COURSE OUTLINE: CCM103 - WATER RESOURCE MGMT

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Course Code: Title	CCM103: WATER RESOURCE MANAGEMENT
Program Number: Name	5250: CLIMATE CHANGE MIT.
Department:	NATURAL RESOURCES PRG
Academic Year:	2024-2025
Course Description:	Rising temperature, loss of snowpack, escalating size and frequency of flood events, and rising sea levels are impacts of climate change that have broad implications for the integrated management of water resources.
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 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 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. 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 course hours in a semester shall result in an F Grade for the course.
Books and Required Resources:	Open Education Resources Open Education Resources, links supplied by Professor

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Explore the water cycle, water quality and demand recognizing the interconnections with climate change.	1. Understand hydrology concepts, evapotranspiration, interception storage and water budgets in the context of a changing climate. 2. Examine the various components of Source Water Protection Plans. 3. Differentiate between climate adaptation and mitigation. 4. Illustrate how water security, human rights, gender considerations and climate justice are integral to sustainable water management.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Understand the impact of the global water crisis on ecosystem services, water supply and quality and then propose solutions to address the issues.	1. Identify the various ecosystem services. 2. Determine the factors contributing to the global water crisis. 3. Understand water demand and competition among users: Tragedy of the Commons. 4. Understand water management in the context of traditional ecological knowledge.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Consider the impacts from extreme weather events and changing water resources on other sectors.	1. Evaluate the competition among users for energy, industry, agricultural and cultural traditions 2. Analyze the impact of freshwater withdrawals, including hydropower generations and thermoelectric cooling. 3. Calculate rain intensity and storm probability in a changing climate. 4. Identify flooding factors and flood types and their impact on human health. 5. Consider the unique impact of the world`s water crises on women and girls and recommend mitigation strategies.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Identify climate adaptation challenges and discuss adaptation opportunities.	1. Enhance adaptive capacity by using nature-based solutions/green infrastructure and grey infrastructure. 2. Discover water management/conservation concepts through reconciliation partnerships and traditional ecological

	knowledge. 3. Explain the various adaptation technologies and understand how to select the appropriate technology. 4. Examine political barriers that present challenges to implementing integrated water resources adaptive strategies.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments (Reports, activities	25%
Discussions	15%
Final Project and Presentation	20%
Tests (mid-term and final)	40%

Date: August 19, 2024

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