Faculty of Earth Sciences

Department of Mineral Resources & Rocks
3rd & 4th Years Program

The Geological Society
Accredited degree courses

ISOTOPE GEOLOGY

Course Name	Course ID	Prerequisites
ISOTOPE GEOLOGY	***EMR 441***	***EMR 241***

Time Table for Course Lectures

ISOTOPE GEOLOGY (EMR 441)

Week	Topic
1	Introduction and Identifications[1] Discovery of radioactivity Atomic structure- Isotopes-Isotones- Isobars
2	Radioactive and stable isotopes[1,2] Using of relative abundance to calculate the isotope value.
3	Radioactive decay and daughter growth[1,2] Methods of radioactive decay (Alpha-Beta-Gamma-Electron capture) Law of radioactive decay
4	Equilibrium and disequilibrium[3] Reasons for radioactive disequilibrium Applications of U-series disequilibrium
5	Geochemistry of Rb and Sr[1,2]] Rb-Sr method for age dating
6	Geochemistry of Sm and Nd[1,2]] Sm-Nd method for age dating
7	K-Ar method for age dating[1,2]
8	U-Pb & Th-Pb methods of dating[1,2]
9	Stable Isotopes (Introduction and identification) [1,2] Fractionation of stable isotopes O and H isotopes
10	Carbon isotopes[1,2] Sulfur isotopes

11	Practical applications on Mass Spectrometry[1] Mathematical problems on calculation of age dating
12	Practical applications on Mass Spectrometry[1] Mathematical problems on calculation of age dating
13	Practical applications on Mass Spectrometry[1] Mathematical problems on calculation of age dating
14	Revision
15	**Final Exam**

References:

Principles of Isotope Geology, by Faure G., 1986. John Wiley and Sons, 589p [1]

Radioactive and Stable Isotope Geology (1st ed.), by Attendorn, H.G, and Bowen, R.N.C., 1997. Published, London; New York: Chapman & Hall. [2]

Uranium Series Disequilibrium: Application to Environmental Problems, (2nd ed.), by Ivanovich M. and Harmon, R.S., 1992. Oxford, Oxford University Press). [3]