Semester	JAN 2022
Open to semester	6,8,22
Course code	**ECS456/EC6253**
Course title	**Glacial Dynamics**
Credits	3 /3
Course Coordinator & participating faculty (if any)	Argha Banerjee
Nature of Course	Lectures
Pre-requisites	Familiarity with differential equations, and computer programming.
Objectives (goals, type of students for whom useful, outcome etc)	In this course we learn about glaciers and their interactions with climate, rivers, and landscape. The emphasis will be on a developing quantitative understanding of glacial processes, using models based on some of the basic physical principles familiar to us.
Course contents (details of topics /sections with no. of lectures for each)	Glaciers (Introduction to glaciers, glaciers as steady states, mass and energy fluxes; flow of ice; steady-state climatic response; 0, 1 and 2-dimensional models of glacier dynamics). [14] Glacier and Climate (ice-albedo feedback; snow-ball earth; ice-sheet and global climate; global warming from glacier data; sea-level fluctuations; computing sea level contribution.)[4] Glacier and water cycle (Glacier hydrology; climate change and glacier-fed rivers; Glaciers and Himalayan rivers.) [5] Glacier and landscape (Glacial erosion and deposition; glacial landforms; modelling glacier valley long profiles.)[5]
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-30% Others-30%
Suggested readings (with full list of authors, publisher, year, edn etc.)	* Geomorphology by Anderson and Anderson, 1st edition, Cambridge University Press (2010) * Glacier and Climate Change by Oerlemans, 1st edition, CRC Press, (2001) * Physics of Glaciers by Cuffey and Patterson, 4th Edition, Elesvier (2010)