Short Course in Astrobiology and Paleontology | ECOAI-225 -6 | 2025

COURSE TYPE: Short Certificate | MODE: Online/ Distance learning | COURSE HOURS: 40

DURATION: 3 Months/ Each Saturday 6.30pm to 8.30pm [IST]

START: 15th of March 2025 | Application DEADLINE: 10th of March 2025

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Info@ecoastronomy.edu.lk | hr.ecoastronomy@gmail.com

Importance of Studying Astrobiology and Paleontology

Astrobiology and paleontology are two interconnected scientific disciplines that contribute to our understanding of life's origins, evolution, and potential existence beyond Earth. Astrobiology investigates the conditions necessary for life to emerge and persist in the universe, examining planetary habitability, biosignatures, and extremophiles as analogs for extraterrestrial life. Meanwhile, paleontology focuses on Earth's fossil record, reconstructing the history of life and the environmental factors that shaped its development over billions of years.

The study of astrobiology is essential for assessing the possibility of life beyond Earth, guiding space exploration missions, and refining our understanding of planetary systems and their potential for habitability. It integrates knowledge from biology, chemistry, planetary science, and astronomy to explore fundamental questions about life's existence elsewhere in the cosmos. Similarly, paleontology provides critical insights into the history of life on Earth, revealing patterns of evolution, mass extinctions, and survival strategies that inform our search for life in extreme environments, both on our planet and on other celestial bodies.
By combining insights from both fields, scientists can develop models to predict where and how life might exist beyond Earth. Studying ancient microbial fossils, such as stromatolites, helps refine techniques for identifying biosignatures on Mars and icy moons like Europa and Enceladus. Understanding past extinction events on Earth also aids in recognizing planetary conditions that may be conducive or hostile to sustaining life elsewhere.

Overall, the interdisciplinary study of astrobiology and paleontology enhances our knowledge of life's potential in the universe while deepening our appreciation for Earth's biological history. As space exploration advances, these fields will continue to play a crucial role in answering fundamental questions about our place in the cosmos.

Therefore, The Online Certificate Course in Astrobiology and Paleontology, introduced by Eco Astronomy Inc. - International Hub, aims to enhance awareness and outreach in the fields of Astrobiology and Paleontology across Planet Earth. This interdisciplinary program integrates principles of paleontology, geology, and astrobiology, fostering a comprehensive understanding of Earth's biological and geological past while exploring extraterrestrial environments for signs of life.

Course Structure and Syllabus:

1. History and Theoretical Foundations of Paleontology and Geology – Analyzing the historical development and fundamental principles governing Earth's geological and biological evolution.

2. Introduction to Astrobiology and its Intersection with Paleontology – Investigating the biological and chemical processes that connect ancient Earth with potential extraterrestrial life.

3. Fossils, Fossilization, and Preservation Methods (Part 1 & Part 2) – Understanding fossil formation, diagenesis, and long-term preservation techniques.

4. Geology of Mars and Landscape Traces – Exploring Martian surface geology, sedimentary records, and geomorphological evidence for past water activity.

5. Fossil Preservation in Planet Earth – Examining the region's unique fossil records and their significance in evolutionary studies.

6. Fossils, Minerals, and Commercial Applications – Assessing the economic and scientific value of fossils and minerals in industry and research.

7. Advanced Analysis of Invertebrate and Ichnological Fossils – Studying trace fossils and their implications for understanding ancient ecosystems.

8. Special Astrobiology Lecture: Analog Studies & Planetary Geology (Part 1 & Part 2) – Reviewing terrestrial analog environments that simulate extraterrestrial conditions.

9. Biotechnology Beyond Earth: Innovations for Space Exploration – Exploring biotechnological advancements supporting life and resource utilization in space.

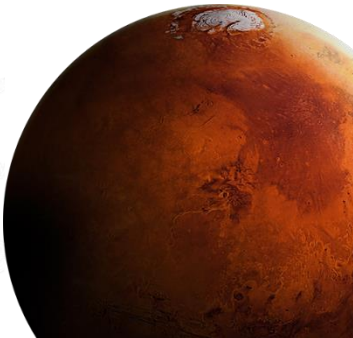
10. Introduction to Meteorite, Mineral, and Rock Identification – Learning techniques for recognizing extraterrestrial and terrestrial geological materials.

