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: Rock Dating Methods **Code:** G635

Credit Hours: 2 Credits Hours **Lecture:** 2 Credit

Tutorial: **Practical:** ------- **Total:** 2 Credit Hours

b- Professional Information

1 – Overall Aims of Course

- The student should be familiar with the various principles of rock dating methods**.**

2 – Intended Learning Outcomes of Course (ILOs)

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

a1- Familiarize with the various conditions that must be satisfied before an isotopic age determination is considered a valid crystallization age.

a2- Understand the various principles of relative dating of rocks.

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

b1- Decide which radioactive elements have long half-lives and are useful for dating old rocks?

b2- Specify problems and finding solutions.

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

c1- Calculate the age of a rock if given isotopic half-life and the amount of parent and daughter material present remaining in the rock.

c2- Conclude the most useful method that provide a crystallization age for the rock.

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 course topics.

d2- Write and present the age dating 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
Review of isotope terminology and decay processes	4	4
Introduction to dating methods, the radiometric "clocks in rocks"	4	4
Potassium-Argon method	2	2
Argon-Argon method	2	2
Rubidium-Strontium method	2	2
Samarium-Neodymium method	2	2
Lutetium-Hafnium method	2	2
Rhenium-Osmium method	2	2
Uranium-Lead method	4	4
The Age of the Earth	2	2
Radiometric Dating of Geologically Young Samples	2	2
Total	**28**	**28**

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 Exam :	20%
Final-term Exam :	60%
Total:	100%

6- List of References

6.1- All course topics will be given from published international journals and high standard local journals.
6.2. Essential Books (Text Books):
Gunter Faure 1986. Principles of Isotope Geology, 2nd Edition. John Wiley, 608p.
6.4- Periodicals, Web Sites, … etc
Journal of African Earth Sciences (Elsevier), Precambrian Research (Elsevier)

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