Program Viewbook

Master of Science in Environmental Artificial Intelligence (MScEAI)

Program Description

The Master of Science in Environmental Artificial Intelligence (MScEAI) is an interdisciplinary graduate program that integrates advanced artificial intelligence techniques with environmental science to address global sustainability challenges. It equips students with expertise in machine learning, data analytics, remote sensing, and ecological modeling to analyze complex environmental systems. The program emphasizes practical applications of AI in climate change mitigation, biodiversity conservation, renewable energy optimization, and smart resource management. Students develop strong computational skills alongside a deep understanding of environmental processes and policy frameworks. Through hands-on projects and research, learners apply AI-driven solutions to real-world environmental problems. The curriculum fosters innovation, critical thinking, and ethical responsibility in deploying AI technologies for environmental stewardship. Graduates are prepared for impactful careers in research, industry, government, and international sustainability initiatives.

Graduates of the MScEAI program are equipped to apply advanced artificial intelligence techniques to solve complex environmental challenges. They are prepared to work as environmental data scientists, AI specialists, sustainability analysts, or research professionals in governmental, industrial, and academic sectors. With strong expertise in both artificial intelligence and environmental systems, they contribute to innovative, data-driven solutions that promote sustainable development and climate resilience.

Program Learning Outcomes (PLOs)

PLO 1. Demonstrate advanced, integrated knowledge of artificial intelligence, mathematics, statistics, and machine learning for sustainable environmental systems.

PLO 2. Analyze, preprocess, integrate, and manage environmental datasets using robust, scalable, reproducible, and sustainable data engineering practices.

PLO 3. Design, implement, and evaluate innovative machine learning models for sustainable environmental monitoring, forecasting, and decision support.

PLO 4. Apply data-driven and artificial intelligence methods to assess environmental risks and support sustainable resilience strategies and decision-making.

PLO 5. Conduct independent research in environmental artificial intelligence to develop innovative entrepreneurial solutions and communicate findings effectively to diverse audiences.

PLO 6. Demonstrate professional responsibility, applying responsible artificial intelligence, sustainability, ethics, teamwork, leadership, and good research practice.

Program Completion Requirements

The Master of Science in Environmental Artificial Intelligence (MScEAI) shall be awarded to a student upon fulfillment of the following requirements:

- Successful completion of Thirty-six (36) credit hours.
- Achievement of a minimum CGPA of 3.0 on a 4.0 scale.
- Completion of at least 75% of the total program credit hours at CUD.
- Completion of Master's Thesis and Practicum at CUD.

Program Structure

Core Courses	**21 Cr. Hrs.**
Electives	**06 Cr. Hrs.**
Master's Thesis and Practicum	**09 Cr. Hrs.**
Total	**36 Cr. Hrs.**

List of Courses

I. Core Courses

Course			Prerequisite	Cr. Hrs.
				21
MAI	600	Mathematics and Statistics for AI	None	3
MAI	602	Machine Learning	None	3
MAI	600	Programming for Environmental Intelligence	None	3
MAI	601	AI for Climate Science and Environmental Systems	None	3
MAI	602	Environmental Data Engineering	MEI 600	3
MAI	603	Deep Learning for Earth Observation	MAI 602	3
MAI	604	Research Methods in Environmental AI	MAI 600	3

II. Elective Courses

Course			Prerequisite	Cr. Hrs.
				06
MEI	605	Geospatial Artificial Intelligence	MEI 601 and MAI 602	3
MEI	606	Urban Environmental Analytics	MEI 603	3
MEI	607	Sustainability Policy Analytics	MEI 602	3
MEI	608	Climate Risk Analytics	MAI 602	3
MEI	609	AI for Smart and Sustainable Cities	MEI 602	3
MEI	610	AI for Renewable and Smart Energy Systems	MEI 602	3

III. Practical and Master's Thesis

Course			Prerequisite	Cr. Hrs.
				09
MEI	620	Environmental Artificial Intelligence Practicum	Completed 21 Credit Hours	3
MEI	621	Master's Thesis	Completed 21 Credit Hours including MEI 604	6

Three Semesters Study Plan

Semester	Course Code		Subject Title	Prerequisite	Cr. Hrs.
Semester 1	MAI	600	Mathematics and Statistics for AI	None	3
	MEI	600	Programming for Environmental Intelligence	None	3
	MEI	601	AI for Climate Science and Environmental Systems	None	3
	MAI	602	Machine Learning	None	3
	Total				**12**
Semester 2	MEI	xxx	Elective Course		3
	MEI	602	Environmental Data Engineering	MEI 600	3
	MEI	603	Deep Learning for Earth Observation	MAI 602	3
	MEI	604	Research Methods in Environmental AI	MAI 600	3
	Total				**12**
Summer	MEI*	620	Environmental Artificial Intelligence Practicum	Completed 21 Credit Hours	**3**
Semester 3	MEI	xxx	Elective Course		3
	MEI	621	Master's Thesis	Completed 21 Credit Hours including MEI 604	6
	Total				**9**
Totals Program Credit Hours					**36**

** The Environmental Artificial Intelligence Practicum will be completed in the summer semester following the successful completion of at least 21 credit hours.*

***Note**: The specific elective course(s), including course code, title, and prerequisite, will be finalized and implemented at the time of offering in accordance with the approved program structure.*