Department	International College of Liberal Arts		
Semester	Spring 2023	Year Offered (Odd/Even/Every Year)	Every Year
Course Number	SCNS110		
Course Title	Earth Science		
Prerequisites	None		
Course Instructor	JHINGAN Sanjay	Year Available (Grade Level)	1
Subject Area	Quantitative Reasoning & Natural Sciences	Number of Credits	3
Class Style	Lecture	Class Methods	Face to face

(NOTE 1) Class Methods are subject to change

(NOTE 2) Depending on the class size and the capacity of the facility, we may not be able to accommodate all students who wish to register for the course"

Course Description	This course is a scientific presentation of Earth' s nature in terms of its interactions and exchanges between atmosphere, land, living things and physical laws.
Class plan based on course evaluation from previous academic year	Based on student feedback from previous offering of this course, there will be regular in-class quizzes. This will help students understand better their learning and over all progress.
Course related to the instructor's practical experience (Summary of experience)	Not applicable.
Learning Goals	The emphasis of the course will be on developing scientific reasoning, critical and independent thinking skills. At the end of this course, students should have developed an appreciation for Earth' s nature and interactive global influences. Student should be able to: 1. Understand nature of scientific inquiry. 2. Explain Earth`s resources, impact of human activity for resources on Earth. 3. Describe Action of Water, Wind, Ice, Gravity in shaping land-forms. 4. Relate theory of Plate Tectonics to Earthquakes, Volcanoes, mountain building. 5. Develop an understanding of our Ocean, Atmosphere and Climate changes. 6. Discuss Ancient Astronomy, Modern Astronomy, Earth`s location in the Universe.

iCLA Diploma Policy	DP2／DP3

iCLA Diploma Policy

(DP1) To Value Knowledge - Having high oral and written communication skills to be able to both comprehend and transfer knowledge

(DP2) To Be Able to Adapt to a Changing World - Having critical, creative, problem-solving, intercultural skills, global and independent mindset to adopt to a changing world

(DP3) To Believe in Collaboration - Having a disposition to work effectively and inclusively in teams

(DP4) To Act from a Sense of Personal and Social Responsibility - Having good ethical and moral values to make positive impacts in the world

Active Learning Methods	Problem solving: Active learning method in this class requires students to work individually or in groups, to solve problems, propose solutions, and explain ideas.
Use of ICT in Class	UNIPA (LMS system), Office 365.

Use of ICT outside Class	UNIPA (LMS system), ChatGPT, Office 365.
Expected study hours outside class	Two hours of work is required before (preparation) and after (revision) each lecture.
Feedback Methods	UNIPA, and Office 365 will be used for regular feedback to quizzes. Student can use office hours for discussion.

Grading Criteria		
Grading Methods	Grading Weights	Grading Content
In-Class Quiz	80%	Twelve quizzes will be conducted during the course.
Participation in Group Discussion	20%	See grading rubric for detials.

Required Textbook(s)	E. J. Tarbuck and F. Lutgens, EARTH SCIENCE, 14th Edition, Pearson
Other Reading Materials/URL	Students are encouraged to use any book on Earth Science, Physical Geology, Environmental Science. Information available on various platforms such as NASA, ESA, National Geographic etc. can be useful for understanding concepts covered in the course. https://www.esa.int/About_Us/Ministerial_Council_2012/Earth_science https://science.nasa.gov/earth-science https://www.nationalgeographic.org/topics/geology/
Plagiarism Policy	Plagiarism is the dishonest presentation of the work of others as if it were one's own. Duplicate submission is also treated as plagiarism. Depending on nature of plagiarism you may fail the assignment or the course. Repeated act of plagiarism will be reported to the University which may apply additional penalties.
Other Additional Notes	This class will be conducted primarily as an interactive lecture. Students are expected to participate in class discussions in an inquisitive, thoughtful, and constructive manner. We will follow the textbook reasonably closely and students should review the suggested study materials before joining the class. To have a better grade be regular in the course, be active and attentive in the class, do revision of classwork on a regular basis, and participate in class quizzes. Students are free to choose topic related to Earth Science for their writing project. Idea is to allows students to express geologic ides which they may feel strongly about in a scientific language. Students are invited and encouraged to discuss all phases of the project with the instructor and among each other.

