



**SCHOOL FOR STUDIES
IN
LEARNING COGNITION AND EDUCATION**

COURSE OUTLINE

COURSE CODE: INSC 318E	COURSE NAME: INTEGRATED SCIENCE – ENVIRONMENTAL SCIENCE II Stewardship of Renewable Resources	COURSE LEVEL: Undergraduate	YEAR:2009-2010 SEMESTER : 2	
HOURS PER WEEK: 03	TOTAL HOURS: 45	CREDITS: Three (3)	START DATE: Jan 2010	END DATE: Apr 2010
PREREQUISITES: INSC 313E				
COURSE COORDINATOR:	Phone: Office: 662 2417 Other:	Office Hours:	E-mail:	
INSTRUCTOR: Kishore Lal	Phone: Office: Other: 359-1457	Office Hours:	E-mail kishore.lal@utt.edu.tt	

Approved by _____

Date:

PROGRAMME PROFESSOR

COURSE RATIONALE

Environmental issues affect everyone's lives as evidence of this is easily available in the daily stories in the print and electronic media. To develop a truly democratic society and to critically analyze these issues one must be informed with the knowledge and skills to shape attitudes which lead to education for sustainable development.

In this challenging and incredibly interesting era there is a growing awareness that human activity cannot continue to degrade the natural environment. Change in human behaviour can only be accomplished by developing new cultural transitions in which we learn to live in harmony with nature. Understanding the environmental concepts and issues in the barrage of information encountered daily is crucial to development of attitudes for sustainable development.

Environmental Science draws on the content of several disciplines to present a balanced scientific and holistic approach to the search for solutions to environmental problems.

COURSE DESCRIPTION

Environmental Science II, carrying 3 credit points, is a comprehensive course that explores the impact of obtaining our food and natural fibers from natural ecosystems. Some of these ecosystems are well managed and others are not. The basics for production in these natural systems are the renewable resources contained in the energy flows and water and nutrient cycles that have sustained life on Earth in the past. Our Ecosystem Capital is being depleted when soil erodes, waste degrades, pests multiply, climate changes unfavourably, floods occur and other natural disasters occur due to man's attempt to modify natural systems. In Environmental Science II, you will investigate how we embrace the beauty of both wild and settled ecosystems when we turn to them for enjoyment and renewal while making use of its goods and services in the context of a growing world population. To effectively manage water and soil for food production, forest growth and fisheries you must examine the science and the stewardship in a paradigm of sustainable development.

COURSE GOALS:

- i. Stimulate interest in the environment
- ii. Expand the understanding of Earth and its history and dynamics, environmental changes, natural resources, hazards, and sustainability.
- iii. Provide an intellectual, collegial, and productive working environment
- iv. Build links between the Environmental sciences and other disciplines as required to address increasingly complex problems of compelling intellectual and societal importance

COURSE GENERAL OBJECTIVES

The student will be able to

- i. Develop a picture of the path to a sustainable future.
- ii. Understand the hydrological cycle and human use of water.
- iii. Understand the value of soil as the foundation for land ecosystems.
- iv. Understand the production and distribution of food.
- v. Appreciate the relationship between people wild species and diversity.
- vi. Understand the use and restoration of ecosystem capital

- vii. Develop knowledge, practical and analytical skills in the areas covered.
- viii. Appreciate the need for sustainable development

COURSE UNITS:

1. Water: Hydrologic Cycle and Human Use
2. Soil: Foundation for Land Ecosystems
3. The Production and Distribution of Food
4. Wild Species and Biodiversity
5. Ecosystem Capital: Use and Restoration

COURSE REQUIREMENTS: Laboratory equipped with facilities to conduct activities.

METHOD OF INSTRUCTION: Lectures, power point presentations, group presentations, Laboratory demonstrations and assignments, Field Trips.

