

Online Capacity Training Curriculum

“Digital skills for circular economy and waste management”

Lead by OsloMet

Introduction

This curriculum is designed for scholars and researchers for widening countries who are interested in enhancing digital skills for circular economy research and waste management projects.

Learning outcomes

By the end of this online capacity training, participants are able to:

- Distinguish between the different methods and digital tools applied to a spatial analytical and modelling approach for circular economy including biodiversity and waste management projects.
- Apply digital tools for data analysis, management, and visualization in the circular economy and waste management context.
- Analyze and interpret data to support decision-making
- Create data visualizations that communicated insights to stakeholders effectively.
- Demonstrate critical thinking and problem-solving skills in a learner-centred environment that encourages collaboration and practical application.

This online capacity training curriculum combines digital skill-building with practical application in the field of circular economy and waste management fostering a robust foundation in both technical and project-based competencies.

Pedagogical approaches

This training applies the following three approaches:

- (1) Learner-centred pedagogy where learners are actively involved and interact with both peers and faculty; the learning is flexible and adaptive to learners` needs, learners take responsibility of their own learning to develop their skills, and formative forms of self- and peer assessments.
- (2) Active learning techniques, incorporating think-pair-share and peer instruction via personal response devices (e.g. Mentimeter, Poll Everywhere).

- (3) The assessment method of online Quizzing for testing student knowledge and verifying achievements of learning outcomes. Quizzing belongs to the classic method of multiple-choice testing.

Thematic blocks

Online capacity training 1 “Circular Economy and Biodiversity analyses”

- Overview of circular economy with main modelling approaches
- Basics of data analysis, data cleaning techniques, structuring data for analysis and pre-processing of data in Geographic Information System (GIS)
- Non-weighted and weighted spatial multicriteria analysis in GIS
- Autocorrelation analysis in GIS and the first law of geography
- Econometrics using the software R
- Application to case studies
- Quiz for self-assessment

Online capacity training 2 “Waste Management”

- Waste management hierarchy and challenges for projects (reduce, reuse, recycle, energy recovery, disposal)
- Location choice analysis in GIS: Recycling centres in regions, waste segregation bins in cities, solar cataster for recycling centres (regional and urban scale),
- Life-cycle assessment (building scale)
- Application to case study
- Quiz for self-assessment

Technical requirements

It is advised to have access to a laptop, PC, or tablet with stable internet and access to following programs:

- ArcGIS
- QGIS
- Text processing software
- PDF editor and reader
- Online document management and sharing szsteM: OneDrive, GoogleDrive or similar

Online capacity training 1 “Circular economy and biodiversity analysis”

Training: “Spatial multicriteria decision analysis in GIS for a circular economy” with Dr. Wendy Tan

When: Tuesday, 17th December 2024

Zoom link:

<https://oslomet.zoom.us/j/63748710124?pwd=x9MDz9Ayk9RcF0rNap6Uo1R8zDBTaL.1>

Meeting ID: 637 4871 0124, Password: 222825

9:30-10:00	Welcome and short introduction
10:00-12:00	<ul style="list-style-type: none"> - Lecture: The basics of spatial multicriteria decision analysis (MCDA) in GIS - Part 2: Brainstorming session for MCDA weights and criteria preferences for presented case study
12:00-13:00	Lunch break
13:00-15:00	<ul style="list-style-type: none"> - Part 3 – Practical Lab: Application of MCDA in GIS to presented case study for weighted and non-weighted spatial MCDA. - Q&A
15:00-15:30	Provision of Quizz for self-assessment, closing and outlook

Topic: “Spatial autocorrelation and the first law of geography” with Dr. Marina Toger

When: Wednesday, 18th December 2024

<https://oslomet.zoom.us/j/63841694340?pwd=j8iL1ugTb55DbrODkDAJhLsyCSPOF3.1>

Meeting ID: 638 4169 4340, Password: 808311

9:30-10:00	Welcome and short introduction
10:00-12:00	<ul style="list-style-type: none"> - Lecture: Introduction to Geographic Information System - Practical lab: Spatial autocorrelation in GIS (part 1)
12:00-13:00	Lunch break
13:00-15:00	<ul style="list-style-type: none"> - Practical lab: Spatial autocorrelation in GIS (part 2) - Q&A
15:00-15:15	Closing and outlook to the next capacity training

Topic: “Spatial econometrics in R” with Dr. Umut Türk

When: Thursday, 19th December 2024

<https://oslomet.zoom.us/j/66163323299?pwd=4bJkrgg8Sw7BaL9FYgjRWT8Mhbw4k6.1>

Meeting ID: 661 6332 3299, Password: 275271

9:30-10:00	Welcome and short introduction
10:00-12:00	- Lecture: Spatial econometrics - Practical lab: Spatial econometrics in R (part 1)
12:00-13:00	Lunch break
13:00-14:00	- Practical lab: Spatial econometrics in R (part 2) - Q&A
14:00-14:15	Closing and outlook to the next capacity training

Online capacity training 2 “Waste management projects”

To be announced soon.

List of participants for Online training 1 “Circular economy and biodiversity analysis!

Partner institutions	Participants
FEUN	
UOM	
EFRI	
Co-PLAN	
DSA	
UL	
POLIEDRA&POLIMI	
OSLOMET	
EMEA	