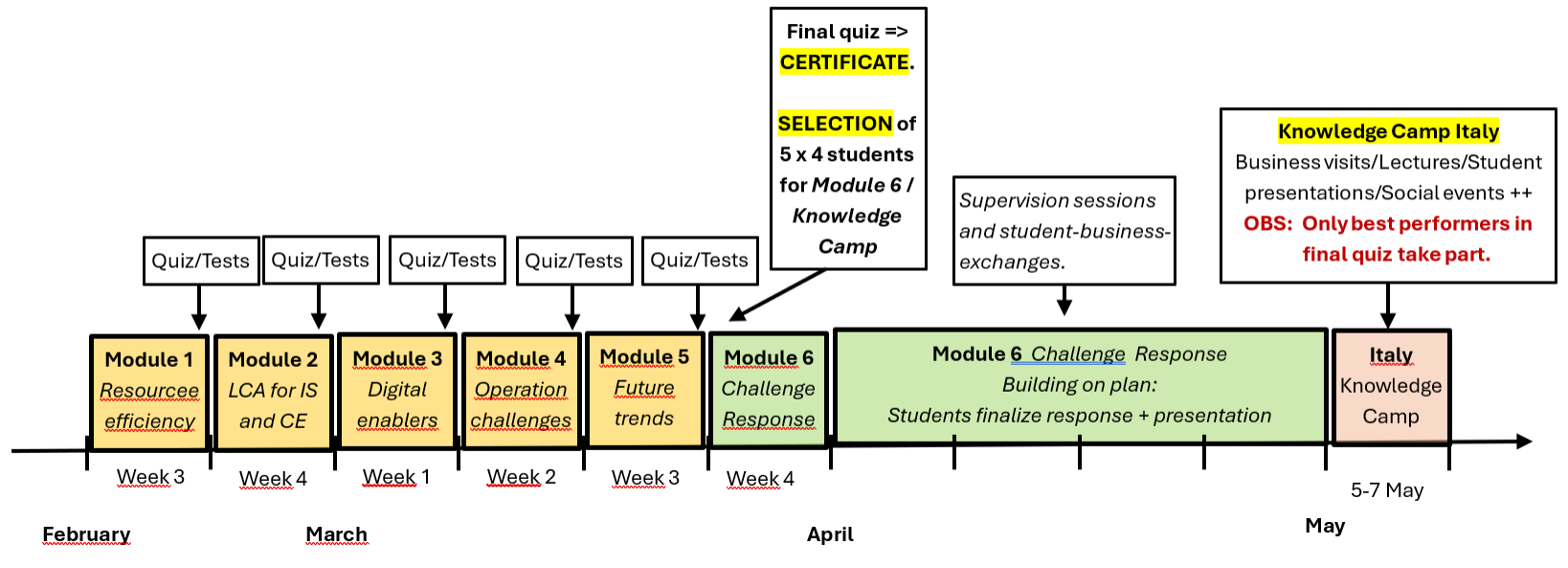


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# KICK-OFF MEETING 16<sup>TH</sup> OF FEBRUARY 2026 *SMART INDUSTRIAL SYMBIOSIS COURSE*

## Timeline for the FReINDs course “Smart Industrial Symbiosis”, Spring 2026



- Five modules before Easter.
- Certificate after final quiz.
- Sixth module and knowledge camp in Italy is only for the best performers in final quiz.
- Lectures are mostly recorded. A few are live first.
- A few minor submissions.

We know you are busy.  
Check the **MOOC** after this meeting!

MOOC = Massive Open Online Course.



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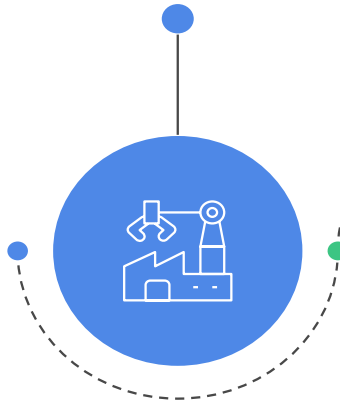
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# Study Course Module Sequence

## Industrial Symbiosis and Collaborative Resource Utilization

Exploring how industries can  
work together to share  
resources



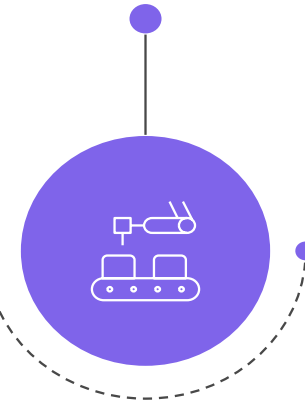
## Smart and Sustainable Resource Management: Digital Enablers

Utilizing digital technologies to  
manage resources efficiently



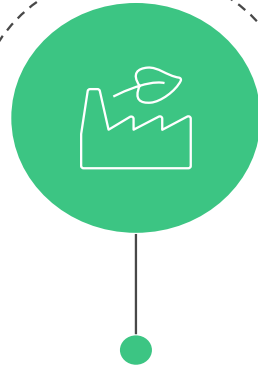
## Trends and Skills in Future Collaborative Supply Chains

