

1.Farming and climate change

I. RI Course 1 Information

- ❖ **Course Title:** Farming and climate change
- ❖ **Course Description/Overview:** The online course "Farming and Climate Change" is designed for participants to understand the intricate relationship between farming practices and climate change. This interactive course will explore how climate change impacts agricultural productivity, soil health, and crop resilience. Participants will learn about sustainable methods that can mitigate these effects, such as crop diversification, soil conservation techniques, and the use of climate-resilient crops. Through case studies, expert-led discussions, and interactive simulations, attendees will gain practical knowledge on adapting farming practices to changing climate conditions. The course will also delve into climate change on farming and how to develop adaptive strategies that ensure long-term sustainability.

Course Objectives

- **Knowledge Acquisition:** Participants will gain a comprehensive understanding of environmental concepts, farming specific issues, and common practices.
 - **Critical Thinking:** Students will develop the ability to analyze environmental problems related to farming, evaluate solutions, and make informed decisions.
 - **Environmental Awareness:** The course will cultivate a sense of responsibility and commitment to protecting the planet.
 - **Sustainable Behavior:** Participants will be encouraged to adopt sustainable practices in their daily lives.
- ❖ **Course Duration:** (Specify the total duration of the course, e.g., 5 weeks, 1 semester)

II. Course Announcement

Participants will be informed about course updates, assignments, and important information through the following channels:

- ❖ **Learning Management System (LMS):** Announcements will be posted on the course LMS page.
- ❖ **Email:** Regular emails will be sent to students with relevant information.
- ❖ **Student Responsibilities:** Students are expected to check the LMS and their email regularly for course communications.

III. Learning Outcomes

- **Valuing Sustainability:** Students will learn to reflect on their values, understand how values differ among individuals and across time, and critically evaluate their alignment with sustainability.
- **Supporting Fairness:** The course will foster an understanding of equity and justice for

present and future generations in the context of sustainability, encouraging learning from past generations' experiences.

- **Promoting Nature:** By exploring the interconnectedness of ecosystems and the impact of human activities, students will understand the importance of living in harmony with nature. They will learn to acknowledge humans as part of nature and recognize the needs and rights of other species.
- **Collaborating Through Digital Technologies:** Depending on the course's design, students may engage in collaborative activities using digital tools. This could involve co-creation of projects or shared learning experiences.
- **Empathy:** By exploring the impact of environmental issues on different communities and ecosystems, students will develop their empathy and understanding of diverse perspectives
- **Collaboration:** Depending on the course structure, students may work together in groups on projects or challenges, learning to share responsibilities, respect others' contributions, and work towards common goals.
- **Coping with Uncertainty, Ambiguity & Risk:** Exploring complex environmental issues and their potential solutions will encourage adaptability and the capacity to make decisions amidst uncertainty.
- **Critical Thinking:** By analyzing information about environmental challenges, evaluating different perspectives, and forming their own conclusions, students will hone their critical thinking skills.

IV Course Contents

Section One: Agriculture and Climate Change: A Complex Relationship

Section Description: This section focuses on understanding the basic science of climate change and its direct and indirect impacts on agricultural systems globally and regionally. Explore the connections between climate variables and crop productivity.

Learning Objectives:

- Comprehend the Fundamentals of Climate Science by understanding the basic principles of climate change, including the greenhouse effect, global warming, and the factors driving climate variability.
- Explore how climate change affects agricultural productivity on both a global and regional scale, with specific examples of affected crops and regions.
- Investigate the connections between key climate variables (such as temperature, rainfall, and CO2 levels) and their influence on crop growth, yield, and quality.
- Recognize both direct and indirect impacts of climate change on agricultural systems, including changes in temperature, precipitation patterns, and the frequency of extreme weather events.

Content Outline:

- Greenhouse Effect and Global Warming
- Rising Temperatures and Crop Productivity
- The impact of climate variability and extremes on agriculture and food security
- Direct vs. Indirect Impacts on Agriculture

Activities and Assessment:

- Reading assignments
- Interactive video
- Case studies and analysis
- Forum discussion
- **Section Two: Farming Practices at the time of Climate Change**

Section Description: This section focuses on discovering sustainable farming methods, including crop diversification, agroforestry, organic farming, and regenerative agriculture. Learn how these practices can reduce greenhouse gas emissions and enhance farm resilience.

Learning Objectives:(more specific)

 - Gain knowledge about organic farming techniques that minimize the use of synthetic inputs, promote soil health, and reduce environmental impact.
 - Explore regenerative agriculture practices that restore soil health, increase biodiversity, and enhance the farm's ability to withstand climate change impacts.
 - Assess how sustainable farming practices contribute to lowering greenhouse gas emissions and mitigating climate change.

