COURSE OUTLINE: CCM101 - CLIMATE SCIENCE FOUN

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Course Code: Title	CCM101: CLIMATE SCIENCE FOUNDATIONS
Program Number: Name	5250: CLIMATE CHANGE MIT.
Department:	NATURAL RESOURCES PRG
Academic Year:	2024-2025
Course Description:	Students will develop an understanding of the multi-faceted challenges of climate, climate change and climate action. Foundational topics include the carbon cycle, greenhouse effect, mitigation, and adaptation toward developing an interdisciplinary knowledge base about climate change causes and impacts. Students will also explore an understanding of the role of natural landscapes in the carbon balance, climate and natural disturbance, carbon-based landscape management and natural responses to climate change (growth and species composition).
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**5250 - CLIMATE CHANGE MIT.** VLO 1 Design and implement resource surveys and sampling programs, including statistical analysis of environmental data to support climate change analysis. VLO 2 Interpret and apply international, national and regional level environmental and climate policy to support mitigation and adaptation strategies. VLO 5 Assess potential environmental threats to human health and natural systems due to climate change and propose adaptive strategies to address them. VLO 6 Apply an integrated ecosystem management approach to climate change to balance mitigation, intervention and adaptation strategies. VLO 7 Assess and address the impacts of natural disturbances on various watershed processes in forests, hillside slopes, and crown land.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.

	EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Academic success is directly linked to attendance. Missing more than 1/3 of the course hours in a semester shall result in an `F` grade for the course.

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Describe the foundations of climate science	1.1 Define and apply fundamental climate science terminology and concepts 1.2 Explain the Earth`s climate system dynamics 1.3 Differentiate between weather and climate 1.4 Analyze historical climate change and weather variability
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Explain the carbon cycle	2.1 Define the components and processes of the carbon cycle 2.2 Identify sources and sinks of carbon dioxide 2.3 Discuss and evaluate human impacts on the carbon cycle, including fossil fuel combustion, deforestation and land use changes 2.4 Analyze case studies on the disruptions to the carbon cycle and their consequences
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Examine the greenhouse effect and climate drivers	3.1 Explain the greenhouse effect and its significance in climate dynamics 3.2 Identify greenhouse gasses and assess their impacts on climate 3.3 Evaluate natural and anthropogenic climate driving mechanisms 3.4 Analyze the role of aerosols and feedback loops in climate change
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Describe climate mitigation and adaptation strategies	4.1 Differentiate between mitigation and adaptation approaches for climate change 4.2 Evaluate mitigation strategies at individual, community and global levels 4.3 Assess the potential impact of renewable energy technologies on emissions reduction 4.4 Analyze policy and economic considerations in climate mitigation efforts
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Explain climate adaptation measures and resilience building	5.1 Describe adaptation strategies in the context of climate change 5.2 Identify vulnerable regions and communities for climate adaptation

	5.3 Analyze case studies on successful adaptation strategies 5.4 Evaluate resilience-building practices in infrastructure and agriculture ecosystems
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Examine natural landscapes and carbon management	6.1 Assess the role of natural landscapes in carbon sequestration and storage 6.2 Evaluate the impact of land use changes on carbon balance 6.3 Analyze the relationship between climate and natural disturbances such as wildfires, droughts, and hurricanes 6.4 Recommend sustainable land management practices for carbon-based landscape management.
Course Outcome 7	**Learning Objectives for Course Outcome 7**
7. Understand climate change impacts on ecosystems and biodiversity	7.1 Assess the impact of climate change on ecosystems and biodiversity 7.2 Analyze changes in species distribution and composition due to climate change 7.3 Evaluate the role of natural ecosystems in climate regulation and feedback loops 7.4 Recommend conservation strategies to preserve biodiversity and ecosystem services in a changing climate

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	20%
Case Study	10%
Group Presentation	20%
In-class Projects	30%
Tests	20%

Date: June 28, 2024

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.