

## CURRICULUM FOR THE LIFE-LONG LEARNING PROGRAM

### Advanced Research Methods in regional Science

#### (1) OBJECTIVE(S):

This course is designed for researchers, academics, and professionals eager to deepen their understanding of spatial data analysis and its applications in regional science. Throughout the program, participants will explore spatial econometrics in R, learn to identify and address spatial dependence in panel data, to apply cutting-edge techniques for more sophisticated data analysis, delve into the complexities of economic modelling across multiple sectors and regions and combine theoretical knowledge with practical application by engaging in empirical simulation models and testing complex causal relationships. Besides, the participants will broaden analytical skills with advanced spatial analysis techniques for comprehensive neighbourhood and regional science studies. This program is perfect for those looking to stay at the forefront of regional science research, offering a blend of theoretical knowledge and practical application.

In summary, the educational objectives of the course are:

- Identify and tackle spatial dependence in panel data
- Utilize advanced techniques for data analysis
- Study economic modeling across various sectors and regions
- Integrate theoretical knowledge with practical application through empirical simulation models
- Examine complex causal relationships through testing

Completing this course/educational activity, students will be able to:

- Understand spatial econometric tools in R
- Analyse spatial dependencies in economic data, with practical application to regional studies.
- Understand and use multisectoral and multi-regional economic models
- Engage in robust economic and social simulations: with the introduction to innovative methodologies in regional science: such as spatial machine learning, agent-based modelling and Structural Equation Modelling

	<ul style="list-style-type: none"><li>Conduct survey methods and spatial analysis, culminating in the ability to conduct empirical research and neighbourhood analysis within regional science.</li></ul>				
(2) TARGET GROUP:	This course is designed for researchers, academics, and professionals eager to deepen their understanding of spatial data analysis and its applications in regional science.				
(3) METHODOLOGY:					
1. Lectures	<table><tr><td>X PP slides</td><td>X Discussion</td><td>X Q &amp; A</td><td><input type="checkbox"/> Brainstorming</td></tr></table>	X PP slides	X Discussion	X Q & A	<input type="checkbox"/> Brainstorming
X PP slides	X Discussion	X Q & A	<input type="checkbox"/> Brainstorming		
2. Exercises	<table><tr><td>X Individual</td><td><input type="checkbox"/> Group-based</td><td>X Case studies</td><td><input type="checkbox"/> ...</td></tr></table>	X Individual	<input type="checkbox"/> Group-based	X Case studies	<input type="checkbox"/> ...
X Individual	<input type="checkbox"/> Group-based	X Case studies	<input type="checkbox"/> ...		
3. Written materials	<table><tr><td>X Textbook</td><td>X PP Handouts</td><td><input type="checkbox"/> Worksheets</td><td><input type="checkbox"/> Questionnaire</td></tr></table>	X Textbook	X PP Handouts	<input type="checkbox"/> Worksheets	<input type="checkbox"/> Questionnaire
X Textbook	X PP Handouts	<input type="checkbox"/> Worksheets	<input type="checkbox"/> Questionnaire		
4. Equipment	<table><tr><td><input type="checkbox"/> Notebook</td><td>X LCD projector</td><td><input type="checkbox"/> Flip-chart</td><td><input type="checkbox"/> ...</td></tr></table>	<input type="checkbox"/> Notebook	X LCD projector	<input type="checkbox"/> Flip-chart	<input type="checkbox"/> ...
<input type="checkbox"/> Notebook	X LCD projector	<input type="checkbox"/> Flip-chart	<input type="checkbox"/> ...		
(4) NUMBER OF CONTACT HOURS:	37				
(5) NUMBER OF PARTICIPANTS:	min. 8, max. 30				

(6) CONTENT:	NUMBER OF CONTACT HOURS	TEACHING STAFF
<p><b><u>Monday (1<sup>st</sup> day)</u></b>  <b>Assistant Professor Giovanni Millo (7 hours)</b></p> <ul style="list-style-type: none"> <li>• A Review of Software for Spatial Econometrics in R</li> <li>• Cross-sectional and spatial dependence in panel data</li> </ul> <p><b><u>Tuesday (2<sup>nd</sup> day)</u></b>  <b>Associate Professor Katarzyna Kopczewska (8 hours)</b></p> <ul style="list-style-type: none"> <li>• Spatial machine learning: new opportunities for regional science</li> </ul> <p><b><u>Wednesday (3<sup>rd</sup> day)</u></b>  <b>Full Professor Eduardo A. Haddad (4 hours)</b></p> <ul style="list-style-type: none"> <li>• Multisectoral and Multi-regional Economic Modelling</li> </ul> <p><b>Associate Professor Blanka Šimundić (4 hours)</b></p> <ul style="list-style-type: none"> <li>• Multisectoral and Multi-regional Economic Modelling – the case study - Croatia</li> </ul> <p><b><u>Thursday (4<sup>th</sup> day)</u></b>  <b>Full Professor Eveline Leeuwen (5 hours)</b></p> <ul style="list-style-type: none"> <li>• Survey methods</li> <li>• Agent-based modelling</li> <li>• A combination of the two: empirical simulation models</li> </ul> <p><b>Assistant Professor Marija Vuković (2 hours)</b></p> <ul style="list-style-type: none"> <li>• Structural Equation Modeling (SEM) in Regional Science</li> </ul> <p><b><u>Friday (5<sup>th</sup> day)</u></b>  <b>Associate Professor Özge Öner (7 hours)</b></p> <ul style="list-style-type: none"> <li>• Spatial Analysis in Regional Science</li> </ul>	<p><b>37 contact hours</b></p>	<p><b><u>Full Professors:</u></b>  Eveline van Leeuwen  Eduardo A. Haddad</p> <p><b><u>Associate Professors:</u></b>  Katarzyna Kopczewska  Ozge Oner  Blanka Šimundić</p> <p><b><u>Assistant Professor:</u></b>  Giovanni Millo  Marija Vuković</p>

- Neighbourhood Analysis
- Empirical applications in recent research

<i>Lectures</i>	X PP slides	<input type="checkbox"/> Discussion	<input type="checkbox"/> Q & A	<input type="checkbox"/> Brainstorming
<i>Exercises</i>	X Individual	<input type="checkbox"/> Group-based	X Case studies	<input type="checkbox"/> ...
<i>Written materials</i>	X Textbook	X PP Handout	X Worksheets	<input type="checkbox"/> Questionnaire
<i>Equipment</i>	<input type="checkbox"/> Notebook	X LCD projector	<input type="checkbox"/> Flip-chart	<input type="checkbox"/> ...

**PROJECT MANAGER:**

*Assoc. Prof. Blanka Šimundić*

<b>Date:</b>	<b>26.04.2024.</b>
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**KLASA: 602-06/24-02/06**  
**URBROJ: 2181-196-05-04-24-03**

**Dostaviti:**

1. CCO

Vrijedi od:

02-02-2022

Oznaka:

QF81-1ec

Stranica:

4 od 4