RECOMMENDED COURSE CONTENT:

Learning Outcomes	Recommended content	Teaching-Learning Resources
<p>Students will</p> <ul style="list-style-type: none"> i. Develop a picture of the hydrological cycle and human use of water. ii. Explore the factors which impact on the hydrological cycle and human use of water iii. Explore the importance of science in developing successful and sustainable stewardship of the earths natural environment iv. Explore cultural changes required in the 21st century environment 	<p>UNIT 1: Water: Hydrologic Cycle and Human Use</p> <p>1.1 Hydrologic Cycle: Natural Cycle, Human Impacts Evaporation, Condensation, and Purification Precipitation Groundwater Pools and Fluxes in the Cycle Human Impacts on the Hydrologic Cycle</p> <p>1.2 Water: A Resource to Manage, a Threat to Control Uses and Sources Surface Waters Groundwater</p> <p>1.3 Water Stewardship: Public Policy Challenges Obtaining More Water Using Less Water Public-Policy Challenges</p>	<p>Website Text Audiovisual materials Laboratory Activities Field Trips</p>

Learning Outcomes	Recommended content	Teaching-Learning Resources
<p>Students will</p> <ul style="list-style-type: none">i. Understand the value of soil as the foundation for land ecosystemsii. Understand the structure of soilsiii. Understand the factors which affect soilsiv. Explore the historical human interactions with soils	<p>UNIT: 2 Soil: Foundation for Land Ecosystems</p> <p>2.0 Soil and Plants Soil Characteristics Soil and Plant Growth The Soil Community</p> <p>2.1 Soil Degradation Erosion Drylands and Desertification Causing and Correcting Erosion Irrigation and Salinization</p> <p>2.2 Conserving the Soil Public Policy and Soils Helping Individual Landholders</p>	<p>Website Text Laboratory Activities Field Trips</p>

Learning Outcomes	Recommended content	Teaching-Learning Resources
<p>Students will</p> <ul style="list-style-type: none"> v. Understand the production and distribution of food vi. Evaluate the production and distribution of food 	<p>UNIT: 3 The Production and Distribution of Food</p> <p>3.1 Crops and Animals: Major Patterns of Food Production The Development of Modern Industrialized Agriculture The Green Revolution Subsistence Agriculture in the Developing World Animal Farming and Its Consequences Prospects for Increasing Food Production</p> <p>3.2 From Green Revolution to Gene Revolution The Promise The Problems Policies</p> <p>3.3 Food Distribution and Trade Patterns in Food Trade Food Security</p> <p>3.4 Hunger, Malnutrition, and Famine Nutrition vs. Hunger Extent and Consequences of Hunger Root Cause of Hunger Famine Hunger Hot Spots Food Aid Closing Thoughts on Hunger</p>	<p>Website Text Laboratory Activities Field Trips</p>

Learning Outcomes	Recommended content	Teaching-Learning Resources
<p>Students will</p> <ul style="list-style-type: none"> i. Explore the relationship between people wild species and diversity ii. Understand how ecosystems respond to disturbance iii. Understand the decline of biodiversity iv. Evaluate how humans try to protect natural ecosystems 	<p>UNIT: 4 Wild Species and Biodiversity</p> <p>4.1 The Value of Wild Species Biological Wealth Two Kinds of Value Sources for Agriculture, Forestry, Aquaculture, and Animal Husbandry Sources for Medicine Recreational, Aesthetic, and Scientific Value Value for Their Own Sake</p> <p>4.2 Saving Wild Species Game Animals Protecting Endangered Species</p> <p>4.3 Biodiversity and Its Decline The Decline of Biodiversity Reasons for the Decline Consequences of Losing Biodiversity</p> <p>4.4 Protecting Biodiversity International Developments Stewardship Concerns</p>	<p>Website Text Laboratory Activities Field Trips</p>

