FIRST COURSE HANDOUT (V0.1)
ESO213A Fundamentals of Earth Sciences
2020-2021- 1st semester

Dear Students, this is the first version of the "First Course Handout of ESO213". I may have to update it depending on the situation as and when it comes. The modifications, however, will be mostly on the conducting of the class, not with the syllabus and grading policy. I'll keep it updated and shall let you know if there is any change and/or update.

Instructor : Santanu Misra
Department of Earth Sciences; Room 201, Old SAC
Ph: 6812 (office); e-mail: smisra@iitk.ac.in
https://home.iitk.ac.in/~smisra/

Lecture : Online Platform (https://hello.iitk.ac.in/)

Course e-mail : ESO213A@iitk.ac.in [if you have any filter in your IITK mailbox (boxbe etc.), please remove them. This is compulsory]

Discussion : Mondays 11 :00 am - 11:50 noon (starts from the 2nd week of the lecture-schedule). The online platform will be Zoom. The links will be shared well in advance. If we feel like to have more discussion hours, these will be scheduled on Saturdays.

Syllabus : Universe; Solar System and Earth; Geological Time scale; Origin of life and major geological events; Numerical Dating. Rocks, minerals and soils; Plate Tectonics and Mountain building; Deformation and Geodynamics; Earthquakes, Volcanoes. Earth, Ocean, Land, Rivers, Atmosphere, Biosphere, Cryosphere and Climate; Energy budget; Carbon Cycle; Hydrological Cycle; Weathering and erosion. Coupled processes in Earth System; climate change, Geological resource; Sustainability and Anthropocene activities.

Textbooks:

- *J. Grotzinger and T. Jordan, Understanding Earth, 2010 (7th Ed.), W.H. Freeman & Company: ISBN-13: 978-1-4641-3874-4
- *Stephen Marshak, Earth: Portrait of a Planet, 2015 (5th Ed.), W. W. Norton & Company: ISBN-13: 978-0393937503.
- **D. R. Prothero and R. H. Dott, Jr. Evolution of the Earth. 2010 (8th Ed.), McGraw Hill, 576 p.
- **E. J. Tarbuck, F. K. Lutgens and D. G. Tasa. Earth: An Introduction to Physical Geology, 2013 (11th Ed.). Prentice Hall. 912 p.

*Required, **Recommended (specialized books and texts will be referred during the lectures)

Scheme of the Grades:

Discussions	:	10%
Assignments & Quizzes	:	25%
Mid Semester Examination	:	25%
End Semester Examination	:	40%

The **final course grade** will be calculated out of 100 points (based on the criteria mentioned above).

Tentative Lecture Schedule:

Weeks	Dates	GENERAL TOPICS
Week_01	Sept 01- Sept 04	General Introductions
Week_02	Sept 07 - Sept 11	Earth as a System & the Principles of Earth
Week_03	Sept 14 - Sept 18	Plate Tectonics
Week_04	Sept 21 - Sept 25	Minerals & Rocks
Week_05	Oct 05 - Oct 09	Deformation of Rocks
Week_06	***Oct 12 - Oct 16***	***MID SEMESTER EXAMINATION***
Week_07	Oct 19 - Oct 23	History of the Earth & Time Scale
Week_08	Oct 26 - Oct 30	Earth's interior
Week_09	Nov 02 - Nov 06	Natural Hazards (Earthquakes, Volcanisms & others)
Week_10	Nov 09 - Nov 13	Climate and Atmosphere
Week_11	Nov 16 - Nov 20	Landforms, Weathering and Erosion
Week_11	Nov 26 - Nov 30	Earth's resources (water, minerals, hydrocarbons) & Human Impact
Week_12	***Dec 3 - Dec 12***	***END SEMESTER EXAMINATION***