

Semester	AUG 2022
Open to semester	3
Course code	EC2123
Course title	Landscapes and Their Evolution
Credits	3 /
Course Coordinator & participating faculty (if any)	Argha Banerjee
Nature of Course	Lectures
Pre-requisites	basic calculus
Objectives (goals, type of students for whom useful, outcome etc)	This course is about landscapes and landforms at different spatial scales. Google-Earth, Digital elevation models will be used to explore various interesting landforms. The processes behind the origin and evolution of these landforms will be discussed quantitatively, using basic physics that we all are familiar with.
Course contents (details of topics /sections with no. of lectures for each)	<p>1. A google-earth tour of Earth and Mars; analysing digital elevation models and contour maps; spatial scales of landforms, temporal scales of evolution; force balance and mass conservation [5]</p> <p>2. planetary scale landforms and processes: [8] Oblateness, and the highest peak on any planet; hypsometry of planets; Isostasy (orogens and ocean basins, isostatic response of glacial/erosional unloading); Landscapes near plate boundaries (basic structure of the Himalaya and Western Ghats); folds, faults, Earth-quakes, distribution, slip & uplift pattern;</p> <p>3.Erosional processes: [5] physical and chemical weathering (a typical weathering profile in Deccan plateau); Climate/Erosion/uplift linkage</p> <p>5. hillslope processes: (regolith and its creep, landslide) [2]</p> <p>6. fluvial landscapes: (properties of river networks; river discharge and stream power, erosion and transport; bedrock and alluvial rivers; equilibrium long-profiles, knickpoint</p>

	<p>migration, baselevel; floodplains, meandering, braiding) [5]</p> <p>7. glacial landscapes: (ice flow; erosion, transport, and deposition; u-shaped valleys, hanging valleys, moraines, lakes) [2]</p> <p>8. aeolian landscapes: (dunes morphology and migration; exploring martian dunes) [1]</p>
Evaluation /assessment	<p>End-Sem Examination-40%</p> <p>Mid-Sem Examination-30%</p> <p>Others-30 (quizzes, group project)%</p>
Suggested readings (with full list of authors, publisher, year, edn etc.)	<p>1. Geomorphology: The Mechanics and Chemistry of Landscapes, Robert S. Anderson, Suzanne P. Anderson, Cambridge University Press, 17-Jun-2010</p> <p>2. Fundamentals of Geomorphology, Richard Huggett, Routledge, 04-Jul-2013</p>