

Course/module description

Course provider (institution)	Osh Technological University named after M. Adyshev (OshTU)
Course title	Spatial Analysis
Target group	PhD Students (Cartography and Geoinformation)
Type (compulsory/optional):	Elective course
Number of ECTS credits allocated (if applicable); estimated workload	5 ECTS (150 academic hours)
Mode of delivery (face-to-face/ distance learning etc.); number of contact hours	45 hours (face-to-face hours)
Language of instruction	Kyrgyz/Russian/ English
Prerequisites and co-requisites (if applicable)	Geographic Information Systems (GIS), Informatics and some programming experience in any language.
Course aims:	<p>In this course, students will learn about spatial analysis, which includes any formal methods for studying objects using their topological, geometric, or geographic properties.</p> <p>Here we will study the main methods of spatial analysis used in scientific disciplines; through the social, physical and biological sciences.</p> <p>The course is designed so that students develop an understanding of the quantitative analysis of spatial data, including methods of pattern analysis, classification, and spatial modeling in a GIS environment.</p>
Learning outcomes:	<p>On completion of this course, students should be able to:</p> <ul style="list-style-type: none"> - understand the basic and advanced methods of analysis and spatial modeling using GIS and the consequences of their application in various fields of science and practice; - select and apply appropriate methods of data acquisition, analysis and visualization to solve research problems.
Competences	-
Course content:	<p>The syllabus will cover topics from:</p> <ul style="list-style-type: none"> - quantitative and qualitative spatial analysis: advanced spatial statistics, geostatistics, - surface modeling, - cost analysis, - network modeling, - cellular automata, - location and allocation analysis, - spatial modelling of natural and anthropogenic processes, - problems with the use of GIS in spatial modeling, - examples in the field of: landscape structure analysis, land surface modelling, population modelling, hydrological modelling, transport accessibility, land cover changes and land use.

Recommended or required reading and other learning resources/tools:	<p>1. <i>Lecture Materials</i></p> <p>2. <i>Software:</i> ArcGIS Desktop, ArcPro, R, online mapping tools (e.g. GoogleMaps, ArcGIS online)</p> <p>3. <i>Recommended Books:</i></p> <ol style="list-style-type: none"> 1. An introduction to Spatial Data Analysis, Advanced Remote Sensing. http://book.ecosens.org/gobook/ 2. Fundamentals of Spatial Analysis and Modelling, Jay Gao ISBN 9781032115757, Published December 22, 2021 by CRC Press, 368 Pages
Planned learning activities and teaching methods:	<ol style="list-style-type: none"> 1. Regular lectures; 2. Practical methods – laboratories 3. Practical methods – project method 4. Problem-solving methods – discussions in class
Assessment methods and criteria:	<ol style="list-style-type: none"> 1. Mid-term exam (25%) 2. Labs and computing tasks (25%) 3. Class discussion/participation (10%) 4. Final exam 40%
Additional information:	<p>Course instructor – Gulzara Mamazhakypova Contacts: gulzara.mamazhakypova@mail.com, mob.tel.: +996-777-797070</p>