

Course/module description

Course provider (institution)	Osh Technological University named after M. Adyshev (OshTU)
Course title	Geospatial BIG Data
Target group	PhD Students (Cartography and Geoinformation)
Type (compulsory/optional):	Mandatory
Number of ECTS credits allocated (if applicable); estimated workload	6 ECTS (180 academic hours)
Mode of delivery (face-to-face/ distance learning etc.); number of contact hours	90 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:	The purpose of the discipline "Geospatial BIG Data" - to study the principles of working with big data, to get acquainted with the components of the Hadoop ecosystem and the computational paradigm MapReduce. During the educational process, students in practice implement the main Big Data solutions in cloud platforms and master the standard tools for working with Big Data. Big Data can take up terabytes and petabytes of storage space in diverse formats including text, video, sound, images, and more.
Learning outcomes:	<ul style="list-style-type: none"> - Use the Hadoop architecture for working with big data. - Demonstrate and implement big data streaming processing models. - Perform cloud computing with data of the order of several terabytes.
Competences	-
Course content:	<p>The syllabus will cover topics from:</p> <ul style="list-style-type: none"> • Big Data introduction • Big data analysis process • Methods forecasting • Statistical data processing
Recommended or required reading and other learning resources/tools:	<ol style="list-style-type: none"> 1. <i>Lecture Materials</i> 2. Software: GoogleEarthPro, ArcGIS, online mapping tools (e.g. GoogleMaps, R) 3. Recommended Books: <ol style="list-style-type: none"> 1. Rezzani, A. Big data. Architettura, tecnologie e metodi per l'utilizzo di grandi basi di dati, Apogeo Education, 2013 2. Karau, Konwinski, <i>Learning Spark: Lightning-Fast Big Data Analysis</i>, O'Really, 2015 3. Spatial big-data challenges intersecting mobility and cloud computing, Authors: Shekhar, Shashi and Gunturi,

	<p>Viswanath and Evans, Michael R and Yang, KwangSoo, Year 2012</p> <p>4. Geospatial big data: challenges and opportunities, Authors: Lee, Jae-Gil and Kang, Minseo, Year 2015</p>
Planned learning activities and teaching methods:	<ol style="list-style-type: none"> 1. Regular lectures; 2. Laboratory and practical work 3. 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 – Nurgul Kadyrkulova</p> <p>Contacts: kadyrkulova74@mail.com, mob.tel.: +996-773-682944</p>