11. Astro-ecology and Earth Observation from Space – Analyzing Earth's biosphere through remote sensing and space-based environmental monitoring.

Entry Requirements

This short certificate course is designed for **students aged 8 to 25** who have a keen interest in these scientific domains. Tailored for beginners, the program introduces fundamental concepts, fostering curiosity about the search for extraterrestrial life and the fossil record of ancient organisms. Due to limited availability, only the first 25 applicants will be selected, ensuring an engaging and focused learning experience.



Course Fee | [Included -Registration fee. Tuition Fee, Examination Fee, Certification fee]

Full course Payment: $45

Option 01 - One time Pay**:** The course fee is: $45

Option 02 - If you are unable to make the full payment upfront, you have the option to pay in installments. The total fee can be divided into two stages:

- **First installment:** $25 (to be paid by **March 10, 2025**)
- **Second installment:** $25 (to be paid by **May 6, 2025**)

You can begin the course after completing the first installment. We accept **Visa and MasterCard** for secure online transactions. After you complete the registrations, you will receive a confirmation email from info@ecoastronomy.edu.lk

Notice: Only Sri Lankan students who wish to participate in this course must obtain special permission and successfully complete an online interview.

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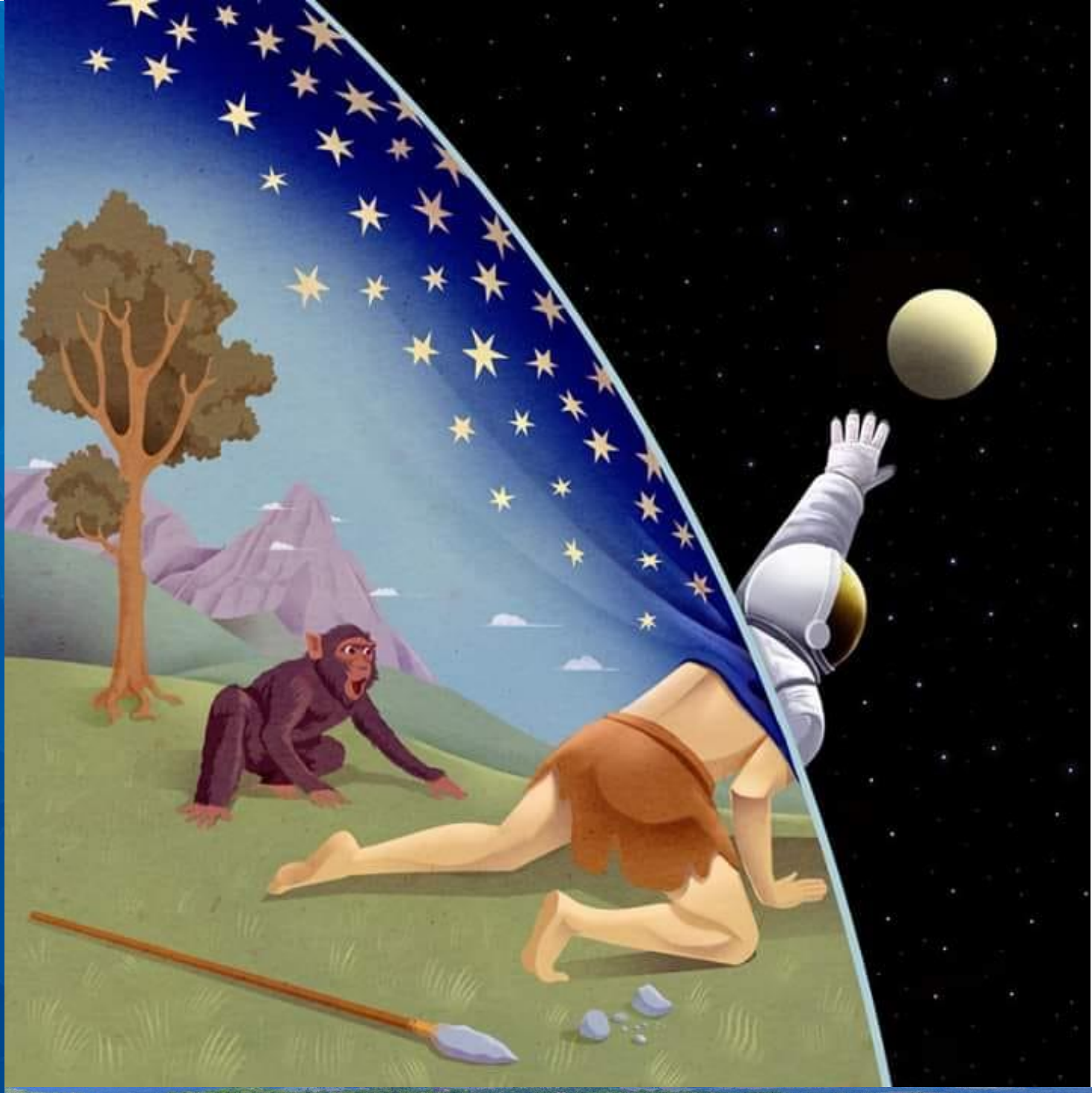


