Course Specifications

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

a- Basic Information

Title: Geochemistry of isotopes **Code:** G637

Credit Hours: 2 Credit Hour **Lecture:** 2 Credit

Tutorial: **Practical:** ------- **Total:** 28 Credit Hours

b- Professional Information

1 – Overall Aims of Course

- The student should be familiar with the principles of isotopes geochemistry**.**

2 – Intended Learning Outcomes of Course (ILOs)

c- Knowledge and Understanding: By the end of this course, the student should be able to:
a1- Familiarize with the isotope geochemistry of the earth's mantle.
a2- Understand the principles of isotopes geochemistry.

d- Intellectual Skills: By the end of this course, the student should be able to:
b1- Decide if Pb isotopes are consistent with the picture provided by Sr, Nd, and Hf ?
b2- Specify problems and finding solutions.

c- Professional and Practical Skills: By the end of this course, the student should be able to:
c1- Evaluate the mantle isotope geochemistry.
c2- Distinguishe between the isotope geochemistry of mantle and crust .

d- General and Transferable Skills: By the end of this course, the student should be able to:
d1- Use internet critically for communication and searching on the course topics.
d2- Write and present the isotope geochemistry subjects in a potentiality published way.
d3- Organize and work effectively within a team.
d4- Give effective presentations using appropriate methods.

3. Contents

Topic	Credit hours	Lecture
Isotope geochemistry of the mantle	4	2
Mantle models	4	2
Isotopic evolution of the mantle	4	2
Isotopic geochemistry of the continental crust	4	2
Isotopic geochemistry of subduction zone magmas	4	2
Isotope cosmochemistry	4	2
Stable isotope applications in high temperature geochemistry	4	2
Total	**28**	**14**

4 – Teaching and Learning Methods

4.1-Professional lectures
4.2- Class discussion
4.3- Preparation of scientific reports during the semester.

5- Student Assessment Methods

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

Assessment Schedule

Assessment 1: Short exam (class activities)	every two weeks
Assessment 2: Mid-term (written)	week 7
Assessment 3: Final-term (written and verbal)	week 15-16

Weighting of Assessments

Semester Work and discussions:		20 %
Mid-Term Examination	:	20%
Final-term Examination	:	60%
Total:		100%

6- List of References

6.1- All topics are collected and given from international and high standard local journals

6.2-

DePaolo, D. J. 1980. Crustal growth and mantle evolution: inferences from models of element transport and Nd and Sr isotopes. *Geochim Cosmochim Acta*. 44, 1185-1196.

White, W. M., J.-G. Schilling and S. R. Hart, 1976. Evidence for the Azores mantle plume from strontium isotope geochemistry of the Central North Atlantic, *Nature*, 263, 659-663.

Ben Othman, D., W. M. White, and J. Patchett,**1989.** The geochemistry of marine sediments, island arc magma genesis, and crust-mantle recycling, *Earth Plan Sci Lett, 94*, 1-21.

7- Facilities Required for Teaching and Learning

Laptop, data show, internet.

Course Coordinator: Prof. Ibrahim khalaf

Head of Department: Prof. Ahmed Al-Boghdady

Date: / /2012