WORK PROGRAMME OF DISCIPLINE
Advanced Geochemistry

for student
Branch of knowledge  
Training direction (Speciality)  
Educational level  
Educational program  
Type of discipline  

Teaching mode  full-time studies
Academic year  2017/2018
Semester  2
Number of credits ECTS  2
Language of teaching, learning and evaluation  English
Form of final control  modular test

Lecturer: Shnyukov Sergey (ScD, head of the department of mineralogy, geochemistry and petrography)

for 20__/20__ (________) «__» 20
for 20__/20__ (________) «__» 20
for 20__/20__ (________) «__» 20

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Kyiv - 2017
Protocol #9 19/06/2017
Head of the Scientific-Methodical Commission (Demidov V.K.)
The aim of the discipline — is to provide an introduction to the main modern concepts of Geochemistry within the fields of (1) research analytical methods, (2) isotopic systems analyses, (3) geochemical modeling of the magmatic and ore-generated hydrothermal systems,

Preliminary requirements:
1. theoretical and practical research foundations in geochemistry
2. theoretical and practical research foundations in analytical techniques (element and isotopic analysis)

Annotation of discipline: 
Academic discipline "Advanced Geochemistry" is a part of education and professional training program for the education level "master" branch of knowledge 10 - Natural Science of specialty 103 - Earth Sciences, educational program - geochemistry and mineralogy. This discipline is a required discipline for educational program "geochemistry and mineralogy". Main considered themes: (1) approaches and concepts of modern research analytical methods, (2) approaches and concepts of modern isotopic systems analyses, (3) approaches and concepts of modern geochemical modeling methods, (4) selection of the optimal methods for analytical research, isotopic systems analyses as well as effective methods and procedures for geochemical modeling, Discipline is aimed at the self-study work of the students and finished by test.

The tasks of the discipline – to highlight the following issues:
- basic concepts of modern research analytical methods;
- isotopic systems analyses;
- geochemical modeling of the magmatic and ore-formed hydrothermal systems,

The results of study:

<table>
<thead>
<tr>
<th>Results (1. to know; 2. to be able)</th>
<th>Methods of teaching and learning</th>
<th>Assessment methods</th>
<th>Percentage in the final assessment of the discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Approaches and concepts of modern research analytical methods</td>
<td>Lecture, reference paper e</td>
<td>presentation</td>
<td>up to 10%</td>
</tr>
<tr>
<td>1.2 Selection of the optimal analytical methods for current geochemical research</td>
<td>Lecture, reference paper e</td>
<td>test</td>
<td>up to 10%</td>
</tr>
<tr>
<td>2.1 Approaches and concepts of modern isotopic systems analyses</td>
<td>Lecture, reference paper e</td>
<td>presentation</td>
<td>up to 15%</td>
</tr>
<tr>
<td>2.2 Selection of the optimal methods of isotopic systems analyses for current geochemical research</td>
<td>Lecture, reference paper e</td>
<td>test</td>
<td>up to 15%</td>
</tr>
<tr>
<td>3.1 Approaches and concepts of modern geochemical modeling methods</td>
<td>Lecture, reference paper e</td>
<td>presentation</td>
<td>up to 25%</td>
</tr>
<tr>
<td>3.2 Selection of the optimal methods for geochemical modeling of the magmatic and ore-forming hydrothermal systems</td>
<td>Lecture, reference paper e</td>
<td>test</td>
<td>up to 25%</td>
</tr>
</tbody>
</table>

Structure of discipline: lectures, seminars, self-studying work of student

Scheme of grading forms:

Form of student evaluation:
- semester grading:
  1. Control test - (min - 6, max - 10 grades)
  2. Control test - (min - 6, max - 10 grades)
  3. Presentations (min - 38, max - 60 grades)
- final assessment (modular test) in form of the written test (min - 12 , max - 20 grades)
Final evaluation is in the form of a final test (total score of discipline (maximum 100 grades) is defined as the sum for the systematic work during the semester).
Final evaluation based on the results of the student's work throughout the semester.

Procedure and evaluation system

<table>
<thead>
<tr>
<th></th>
<th>Semesters grades</th>
<th>Modular test</th>
<th>Final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>48</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Max</td>
<td>80</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

For students who have obtained total grades less than critically-calculated minimum of 20 grades repeated control test is obligatory for taking the test.

Grading: For admission to the final grading it is obligatory: 1) to pass two control tests; 2) to prepare six oral reports, which can be presented in the form of presentations and abstracts. The final grading is carried out in the form of written modular test.

Assessment:

Conformity scale

<table>
<thead>
<tr>
<th>Passed</th>
<th>60-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fail</td>
<td>0-59</td>
</tr>
</tbody>
</table>

STRUCTURE OF THE DISCIPLINE

PLAN OF LECTURES AND SEMINARS

<table>
<thead>
<tr>
<th>#</th>
<th>Theme</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lectures</td>
</tr>
<tr>
<td>1</td>
<td><strong>Theme 1.</strong> Approaches and concepts of modern research analytical methods</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td><strong>Theme 2.</strong> Approaches and concepts of modern isotopic systems analyses</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td><strong>Theme 3.</strong> Approaches and concepts of modern geochemical modeling methods</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Modular test</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>16</td>
</tr>
</tbody>
</table>

Themes for self-studying work:
1. Approaches and concepts of modern research analytical methods
2. Approaches and concepts of modern isotopic systems analyses
3. Approaches and concepts of modern geochemical modeling methods

Total hours of the discipline – 120, that include:
- lectures – 16 hrs
- seminars - 8 hrs
- consultations - 6 hrs
- self-studying work - 60 hrs

RECOMMENDED LITERATURE

4. WWW- resources