Check Guest Speakers and Eco Astronomy Research Activities

NASA
United States

Japan Aerospace Exploration Agency
Japan

International Space University
France

Space Generation Advisory Council
Austria

Kei Cities
Spain

Zero 2 Infinity
Spain

Eco Astronomy Sri Lanka
Sri Lanka

Space Watch Global
Switzerland

National Space Academy
United Kingdom

Astronautin GmbH
Germany

New Zealand Space Agency
New Zealand

Space Foundation
United States

TAKING FLIGHT

OCTOBER 14-17 - 2021

THE 24TH ANNUAL INTERNATIONAL MARS SOCIETY CONVENTION

AN ONLINE VIRTUAL EVENT POWERED BY ATTENDIFY

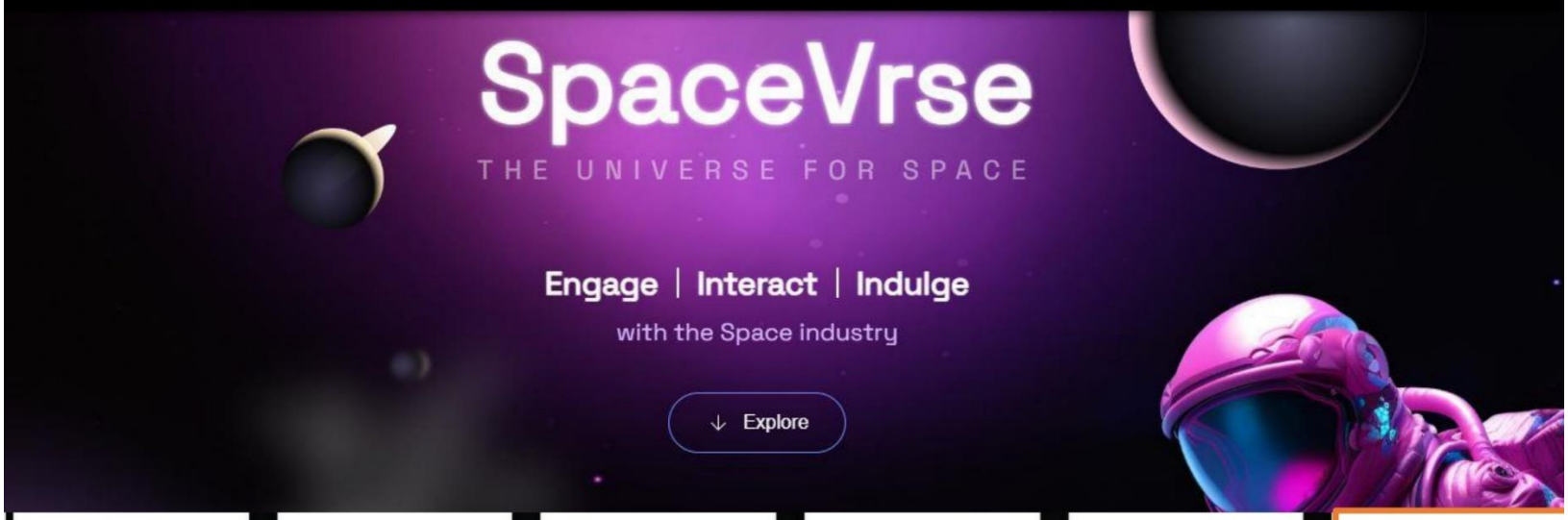
Space Archaeology in Mars: Anthropological aspect of Humans as a Multiplanetary Species in 2050

