DEPARTMENT OF EDUCATION AND SPECIAL EDUCATION

QRM2301, Education and geography - methods for measuring and analysing spatiality , 7.5 credits

Utbildning och geografi - metoder för att mäta och analysera rumslighet , 7,5 högskolepoäng

Third-cycle level / Forskarnivå

Confirmation

This syllabus was confirmed by the Department of Education and Special Education on 2023-09-08, and was last revised on 2024-08-22. The revised course syllabus is valid from Autumn semester 2024.

Responsible Department

Department of Education and Special Education, Faculty of Education

Entry requirements

For admission to the course, the applicant has to be registered as a doctoral student in the third cycle or have a doctoral degree. The applicant should also have documented prior knowledge corresponding to the learning goals in the basic courses QRM1800 *Basic statistics for educational research,* 7,5 credits and QRM1802 *Regression analysis in educational research,* 7.5 credits, or similar.

Learning outcomes

The overall purpose of the course is to provide an introduction to measurement, analyses and visualization of spatial data with quantitative methods. The course covers a range of methodologies and techniques used to measure and analyse various aspects of spatiality of education such as educational segregation and social stratification in urban and rural areas. Through the course, participants will learn to critically evaluate and interpret research on segregation and social stratification, as well as develop a comprehensive understanding of methodological knowledge and skills for addressing research questions related to spatiality of education. By the end of the course, course participants will be able to apply the learned techniques to conduct independent research that addresses critical questions related to spatiality

and educational outcomes.

Knowledge and understanding

- Discuss theoretical and empirical departures in research on spatial inequalities and describe how segregation processes contribute to shape various educational outcomes
- Account for what kind of data that are suitable for spatial analyses of segregation in education, such as social mix, isolation and diversity.
- Describe basic methodological principles and techniques for measuring, analyzing, and visualizing spatial data across different geographies related to education.
- Explain key concepts used in spatial analyses, such as segregation indices, modifiable areal unit problem (MAUP), and spatial clustering.

Competence and skills

- Prepare and modify geographical data on different analytical levels.
- Create non-administrative geographies of residential and schooling areas using geographical data and K-nearest neighbourhood techniques.
- Use data to develop and apply various indices of segregation along with basic regression techniques.
- Visualize and interpret analytical outcomes using basic cartography.

Judgement and approach

- Critically evaluate and interpret research on segregation and social stratification, identifying strengths and weaknesses of existing studies and developing ideas for future research.
- Reflect on methodological knowledge and skills for developing research questions related to spatial distribution in education, including designing and executing empirical studies that incorporate spatial analysis techniques.

Course content

The course provides the necessary knowledge and skills to independently conduct research related to spatiality of education. It covers fundamental principles for measuring, analysing, and visualizing spatial data using quantitative methods that can be applied to explore the impact of spatiality on education. The course begins with an overview of theoretical and empirical departures in spatial analyses, followed by a focus on measures and indicators of segregation and how to handle geographical scales. Course participants will learn how to create non-administrative geographies of residential and schooling areas using geographical data and K-nearest neighbourhood techniques. The course also covers basic regression techniques applied for analysing segregation indices and various explanatory background variables. Furthermore, course participants will learn techniques for visualizing and interpreting findings by making and using maps. Finally, course participants will discuss and evaluate analytical strategies appropriate for conducting research on matters of spatiality in education by identifying strengths and weaknesses in research design and methodology.

Types of instruction

The course is organized around meetings that includes lectures, seminars and workshops with hands-on training using datasets developed for the content of the course using, mainly, the statistics software SPSS. In addition, online supervision will be offered during the course. Other statistical software may be introduced by teachers during the course, such as R studio and appropriate GIS-software.

Course participants are further expected to work independently and take responsibility for their own learning by reading the course literature, performing practical exercises and complete the tasks that are assigned by the course leader.

Language of instruction

The course is given in English

Language of instruction is English, unless all participants and teachers agree on Swedish.

Grades

The grade Pass (G) or Fail (U) is given in this course.

Types of assessment

Teaching in the form of lectures, seminars and practice will take place online and/or on site in the form of mandatory 'Campus days'. The course is examined by various theoretical and practical assignments continuously during the course, and a final written report, in which statistical analyses are applied to educational data and the interpretation of the results are presented. A pass grade requires active participation in seminars and workshops, and attendance in all mandatory tasks.

Course evaluation

The course will be evaluated after the course has ended. The results will be used as advice for improvement of the course.

Other information

Collaborating departments

Department of Education and Special Education (department in charge), University of Gothenburg in collaboration with Department of Applied Educational Science, Umeå University, and Department of Education, Uppsala University.

Technical equipment

In order to participate in the course, access to your own computer and the required statistical software (see list of literature) is needed.

Participant limitation and priority

The number of participants is limited to 15 students. Priority will be given to doctoral students within the Educational sciences if the number of applicants for the course is exceeding the

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number of places.

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