Content Outline: Farming at the time of climate change

 - Effects of Climate Change on Soil Structure and Fertility
 - Impact on Water Availability and Irrigation Needs
 - Soil Erosion, Degradation, and Conservation Techniques
 - Water Management Strategies in Changing Climates

Activities and Assessment:

 - Reading assignments
 - Interactive video
 - Case studies and analysis
 - Forum discussion

2. Permaculture Practices

I. RI Course 2 Information

- ❖ **Course Title:** Permaculture Practices
- ❖ **Course Description/Overview:**

The online course "Permaculture Practices" is designed to provide a comprehensive introduction to the principles and techniques of permaculture, focusing on creating sustainable and self-sufficient ecosystems. Participants will learn how to design and manage landscapes that mimic natural ecosystems, fostering biodiversity, soil regeneration, and water conservation. The course covers essential topics such as zoning, companion planting, natural building, and integrated pest management. Through interactive design exercises, participants will develop practical skills in planning permaculture systems for various environments,

including urban, suburban, and rural settings. The course also delves into ethical principles, including care for the earth, care for people, and fair resource distribution. By the end of the course, participants will be equipped to apply permaculture practices to their own gardens, farms, or community projects, creating resilient systems that support both human needs and the environment.

Course Objectives

- ❖ **Knowledge Acquisition:** Participants will gain a comprehensive understanding of permaculture principles, farming specific issues, and common practices.
- ❖ **Critical Thinking:** Students will develop the ability to analyze environmental problems related to farming, evaluate solutions, and make informed decisions.
- ❖ **Environmental Awareness:** The course will cultivate a sense of responsibility and commitment to protecting the planet.
- ❖ **Sustainable Behavior:** Participants will be encouraged to adopt sustainable practices in their daily lives.
- ❖ **Active Citizenship:** Students will learn how to engage in environmental activism and contribute to positive change.
- ❖ **Course Duration:** (Specify the total duration of the course, e.g., 5 weeks, 1 semester)

II. Course Announcement

Participants will be informed about course updates, assignments, and important information through the following channels:

- ❖ **Learning Management System (LMS):** Announcements will be posted on the course LMS page.
- ❖ **Email:** Regular emails will be sent to students with relevant information.
- ❖ **Student Responsibilities:** Students are expected to check the LMS and their email regularly for course communications.

III. Learning Outcomes

Futures Literacy: Through exploring the causes and effects of environmental issues, the course will enable students to envision alternative sustainable futures. They will learn design with nature and identify the steps required to achieve a preferred sustainable future with permaculture principles.

Exploratory Thinking: Through examining various environmental topics and considering solutions, students will develop exploratory thinking skills. They will learn to link different disciplines, applying creativity and experimentation to develop novel ideas and methods for sustainability.

Collaborating Through Digital Technologies: Depending on the course's design, students may engage in collaborative activities using digital tools. This could involve co-creation of projects or shared learning experiences.

Protecting Health and Well-being: Students will become aware of potential health risks associated with digital technology use and learn strategies for maintaining well-being in online environments. This includes addressing issues like cyberbullying and promoting positive online

interactions.

Protecting the Environment: The course content will raise awareness about the environmental impact of digital technologies. This aligns with the course's overarching theme of environmental responsibility.

Empathy: By exploring the impact of environmental issues on different communities and ecosystems, students will develop their empathy and understanding of diverse perspectives

Collaboration: Depending on the course structure, students may work together in groups on projects or challenges, learning to share responsibilities, respect others' contributions, and work towards common goals.

Coping with Uncertainty, Ambiguity & Risk: Exploring complex environmental issues and their potential solutions will encourage adaptability and the capacity to make decisions amidst uncertainty.

Critical Thinking: By analyzing information about environmental challenges, evaluating different perspectives, and forming their own conclusions, students will hone their critical thinking skills.

IV.Course content

Section One:Permaculture Principles and Ethics

Section Description: This section covers the core principles and ethics of permaculture, including observe and interact, catch and store energy, obtain a yield,, apply self regulation and feedback, use and value renewables. The course also emphasizes permaculture ethics, earth care, people care, and fair resource distribution

Learning Objectives:

- Identify the principles and ethics of Permaculture
- Grasp the foundational principles of permaculture, including the integration of ecological and sustainable practices into landscape design.
- Learn the methods and benefits of obtaining a yield and catching energy.
- Gain knowledge about natural building techniques, focusing on sustainable materials and construction methods that minimize environmental impact.

Content Outline:

- Key Ethics & Permaculture Design Principles
- Observe and Interact
- Catch and Store Energy
- Obtain a Yield
- Apply Self-Regulation and Feedback
- Use and Value Renewables

Activities and Assessment:

- Reading assignments
- Interactive video
- Case studies and analysis
- Forum discussion

- **Section Two: Permaculture Principles**

Section Description: This section delves into the concept of permaculture principles and sustainably practices

Learning Objectives:

- Demonstrate how to apply the principle of "Produce No Waste" in a practical, real-life permaculture system by reducing resource consumption and recycling materials
- Differentiate between systems that produce waste and those that reuse and recycle resources effectively.
- Recall examples of natural patterns used in permaculture design.
- Apply the principle of "Use Small and Slow Solutions" to create a low-maintenance garden or farming system in your home or community.

Content Outline:

- Produce No Waste
- Design from Patterns to Details
- Integrate Rather Than Segregate
- Use Small and Slow Solutions
- Use and Value Diversity
- Use Edges and Value the Marginal
- Creatively Use and Respond to Change

Activities and Assessment:

- Reading assignments
- Interactive video
- Case studies and analysis
- Forum discussion