Eng. Majda Aouititen

Dr. Siddharth Pandey

www.MarsSociety.org

Eco Astronomy's Another Step to Take Sri Lanka into Industrial Astronomy and Space Applications.



Cosmic Space Systems Pakistan	CosmoLAB HUB Benin	Cosmos for Humanity Switzerland	Dream Tech Armenia	Drone Link Malawi	Eco Astronomy Sri Lanka Sri Lanka
Institution of Mechanical Engineers UK	Intergrated Spaceflight Services LLC USA	International Institute of Astronautical Sciences USA	The International Institute of Space Law France	The Interstellar Foundation USA	Intuitive Machines USA
ISA Industries USA	JKIC Germany	Kelly Kowalski USA	Kenya Space Society Kenya	LearnSpace Foundation Nigeria	LIA Aerospace Argentina
Habitat Marte	Hayes Group	Helight	Helium Learning Labs	Humbitec	INNOIGNITE

ANALOGIES LOCATIONS OF MARS - Gusev Crater, Meridiani Planum, Noachian terrains, Juventae Chasma.

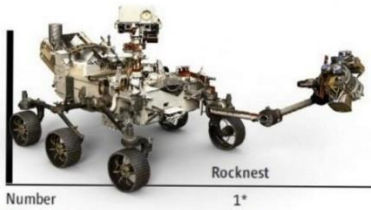
GRAIN DIAMETER - 0.002- 1mm **ADDITIONAL ELEMENTS -**Ni, Zn, Sr, Co

SOIL MOOD: Ultra Superfine **RADIOACTIVE:** Nil

Artificial RM 01 | Artificial RM 02

Artificial Regolith of Mars | J– Collection

CHEMICAL PROPERTIES



MARS

	Rocknest	Gusev	Meridiani
Number	1*	48†	29†
SiO_2 (wt %)	42.88 ± 0.47	46.1 ± 0.9	45.7 ± 1.3
TiO_2	1.19 ± 0.03	0.88 ± 0.19	1.03 ± 0.12
Al_2O_3	9.43 ± 0.14	10.19 ± 0.69	9.25 ± 0.50
Cr_2O_3	0.49 ± 0.02	0.33 ± 0.07	0.41 ± 0.06
Fe_2O_3 + FeO	19.19 ± 0.12	16.3 ± 1.1	18.8 ± 1.2
MnO	0.41 ± 0.01	0.32 ± 0.03	0.37 ± 0.02
MgO	8.69 ± 0.14	8.67 ± 0.60	7.38 ± 0.29
CaO	7.28 ± 0.07	6.30 ± 0.29	6.93 ± 0.32
Na_2O	2.72 ± 0.10	3.01 ± 0.30	2.21 ± 0.18
K_2O	0.49 ± 0.01	0.44 ± 0.07	0.48 ± 0.05
P_2O_5	0.94 ± 0.03	0.91 ± 0.31	0.84 ± 0.06
SO_3	5.45 ± 0.10	5.78 ± 1.25	5.83 ± 1.04
Cl	0.69 ± 0.02	0.70 ± 0.16	0.65 ± 0.09
Sum (wt %)	99.85	99.88	99.88