Identifying future trends and  
skills needed for collaborative  
supply chains



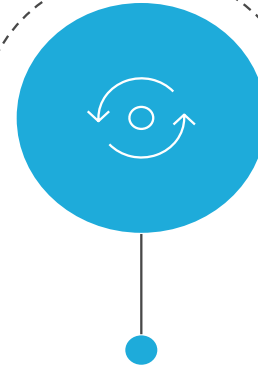
## Life Cycle Assessment for Industrial Symbiosis and Circular Economy

Evaluating the environmental  
impact of circular economy  
practices



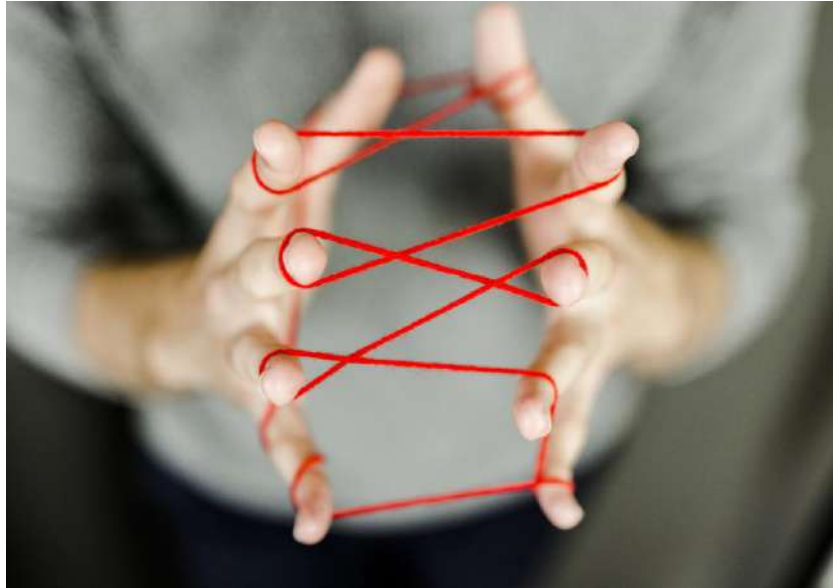
## Operationalizing Circular Economy in Business Operations

Implementing circular economy  
principles in business  
processes





# Overall Study Course Structure



## Progressive complexity:

- Conceptual foundations
- Analytical tools
- Digital enablers
- Business implementation
- Future-oriented skills and systems thinking

## Interdisciplinary integration:

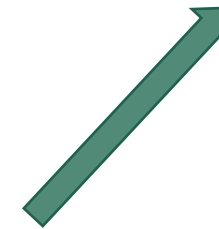
- Environmental science
- Engineering & digitalization
- Business & operations
- Systems and supply chain management

## Assessment structure:

- Each module is followed by a quiz
- A comprehensive final test is opened after completion of all 5 modules
- Continuous knowledge consolidation throughout the course.

## Real Industry Challenges

- Students work on authentic industrial symbiosis cases
- Identification of collaboration opportunities
- Development of implementable circular solutions



