Subject Description Form

Subject Code	LSGI1D03
Subject Title	Living on a Dynamic Earth
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Nil
GUR Requirements Intended to Fulfill	**Cluster Area** (CAR(D)) – Science, Technology and Enviornment **"English Reading" (ER) designation** - include a reading of an extensive text (100,000 words or 200 pages) **"English Writing" (EW) designation** - include an extensivepiece of writing (1,500 - 2,500 words)
Objectives	To enable students to understand the dynamics of their home planet and their roles in their daily lives. To contribute to the expansion of students' intellectual capacity and interdisciplinary learning encompassing, astronomy, geology, geophysics, geodesy, geography, geomorphology, and ocean and atmospheric sciences.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) Understand the dynamics of the Earth at the local, regional and global scale (b) Establish the scientific fundaments for students to realize the impact of human activities on the environment for social responsibility (c) Appreciate the role and the complexity of modern science. The subject content exposes students to a wide variety of scientific problems, which took centuries for the best scientific minds to discover, observe, formulate and, solve. Students' exposure to a number of changes on a dynamic earth empowers them to understand a broad range of scales under which the nature operates. Overall subject content and the addressed problems in earth sciences broaden students' thinking and appreciation of the value of science that unravels the hidden side of the dynamic earth. The students are required to complete a literature review report and examine the recent research progress in an area, which is selected by students, by comparing with the old research work. The students are able to think independently and critically what research area is of interest to them and what research progresses have been made in that selected area. This process trains the students' multiple levels

	of skills in literature search and reviewing, independent thinking, and making comparative studies.
Subject Synopsis/ Indicative Syllabus	**A. Earth and Space** Earth's orbit, earth's shape and size, day and night time zones, the seasons, latitude and longitude, the solar system, structure of the sun, the sun's energy, the moon, solar and lunar eclipses, structure of earth, earth's magnetic **B. Earth's History** Superposition, unconformities, complex rock sequences, paleomagnetic dating, how fossils form, fossil use in rock correlation, correlating rocks, tree of life, evolutionary clocks, mass extinctions, geologic times. **C. Earth's Rocks** Origins, elements, internal heat, periodic table, atoms, compounds, isotopes and ions, crystals and minerals, crystal systems, rock forming minerals, hardness, igneous rocks, intrusive igneous rocks, magma production, volcanoes, geysers and hot springs, sedimentary rocks, metamorphism, continental drift and plate tectonics, isostasy, ore, coal, oil, and gas. **D. Air and Oceans** Atmosphere, radio waves, the nitrogen cycle, the carbon and oxygen cycles, heat transfer processes, sunshine, temperature belts, pressure belts, the coriolis effect, wind circulation, humidity, fog cloud types rain, snow, and sleet rain types, thunderstorm, cyclones, hurricanes, tornadoes, pressure systems air masses, water oceans, ocean temperatures, the ocean floor, seafloor profiling, tides ocean currents, waves and beaches, coastlines, coral reefs, atolls and guyots. **E. Shaping the Surface** Continents, Lakes, Islands, Mountains, Deserts and Rivers Overview of Hong Kong's geological landscape
Teaching/Learning Methodology	In class lectures together with online demonstrations, videos, and internet resources are employed for teaching and learning. Lectures are reinforced by relevant animations and videos shown during the tutorials. Students are required to write a book report as part of the ER and EW requirement to be discussed and revised following feedback using an online website by the ELC.
Assessment Methods in Alignment with Intended Learning Outcomes	Two online multiple choice tests. A book report from each student which will be assessed by the instructor for its content for the cluster area ER requirement, and by the English Learning center (ELC) for the cluster area EW requirement. In order to pass the subject, students must also pass the reading and writing component assessment, i.e., attain a minimum grade D in the reading and writing component which will be assessed jointly by the instructor and ELC.

	Specific assessment methods/tasks	% Weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)		
			a	b	c
	Book Report (1,500 - 2,500 words)	40% 10% (ELC)	✓	✓	✓
	Two online MC tests	20% +20%	✓	✓	✓
	In-Class Quizzes	10%	✓	✓	✓
	Total	100%			

Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.
	Other student study effort:	
	▪ Self-study	35 Hrs.
	▪ Reading/Writing Requirement	35 Hrs.
	Total student study effort	109 Hrs.

Reading List and Refnces	**Book Report (ER and EW Requirement)** Each semester, a different book can be assigned for the book report. The following books were used during the past semesters: • Earth: Evolution of a Habitable World, Lunine, J.I., pp.346, Cambridge University Press, 2013. It is accessible through the PolyU library as an eBook. • Princeton Primers in Climate: Climate and the Oceans, Vallis, G.K., pp. 244, Princeton University Press, 2011. It is accessible through the PolyU library as an eBook. A Kindle version is also available. • Earth Science and Human History 101, by: Rogers, John J.W.;Tucker, Trileigh L., Greenwood Publisher, 2008. It is accessible through the PolyU library as an eBook. **Books and eBooks** • Earth Science. An Illustrated Guide to Science. Science Visual Resources, the Diagram Group, MIL EAN/ISBN: 9781282051522, Pub e-EAN/ISBN: 9781438125985. **This is the textbook for the subject** and available in PolyU library via a URL at the subject's website. • Earth Science Demystified, McGraw-Hill Professional Pub.,1 Ed. (2004), ISBN-10: 0071434992, ISBN-13: 978-0071434997. PolyU Library reserve: QE26.2 .T38 2012. • Earth Science, E.J. Tarbuck, F.K. Lutgens, Prentice Hall Pub., 13 Ed. (2011). Also available as an eBook. **Tutorial videos** Planet Earth: Limited Edition. Produced by the BBC (2011), Narrated by David Attenborough (Actor), Alastair Fothergill (Director).DVD, 8h 21 mn. • Earth: the biography / produced by the BBC for National Geographic Channel. Description: 2 videodiscs (228 min.): sd., col.; 4 3/4 in. Call No.: QE501 .E277 DVD. URL: http://library.polyu.edu.hk/record=b2527723~6 • How the Earth changed history. BBC Productions; a BBC/National Geographic Channel-US co-production in association with ZDF. 2 videodiscs (310 min.): sd., col.; 4 3/4 in. Call No. GF51 .H69 DVD URL: http://library.polyu.edu.hk/record=b2527731~6 • There are also a number of online videos accessible through the subject's website.