ARTIFICIAL REGOLITH OF MARS

J– COLLECTION SIMULANT BY ECO ASTRONOMY

Artificial Soil Simulant | Calibration to Rocknest 1*	
SiO_2 (wt %)	42.88 ± 1.5
TiO_2	1.19 ± 0.5
Al_2O_3	9.43 ± 1.5
Cr_2O_3	1.19 ± 0.5
Fe_2O_3 + Feo	19.19 ± 1.5
MnO	0.41 ± 0.4
MgO	8.69 ± 1.5
CaO	7.28 ± 1.5
Na_2O	2.72 ± 1.5
K_2O	0.49 ± 0.2
P_2O_5	0.94 ± 0.5
SO_3	5.45 ± 1.5
Cl	0.69 ± 0.5
	99.85

ECO ASTRONOMY

Basaltic soil compositions from APXS analyses for Rocknest Portage, Gusev Crater, and Meridiani Planum on MARS | XRF data - Artificial

Director academic at Eco Astronomy Inc., Eng. Majda Aouititen has cooperated with "YOUTH OLYMPIC" Beijing City Youth Online Dialogue at China. She is the first scientist in the Eco Astronomy Global Network that represents the preliminary discussion event of the

SCIENTISTS WITH ECO ASTRONOMY NETWORK

Executive Portal of Eco Astronomy Network

Eng. Majda Aouititen

Astro Ecologist

Director Academic- Eco Astronomy Sri Lanka.

Beijing Forestry University School of Ecology and Nature Conservation, Beijing, China.

A.R.Sumanarathna

Astrobiologist

CEO. Eco Astronomy Inc

South Asian Astrobiology & Earth Science Research Hub

Prof. Dr. Richard B. Hoover

NASA/MSFC EMERITUS – DOCENT/ASTROBIOLOGIST

UNITED STATES SPACE AND ROCKET CENTER

Chief Astrobiology Advisor Eco Astronomy Research Hub.

Mr. Akash Anandh

Senior Astrophotographer

Education Executive -South Asian Sector- India

South Asian Astrobiology & Earth Science Research Hub- Eco Astronomy Sri Lanka

Mr. Bernie Taylor

Senior Archeoastronomer

Education Executive – International Sector- USA

South Asian Astrobiology & Earth Science Research Hub- Eco Astronomy Sri Lanka

Visiting Guest Scientists

Dr. Eleonore Poli

Analogue astronaut and crew commander at Space at your Service

Postdoctoral Researcher at CSEM.

