Course Specifications

Programme(s) on which the course is given: Post-Graduate (Mineralogy and Petrology)
Major or Minor element of programmes: Major
Department offering the programme: Geology
Department offering the course: Geology
Academic year / Level: 00/Post Graduate
Date of specification approval:

a- Basic Information

Title: Advanced Geochemistry **Code:** G631

Credit Hours: 3 Credits Hours **Lecture:** 3 Credit

Tutorial: **Practical:** ------ **Total:** 3 Credit Hours

b- Professional Information

1 – Overall Aims of Course:

- Providing a highly qualified geochemists to work professionally in such field or to start a research degree in geochemistry.
- Developing knowledge and understanding of theoretical, analytical and applied aspects of geochemistry with an emphasis on quantitative approaches as well as qualitative understanding of geochemical processes.
- Interpretation of geochemical data

2 – Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding: By the end of this course, the student should be able to:

a1- Understand the basics of geochemistry subjects.
a2- Know the terminology used in geochemistry.
a3- Define the chemical processes of the mineral formation and rocks.

b- Intellectual Skills: By the end of this course, the student should be able to:

b1- Differentiate between the chemical processes acting on the earth.
b2- Analyze the behavior of elements through minerals and rocks formation.

c- Professional and Practical Skills: By the end of this course, the student should be able to:

c1- Solve geochemical problems.
c2- Read and write scientific data
c3- Interpret chemical data and geochemical models.

d- General and Transferable Skills: By the end of this course, the student should be able to:

d1- Use the internet for searching on the course topics.
d2- Work as a member of a team.
d3- Communicate geochemical results and arguments on paper and orally.

3. Contents

Topic	Credit hours	Lecture
Phase rule and phase diagrams	3	3
Water chemistry (Eh, pH, Eh-pH diagrams)	3	3
characteristics of natural waters	3	3

Crystal chemistry	3	3
Geochemistry of igneous rocks	9	9
Geochemistry of sedimentary rocks	9	9
Geochemistry of metamorphic rocks	6	6
Isotopes geochemistry	6	6
Total	**42**	**42**

4 – Teaching and Learning Methods

4.1-Professional lecture, class discussion, quizzes and homework problems

5- Student Assessment Methods

5.1- Regular written exam.	to assess a1, a2
5.2- Mid-term exam.	to assess a2, c1
5.3- At the end of term exam.	to assess a1-a2, b1-b2, c1-c2, d1-d2
5.4- Reports and discussions	to assess d3-d4

Assessment Schedule

Assessment 1: short exam (class activities)	every two weeks
Assessment 2: mid-term exam (written)	week 7
Assessment 3: final-term exam (written, and verbal)	week 15-16

Weighting of Assessments

Written

Mid-Term Examination:	20%
Written Final-term Examination:	60%
Semester Work (including reports, oral and discussion):	20%
Total:	100%

6- List of References

6.1- Course Notes: Prepared by staff members.

6.2- Essential Books (Text Books):

Geochemistry A.H. BROWNLOW, Prantic-hall Inc., N.J., USA.

Chemical fundamentals of geology, R. GILL, Unwin Hyman, London, GB.

□□□□□□□□□□ □□□ – □□□□□ □□□ □□□□□ □□□□□□ □ □□□□□ □□□□ □□□□ □ □□□□□□□□□□ □□□ □□□

□□□□□□ □□□□□□ □□□□□□□□□□ □□□ □□□□ □□□□ □□□□□□ □□□□ □□□□ – □□□□ □□□□ □□□□ □ □□□□ □□□□ □□□□ □ □□□□□□□□□□ □□□

.□□□□□□□

6.3- Recommended Books

See many geochemistry books in the library.

6.4- Periodicals, Web Sites, … etc

7- Facilities Required for Teaching and Learning

Chemical analysis lab.

Course Coordinator: Prof. Ahmed Bishady

Head of Department: Prof. Ahmed Al-Boghdady

Date: / /2012