Name of Programme: M. Sc. Applied Geology
Course Code: GEO-613
Title of the Course: Radiogenic Isotope Dating
No of Credits: 02
Effective from AY: 2023-24

Prerequisites for the course	Students should have undergone M.Sc. Semester III.	
Objective	The student will acquire the basic knowledge of radiometric dating and the tools to choose between the different dating techniques as a function of the study case.	
Content	**Module 1** An introduction to nucleosynthesis and the distribution of elements in the Solar System; Decay mechanisms of radionuclides; Radioactive Decay and radiogenic growth; Geochronometry; Mass spectrometry: Techniques and Applications; Sampling strategy and processing; Dating and applications of the following methods: Rb-Sr, Sm-Nd, K-Ar, Ar-Ar, Re-Os and Lu-Hf; U-Th-Pb geochronology. **Module 2** Isotope Geology of Pb. Fission Track method of dating. U-disequilibrium methods of dating. Processing and presentation of raw isotope geochemical data; Application of Sr, Nd, Pb and Hf isotopes in petrogenetic studies.	15 hours 15 hours
Pedagogy	Lectures/ tutorials/ assignments/ self-study	
References/ Readings	1. Dickin, A.P. (2005). *Radiogenic Isotope Geology*. Cambridge University Press, 492 pp. 2. Faure, G. (1977). *Principles of Isotope Geology*. Wiley, 464 pp. 3. Faure, G. and Mensing, T.M. (2009). *Isotopes Principles and Applications*. Wiley, 896 pp.	
Course outcomes	1. The student will acquire the knowledge of radiometric dating and applications 2. Students will be able to interpret and evaluate radiometric ages.	