

DISCIPLINE SPECIFIC CORE COURSE - DSC-19 (4)
Crustal Evolution through time (L3, T1)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC-19 (4) Crustal Evolution through time (L3, T1)	4	3	1	0	12 th pass with science	Studied Earth System Science and Equivalent

Learning Objectives

To expose students to the evolution of lithosphere, hydrosphere, atmosphere and biosphere from the early earth to the present form with particular emphasis on lithosphere.

Learning outcomes

After this course students will be able to decipher the early earth processes that was responsible for transforming the early molten Earth into a stratified Earth structure. Evolution of early Continent and amalgamation/fragmentation of continental fragments through the geological history

SYLLABUS OF DSC-19

Theory (45 hours)

UNIT – I (10 hours)

Origin of the Earth and initial Earth: common perceptions. Evolution of minerals and early differentiation. Geochemical and geochronological proxies

UNIT – II (10 hours)

Origin of Tonalite-trondhjemite-granite (TTG) suite of rocks and granites. Greenstone belts and related tectonics

UNIT – III (12 hours)

Geological time scale and Archean-Proterozoic boundary; Evolution of early atmosphere and hydrosphere; Great Oxidation Event (GOE), Early geodynamics of the Earth; initiation of plate tectonics and related debates

UNIT – IV (13 hours)

‘Supercontinent’ cycles, crustal evolution and proxies. Drawing link between evolution of lithosphere, atmosphere, hydrosphere and biosphere.

Crustal evolution of the Indian craton, The Himalayas: evidence of dynamic crustal evolution

Tutorial (30 Hours)

Exercises related to theory. Petrogenetic plots, Tectonic discrimination diagrams

Essential/recommended readings

Plate Tectonics and Crustal Evolution by Kent C. Condie 4th Edition Oxford:
Butterworth/Heinemann

Suggestive readings

Plate Tectonics and Crustal Evolution by Kent C. Condie 4th Edition Oxford:
Butterworth/Heinemann

Note: Examination scheme and mode shall be as prescribed by the Examination
Branch, University of Delhi, from time to time.