

VEERMATA JIAJABAI TECHNOLOGICAL INSTITUTE, MUMBAI

Programme Name	
Course Name	
Course Title	Climate Change and the Earth's Living Systems:

A Focus on Soil, Carbon, and Plants

Course Description: This course will delve into the critical role of soil, carbon, and plants in mitigating climate change. Students will explore the complex interactions between these elements and their impact on global warming, greenhouse gas emissions, and ecosystem health. The course will cover topics such as:

- **Soil as a Carbon Sink:** The role of soil in sequestering carbon and its implications for climate change mitigation.
- **Plant-Soil Interactions:** How plants influence soil carbon storage and nutrient cycling.
- **Carbon Cycle Dynamics:** Understanding the global carbon cycle and its key components.
- **Agricultural Practices and Climate Change:** The impact of agriculture on soil health, carbon emissions, and climate change.
- **Forestry and Carbon Sequestration:** The role of forests in mitigating climate change through carbon sequestration.
- **Climate-Smart Agriculture:** Exploring sustainable agricultural practices that promote soil health and reduce greenhouse gas emissions.
- **Policy and Governance:** Examining international and national policies related to climate change, agriculture, and land use.

Outcome: By the end of this course, students will be able to:

- Understand the critical role of soil, carbon, and plants in the Earth's climate system.
- Analyze the impact of human activities on soil health, carbon emissions, and plant biodiversity.
- Evaluate the potential of soil, carbon, and plant-based solutions to mitigate climate change.
- Develop a critical understanding of climate change policies and governance.
- Apply their knowledge to real-world challenges and propose sustainable solutions.

Potential Course Activities:

- **Field Trips:** Visits to local farms, forests, and research institutions to study soil health, carbon sequestration, and sustainable agricultural practices.
- **Guest Lectures:** Inviting experts in soil science, plant biology, climate change policy, and agriculture to share their insights.
- **Group Projects:** Students can work on projects related to climate change mitigation, such as designing a sustainable farming system or developing a carbon sequestration strategy.
- **Case Studies:** Analyzing real-world case studies of climate change impacts and mitigation efforts.

- Discussions and Debates: Engaging in discussions and debates on controversial topics related to climate change and agriculture.