Adj Prof . Jonathan Clarke

Amity Center of Excellence in Astrobiology

President Mars Society Australia

Mrs. Anastasia Stepanova

Analogue astronaut

Former Engineer at Institute of Biomedical Problems of RAS

Mr.Jonathan Nalder

Chief Futures Officer at STEM Punks

Ambassador of Mars Society

Mrs. Laura Borella

PhD Scholer at ULB – Université libre de Bruxelles

Prof. Abdelouahed Lagnaoui

Senior Paleontologist

EDR Trace analysis program of Mars

EcoAstronomy Inc

North African Sector – Morocco

Université Hassan I – Settat – Morocco

Dr. Jason Kennedy

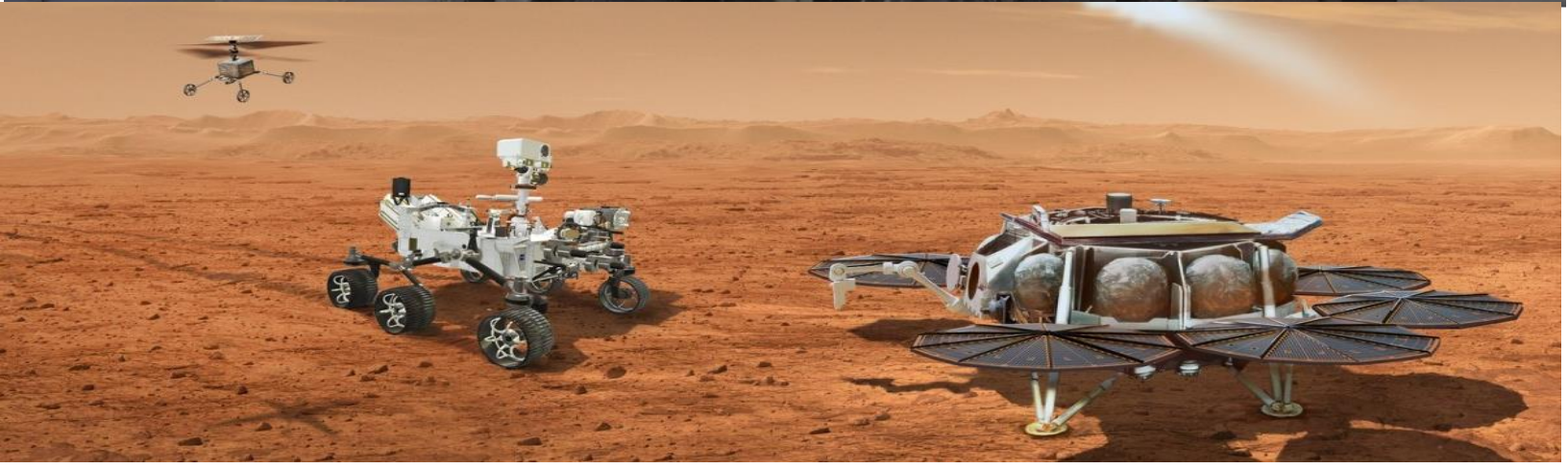
Senior Scientist in Digital Design

Pleistocene of Sri Lanka- Digital reconstruction program – Eco Astronomy Inc

Senior Lecturer (Digital Design) | Curriculum Leader | Animation Pathway Leader Auckland University of Technology. New Zealand.

THE MARS SOCIETY

30 (+) Mars Society Ambassadors Leading the Way in Space Advocacy



ASTRO WEEK

Eco Astronomy Inc
International Lecture Series – 14- 2024

ECO ASTRONOMY
INTERNATIONAL RESEARCH INSTITUTE

HOW TO STUDY EARTH ECOSYSTEMS FROM SPACE

GUEST SPEAKER

Dr. Eng. Majda Aouititen

DIRECTOR ACADEMIC OF ECO ASTRONOMY INTERNATIONAL NETWORK

BEST RESEARCH PROJECT INTERNATIONAL | AWARDS 2023

WINNERS

SUSTAINABLE DEVELOPMENT GOALS

SRI LANKAN MUSEUM OF NATURAL HISTORY AND SCIENCE

ECO ASTRONOMY SRI LANKA

Eng. Majda Aouititen is a distinguished scientist, educator, and leader in the fields of Eco Astronomy, nature conservation, and marine science. She serves as the **Director Academic of the Eco Astronomy International Network**, where she has played a pivotal role in advancing scientific knowledge through online programs, hosting over **150 scientific podcast events** since 2018.

A highly active member of the **International Union for Conservation of Nature (IUCN)**, she contributes to three key commissions:

- **CEC (Commission on Education and Communication)**
- **CEM (Commission on Ecosystem Management)**
- **CCC (Commission on Climate Crisis)**

Her expertise extends to organizing and hosting **international scientific events, debates, and lectures** for diverse audiences, including university students and institutions across **Morocco, China, Sri Lanka, Turkey, Pakistan, East Asia, Europe, and Canada**.

In addition to her academic leadership, Eng. Aouititen is an **executive member and scientist of the Mars EDR exploration team** under Eco Astronomy-Astrobiology, contributing to space exploration research. She holds an **International 2nd Master's degree in Nature Conservation and Animal Behavior** and is currently pursuing her **Ph.D. in Marine Science and Technology**.

She also serves as an **International Students Advisor and Ambassador at Beijing Forestry University International College (China)**, where she continues to support and mentor students. Over the course of **11+ years of research and professional experience**, she has developed strong leadership, team management, and innovative problem-solving skills.

Her remarkable contributions to science and education have been recognized globally. She has published **over 10 research papers and four books** and has received **more than seven prestigious awards** in recent months. Eng. Majda Aouititen remains dedicated to scientific research, environmental conservation, and fostering international collaboration in education and communication.

ECO ASTRONOMY
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Please Visit for more Information and Online Registration
http://ecoastronomy.edu.lk/course

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