

Course/module description

Course provider (institution): Kyrgyz Mining-Metallurgical Institute named after academic U. Asanaliev
Course title: Geoinformation Technologies in Geology
Target group: PhD Students (Applied Geology Program)
Type (compulsory/optional): Compulsory
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): General Geology, Structural Geology, Knowledge of English for reading literature
Course aims: formation of theoretical knowledge and practical skills in application of modern information technologies, geoinformation systems, in matters of collection, analysis and presentation of spatially distributed information related to geology.
Learning outcomes: Student will be able to: LO1: Formulate the basic concepts of the geographical information system and technology; LO2: Prepare and process geochemical sampling data obtained from the field; LO4: Use geochemical data in geological modeling of mineral deposits; LO5: Create a digital geological map. LO6: Analyze digital geological map.
Course content: <ol style="list-style-type: none">1. Introduction to GIS technologies. Tools, systems and applied software of GIS-technologies. Role of GIS in mineral resources exploration2. Network solutions in GIS technologies. Types and formats of data used in automated information technologies.3. Organization and structure of topographic data in GIS.4. Technologies for entering spatial data into GIS; data sources for GIS.5. Geological model of mineral deposits for representing spatial data in GIS.6. Raster representation of data in a GIS.7. Surface relief modeling and methods for displaying relief in GIS; Solving different tasks by using digital elevation models.8. DBMS and GIS applications (Micromine, Dolon, QGIS). The concept of distributed databases. Remote access to databases from the network9. Solving various tasks by using data stored in a GIS; Analyzing spatial data with different functions; solving specific problems using GIS tools.
Recommended or required reading and other learning resources/tools: <ol style="list-style-type: none">1. Lecture Materials2. The course materials will be available through ELMS3. The Power Point lecture slides are available for download as PDF files at the course website.4. Electronic resources on the lecture topics are available at the course website.

<p>5. The class notes, latest journal articles and references related the course topics will be referred to and/or distributed during the lectures.</p> <p>6. Text and Reference Books (below)</p>
<p>Planned learning activities and teaching methods:</p> <ol style="list-style-type: none"> 1. Regular lectures, instructions, planning .; 2. Labs and computing tasks; 3. Individual practical exercises with examples of materials from mineral deposits; 4. Class discussions.
<p>Assessment methods and criteria:</p> <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% <p>Grades: A, B, C, D, E, Fx, F</p>
<p>Additional information: Course instructor – prof. Maralbaev A.O.</p>

1.Authors: Chymyrov A.U., Bekturov A.K., Vkyllbek uulu Belek «Geoinformation systems», Tutorial for performing laboratory work using the Quantum GIS program, 2021.

2.Authors: Chunuev I.K., Umarov T.S., Emilbek kyzy Akshoola, Guidelines for practical exercises in the discipline "Computer modeling of mineral deposits"