(NOTE 3) Class schedule is subject to change

Class Schedule	
Class Number	Content
Class 1	Lecture 1 Course overview, The nature of scientific inquiry, Early Evolution of Earth, Earth Spheres, and Earth as a system.
Class 2	Lecture 2 Fundamentals: Atoms, Bonding, Minerals. Mineral groups and properties.
Class 3	Lecture 3 Fundamentals: Group discussion. In-class Quiz.
Class 4	Lecture 4 Rocks: Rock cycle, Igneous, Sedimentary, Metamorphic rocks.
Class 5	Lecture 5 Rocks: Mineral resources. Group discussion. In-class Quiz.
Class 6	Lecture 6 Weathering: Mechanical and Chemical weathering.
Class 7	Lecture 7 Weathering: Soil. Group discussion. In-class Quiz.
Class 8	Lecture 8 Water, Running and Underground: Hydrologic cycle, Running water, Stream flow and erosion, stream channels and valleys, depositional landforms.
Class 9	Lecture 9 Water, Running and Underground: Ground water. Group discussion. In-class Quiz.
Class 10	Lecture 10 Glaciers Desert and Wind: Glaciers and earth systems, movement, erosion and deposits, Ice ages.
Class 11	Lecture 11 Glaciers Desert and Wind: Deserts, Wind erosion and deposits. Group discussion. In-class Quiz.
Class 12	Lecture 12 Plate Tectonics: Theory of plate tectonics, plate boundaries, plate motion.

Class 13	Lecture 13 Plate Tectonics: Group discussion. In-class Quiz.
Class 14	Lecture 14 Earth quake and Earth's Interior: Earthquake, Seismology, Size and scale of earthquakes, Earthquake and plate boundaries.
Class 15	Lecture 15 Earth quake and Earth's Interior: Earth interior and layers. Group discussion. In-class Quiz.
Class 16	Lecture 16 Volcanoes: Nature of volcanic eruptions, Anatomy of a volcano, Volcanic land-forms, Plate tectonic and volcanic activities.
Class 17	Lecture 17 Mountain Building: Crustal deformation, Faults and joints, Mountain building. Group discussion. In-class Quiz.
Class 18	Lecture 18 Earth's History: Time scale: Relative dating.
Class 19	Lecture 19 Earth's History: Fossils.
Class 20	Lecture 20 Earth's History: Group discussion. In-class Quiz.
Class 21	Lecture 21 Global Ocean: World Ocean, ocean floor, Continental margins, Ocean ridges, Seafloor sediments.
Class 22	Lecture 22 Global Ocean: Composition of sea water, Variation of density and temperature with depth.
Class 23	Lecture 23 Global Ocean: Ocean circulation, Ocean waves. In-class Quiz.
Class 24	Lecture 24 Atmosphere: Composition of atmosphere, Vertical structure.
Class 25	Lecture 25 Atmosphere: Earth Sun relation Energy, Heat and temperature, Humidity and cloud formation, Understanding air pressure, Factors affecting wind. Storms.

Class 26	Lecture 26 Climate Change: Climate system, Different climates, Climate change. In-class Quiz.
Class 27	Lecture 27 Earth in the Universe: Ancient Astronomy, Modern Astronomy, Constellations.
Class 28	Lecture 28 Earth in the Universe: Motion of Earth, Earth moon system, Eclipses, Solar system, Moon, Terrestrial and Jovian planets.
Class 29	Lecture 29 Light from space, Optical, ratio and space telescopes. The Sun, Universe, Birth and evolution of stars, Death of stars, Galaxies and Galactic clusters, The big bang theory.
Class 30	Lecture 30: Group discussion. In-class Quiz.