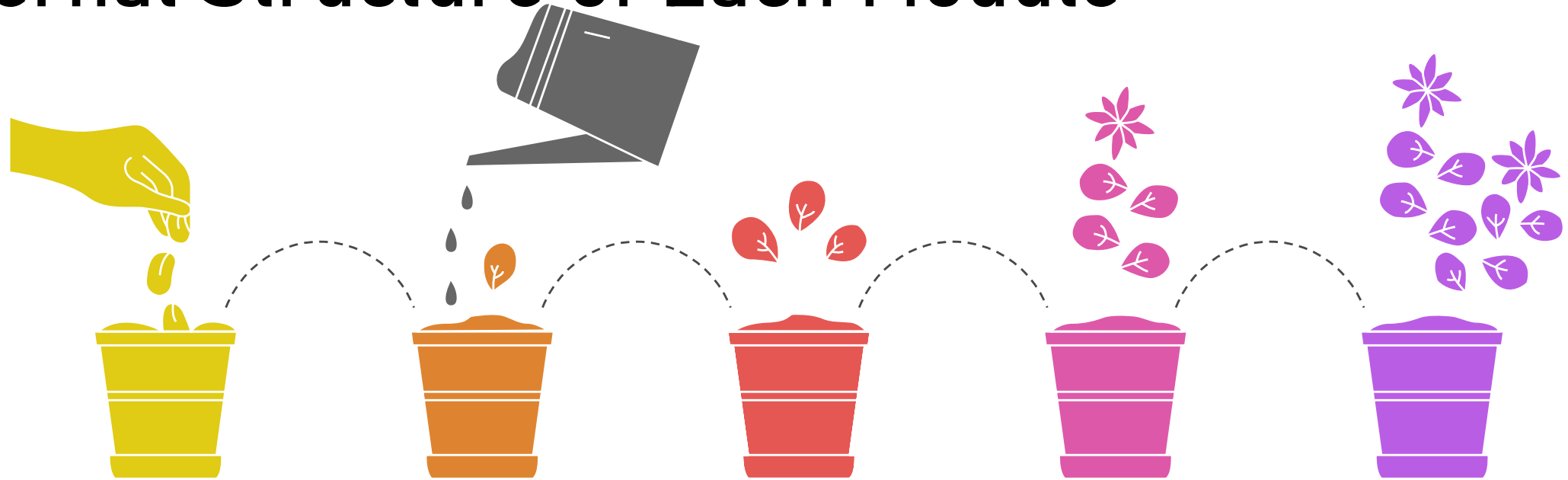


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# Internal Structure of Each Module



**Initial  
Understanding**

Basic knowledge of  
circular economy

**Module  
Structure**

Thematic subtopics  
and sequenced  
blocks

**Learning  
Materials**

Mandatory and  
recommended  
resources

**Skill  
Development**

Analytical, digital,  
and systems-  
thinking

**Practical  
Application**

Applying circular  
economy principles

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# Learning Impact & Added Value



## What Students Gain

- Systems thinking in circular economy
- Practical skills in industrial symbiosis
- Competence in LCA and digital tools
- Ability to operationalize CE in business
- Collaboration skills for future supply chains

## Innovative Elements of the Course

- Industry-integrated challenges
- Competence-based assessment
- Combination of analytical + digital + business perspectives

## Learning Logic

- Modules → Quizzes → Real Case Work → Final Test → Integrated Competence



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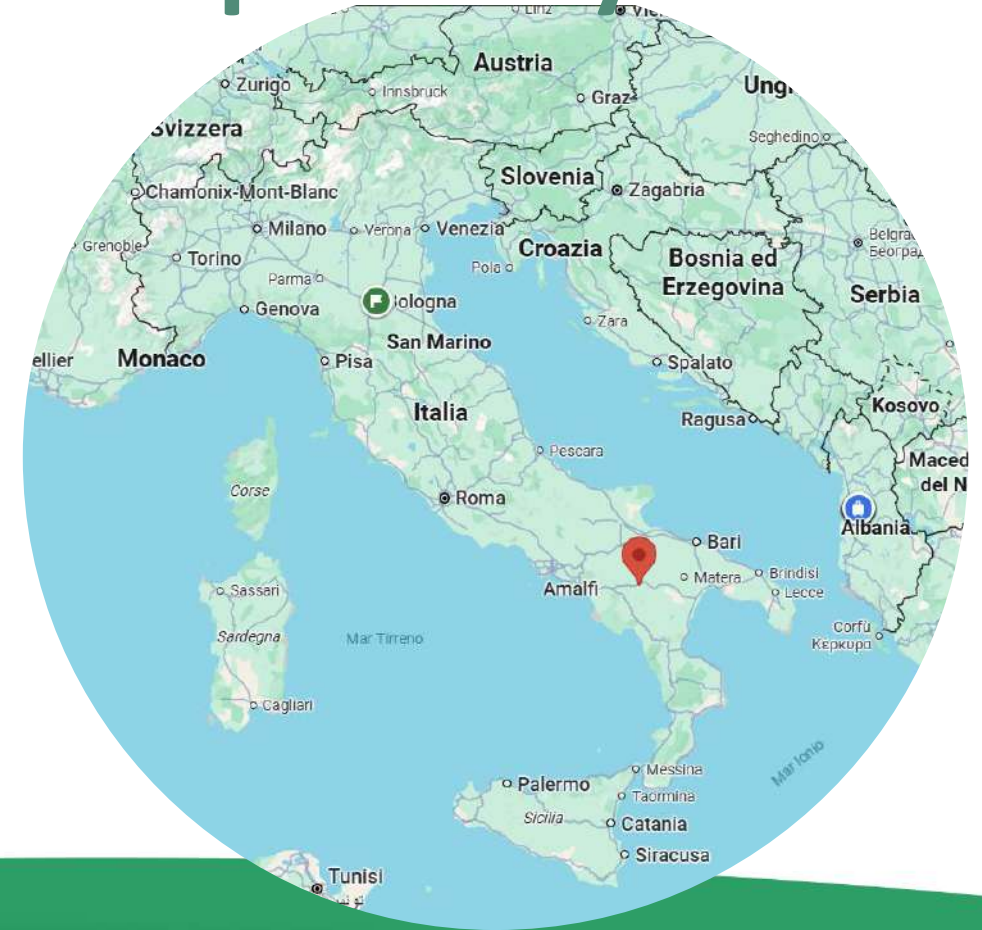


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# FReINDs Knowledge Camp in Italy



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# Knowledge Camp

5th – 7th May 2026

Potenza

- 2 days and an half
- Welcome event
- Workshops
- Study visit in Matera
- International dinner





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# THANK YOU

## Partnership



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