



## Discipline Information

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The following dates are in (dd/mm/yyyy) format.

Code: GMG5837 - 1 Type: POS  
Name: Radiogenic isotopes and Precambrian Crustal Evolution  
Concentration area: Geotectônica (44141)

Approval dates:

CCP: 03/02/2016 CPG: 03/03/2016 CoPGr:

Activation date: 10/03/2016 Inactivation date:

Workload:

Total: 60 h Theory: 2 h Practice: 2 h Study: 2 h

Credits: 4 Duration: 10 weeks

Professors: 2087679 - Wilson Teixeira - 03/03/2016 until today

Objectives:

This course is intended to provide a robust interpretation of U-Pb, Lu-Hf and Sm-Nd data with focus on Archean and Proterozoic rocks. The evaluation of the published information in journals will be addressed in benefit to the individual Master and Doctoral projects that will be discussed and improved, given the geochronological background.

Rationale:

Critical evaluation of the isotopic data and their interpretation provide a better understanding of the Precambrian crustal evolution. Classical examples in South America and abroad will be considered to highlight the relevant aspects of geochronology and isotopic geochemistry.

Content:

Introduction. Geochemical differentiation of the Earth and Mantle evolution through time. U-Pb geochronology and Pb, Hf, Nd isotopic geochemistry with focus on Precambrian rocks. Application and interpretation of isotope diagrams and models. Discussion based on the literature dealing with crustal evolution. Seminars on the selected subjects.

Bibliography:

Cordani, U. G. and Teixeira, W., 2007, Proterozoic accretionary belts in the Amazonian Craton, in Hatcher, R. D. Jr., Carlson, M. P., McBride, J. H., Martinez-Catalan, J. R., editors, 4-D Framework of Continental Crust: Boulder, Colorado, Geological Society of America Memoir 200, p. 297-320. Black, L.P., Kamo, S.L., Allen, C.M., Aleinikoff, J.N., Davis, D.W., Korsch, R.J., Foudoulis, C., 2003. TEMORA 1: a new zircon standard for Phanerozoic U-Pb geochronology. *Chemical Geology* 200, 155-170. Blichert-Toft, J., Albarede, F., 1997. The Lu-Hf isotope geochemistry of chondrites and the evolution of the mantle-crust system. *Earth and Planetary Sciences Letters* 148, 243-258. DePaolo, D.J., 1981. Nd isotopic studies; some new perspectives on Earth structure and evolution. *Transactions of American Geophysical Union* 62, 137-140. DePaolo, D.J., 1988. Neodymium isotope geochemistry: an introduction Springer-Verlag, Berlin, 187p. FAURE, G. (1986) Principles of isotopic geology. 2a. ed. New York, John Wiley, 589p. Dickin, A.P., 2005. Radiogenic isotope geology. 2nd edition. Cambridge University, 492p. Griffin, W.L., Pearson, N.J., Belousova, E., Jackson, S.E., Van Acherbergh, E., O'Reilly, S.Y., Shee, S.R., 2000. The Hf isotope composition of cratonic mantle: LAM-MC-ICP-MS analysis of zircon megacrysts in kimberlites. *Geochim Cosmochim Acta* 64:133-147. Morel, M.L.A., Nebel, O., Nebel-Jacobsen, Y.J., Miller, J.S., Vroon, P.Z., 2008. Hafnium isotope characterization of the GJ-1 zircon reference material by solution and laser-ablation MC-ICPMS. *Chemical Geology* 255, 231-235.

Type of Assessment:

Seminars and Geochronological Proposal

Note:

Short course (10 graduate students maximum)

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