

Name of Programme: M. Sc. Applied Geology
Course Code: GEO-612
Title of the Course: Precambrian Crustal Evolution
No of Credits: 02
Effective from AY: 2023-24

Prerequisites for the course	Students should have undergone M.Sc. Semester III.	
Objective	To provide knowledge to the students about the processes of formation of the Precambrian crust and the variations in Precambrian crustal properties	
Content	Module 1 Processes responsible for formation of the early crust. Archean cratons- origin of granite-greenstone belts. Archean-Proterozoic boundary, early atmosphere-hydrosphere. Distribution and tectonic setting of Precambrian crust: Global distribution, Paleomagnetism and continental reconstructions; Orogenies and tectonic cycles; Geologic setting of some cratons: Indian shield, Greenland shield, African shield, Antarctic craton; Nature of Archean crust: Dharwar craton, Southern granulite terrain, Eastern Ghat Belt, Singhum craton, Bundelkhand craton, Bastar craton.	15 hours
	Module 2 Mineralization associated with Precambrian shields; Early Proterozoic crust; Mid-Proterozoic crust; Evolution of the continental crust; Archean heat flow and geotherms; granitoid associations; composition of continental crust; high- grade metamorphic terrains; Banded Iron Formations; Uraniferous conglomerates.	15 hours
Pedagogy	Lectures/ tutorials/ assignments/ self-study	
References/ Readings	1. Condie, K. C. (2013). <i>Plate tectonics & crustal evolution</i> . Elsevier 2. Goodwin, A. M. (1996). <i>Principles of Precambrian geology</i> . Elsevier. 3. Kearey, P., Klepeis, K. A., and Vine, F. J. (2009). <i>Global tectonics</i> . John Wiley & Sons. 4. Holdsworth, R. E., Handa, M., Miller, J. A., and Buick, I. S. (2001). <i>Continental reactivation and reworking: an introduction</i> . Geological Society, London, Special Publications, 184(1), 1-12. 5. Coward, M. P., and Ries, A.C. (1986) <i>Collision Tectonics</i> . Geological Society of London Special Publication No. 19, 415 p. 6. Condie, K. C. (Ed.). (1994). <i>Archean crustal evolution</i> . Elsevier. 528 p. 7. Moores, E.M., and Twiss, R.J., (1995). <i>Tectonics</i> . Freeman and Company.	

	8. Windley, B., (1977). <i>The evolving continents</i>. John Wiley & Sons Ltd 9. Valdiya, K.S., (1984). <i>Aspects of Tectonics – Focus on south central Asia</i>. Tata McGraw-Hill
Course outcomes	1. Students will understand the characteristics of Precambrian crusts worldwide. 2. The student will be able to identify different processes that led to formation of the Precambrian crust. 3. They will be able to delineate economic deposits associated with the Precambrian rocks.