

**Kabi Jagadram Roy Government General Degree College  
Mejia, Bankura**

*A Certificate Course*

*On*

***Antarctica: A content of wonders***

*Conducted by*

***Department of Geology***

*(In association with IQAC)*

**[December 21-31, 2022]**



".....দক্ষিণ মেরুর উর্ধ্বে যে অজ্ঞাত তারা  
মহাজনশূন্যতায় রাত্রি তার করিতেছে সারা,  
সে আমার অর্ধরাত্রে অনিমেষ চোখে  
অনিদ্রা করেছে স্পর্শ অপূর্ব আলোকে।"

রবীন্দ্রনাথ ঠাকুর (ঐকতান)





## Antarctica: A content of wonders

### Overview

Explore the continent of Antarctica and more than 500 million years of geological history and 250 years of geographical discovery and scientific endeavor.

Cliff, an Antarctic veteran, with 12 seasons on the ice, will introduce you to some of our planet's most remarkable landscapes—the Dry Valleys, the Transantarctic Mountains and the world's southernmost volcanic island. At a remote field camp, he interviews fellow geologists studying fossil-rich sediments—from a time when Antarctica was 20°C warmer than today—to see what Antarctica's past climate can reveal about what the future might hold.

This course offers a comprehensive exploration of Antarctica, covering its geological formation, environmental significance, and human history. Participants will delve into the unique geological features of Antarctica, examine its ecological systems, and analyze the continent's exploration and human presence over time.

#### **Why we study about antarctica:**

Science is really significant in Antarctica because unlike most other areas of the world, it remains relatively untouched and all activities are carefully controlled and monitored. The scientific studies in Antarctica are often ones that cannot usually be conducted elsewhere and help our understanding of global environmental issues including climate change, ozone depletion, sea level rise. Antarctica is also a barometer of climate change.

# COURSE CONTENT

## **Module 1: Introduction to Antarctica:**

Module Description: The "Introduction to Antarctica" module serves as an entry point for learners to explore the geography, geology, climate, and significance of Antarctica. Through this module, participants will gain foundational knowledge about the southernmost continent, its unique features, and its role in global environmental systems.

### **Understanding Antarctica:**

- Overview of Antarctica's geographic location, size, boundaries climate, and physical characteristics
- Introduction to landmarks of Antarctic
- Introduction to the climate and weather patterns of Antarctica
- Discussion on the significance of Antarctica as a continent and its role in regulating global climate systems

### **Origin of Antarctica:**

- Exploration of Antarctica's geological history and formation
- Plate tectonics and the breakup of Gondwana: How Antarctica became a separate landmass

### **Landscapes and Ecosystem:**

- Overview of geological features such as mountains, glaciers, and ice shelves
- Flora and Fauna of Antarctica; exploration of Antarctica's rich wildlife, including penguins, seals, whales, and seabirds
- Overview of the unique adaptations of Antarctic animals to survive in extreme conditions
- Importance of Antarctic Ecosystems

## **Module 2: Exploration and Discovery**

Module Description: The "Exploration and Discovery of Antarctica" module offers participants a comprehensive journey through the history of Antarctic exploration, from the earliest voyages of discovery to modern scientific expeditions. Through a blend of historical accounts, multimedia presentations, and interactive discussions, learners will gain insights into the challenges, triumphs, and enduring legacy of Antarctic exploration.

### **Early Voyages, Discoveries and Antarctic Exploration:**

- Overview of early attempts to explore and discover Antarctica
- Exploration of the Heroic Age of Antarctic Exploration (late 19th to early 20th century)
- Exploration expeditions led by notable explorers such as Scott, Amundsen, and Shackleton

- Motivations and challenges faced by early explorers in their quest to reach the southernmost continent and survive in Antarctica's harsh environment

### **Scientific Expeditions and Research:**

- Overview of scientific expeditions and research conducted in Antarctica during the 20<sup>th</sup>-21<sup>st</sup> century
- Discussion on the establishment of research stations and the development of Antarctic science programs
- Exploration of key discoveries and breakthroughs in fields such as geology, glaciology, oceanography, and biology

### **Module 3: Wonders and Challenges:**

Module overview: This module aims to provide a comprehensive overview of the wonders and challenges of Antarctica, covering its unique environment, scientific significance, human presence, environmental threats, cultural aspects, and future prospects. Each session combines lectures, discussions, and interactive activities to engage participants and deepen their understanding of Antarctica's complexities.

#### **Antarctica and Human:**

- Historical overview of human exploration and scientific research in Antarctica.
- Challenges of Living and Working in Antarctica
- Indigenous Peoples and Cultural Significance of Antarctica

#### **Climate Issues in Antarctica**

- Climate Change and Its Impact on Antarctica
- Melting Ice: Environmental Consequences and Global Implications
- Wildlife Conservation Efforts in Antarctica
- Threats to Antarctic Ecosystems: Pollution, Invasive Species, and Overfishing

#### **Tourism and future prospect in Antarctica**

- Tourism in Antarctica: Opportunities and Challenges
- Future Prospects for Antarctica: Environmental Protection and Sustainability

#### **Suggested Reading:**

- ❖ Scott and Amundsen: The Last Place on Earth, Roland Huntford
- ❖ Race to the South Pole, Roald Amundsen
- ❖ Forgotten Footprints: Lost Stories in the Discovery of Antarctica, John Harrison
- ❖ Natural History of the Antarctic Peninsula, Sanford Moss
- ❖ Antarctica (Bengali Edition) by Sudipta Sengupta (Author)
- ❖ Antarctica: Life on the Frozen Continent (Wonders of Our Planet) by Conor Kilgallon
- ❖ Pilgrims on the Ice: Robert Falcon Scott's First Antarctic Expedition by T. H. Baughman
- ❖ <https://discoveringantarctica.org.uk/>