Learning Outcomes	Recommended content	Teaching-Learning Resources
<p>Students will</p> <ul style="list-style-type: none"> i. Understand the use and restoration of ecosystem capital ii. Understand the factors which affect Conservation, Preservation, Restoration iii. Evaluate the consequences of pressure on Biomes and Ecosystems iv. Evaluate the use of Public and Private Lands in managing ecosystem capital 	<p>UNIT: 5 Ecosystem Capital: Use and Restoration</p> <p>5.1 Global Perspective on Biological Systems Major Systems and Their Goods and Services Ecosystems as Natural Resources</p> <p>5.2 Conservation, Preservation, Restoration Conservation Versus Preservation Patterns of Human Use of Natural Ecosystems Restoration</p> <p>5.3 Biomes and Ecosystems under Pressure Forest Biomes Ocean Ecosystems</p> <p>5.4 Public and Private Lands National Parks and National Wildlife Refuges National Forests Protecting Nonfederal Lands Final Thoughts</p>	<p>Website Text Laboratory Activities Field Trips</p>

EVALUATION

Evaluation consists of Field Trips Reports and assignments together with Mid-term Test. Final evaluation comes at the end of the course in the form of final examination. The pass mark is 50%.

Source of Marks	Marks
Field Trips	15%
Assignments / Presentations	15%
Mid Term Assessment	20%
Final examination	50%

Field Trips

There will be two field trips. For each field trip, there is a 5% for attendance and discussions in the field and 5% for the written report.

Presentations will be marked with the following rubric:

Criterion	0	1	2	3	Your mark
Body Language	No movement or descriptive gestures.	Very little movement or descriptive gestures.	Movements or gestures enhance articulation.	Movements seemed fluid and helped the audience visualize presentation.	
Eye Contact	No eye contact with audience.	Displayed minimal eye contact with audience.	Consistent use of direct eye contact with audience.	Holds attention of entire audience with the use of direct eye contact.	
Poise	Tension and anxiety is obvious; has trouble recovering from mistakes.	Displays mild tension; has trouble recovering from mistakes.	Makes minor mistakes, but quickly recovers from them; displays little or no tension.	Student displays relaxed, self-confident nature about self, with no mistakes.	
Voice	Consistently uses a monotone voice.	Displays some level of inflection throughout delivery.	Satisfactory use of inflection, but does not consistently use fluid speech.	Use of fluid speech and inflection maintains the interest of the audience.	
Pacing	Delivery is either too quick or too slow to meet apportioned time interval.	Delivery is in bursts and does not meet apportioned time interval.	Delivery is patterned, but does not meet apportioned time interval.	Good use of drama and meets apportioned time interval.	
Resources	No use made of any resources.	Few or inappropriate resources used.	Appropriate resources used.	A variety of resources used.	
Preparation	Poor preparation.	Somewhat prepared.	Fairly well-prepared.	Excellent preparation	
Use of Language	Frequent lapses in Standard English usage.	Switches arbitrarily between Standard English and local dialect/creole.	A good command of Standard English, but with occasional lapses in grammar, clarity and/or vocabulary.	Uses grammatically correct Standard English with clarity and appropriate vocabulary. Uses local dialect/creole appropriately when needed.	
Introduction to presentation	No introductory remarks or introductory activity used.	Introductory remarks or activities used but unlikely to arouse learners' interest or link to what follows.	Introductory remarks or activities likely to capture learners' interests.	Clear, meaningful opening remarks or activities that will certainly capture the attention of the learners and sets the mood.	

Criterion	0	1	2	3	Your mark
Under-standing of Content	Demonstrates poor understanding of content.	Demonstrates a vague understanding of content	Demonstrates an understanding of most of the content.	Demonstrates full understanding of the content.	

Written Reports will be marked with the following rubric:

Criterion	0	1	2	3	4	YOUR MARK
Cover page Title page Table of Contents Secured in folder or binder	None submitted	Only one element included with accurate and complete information	Up to two elements included with accurate and complete information	Up to three elements included with accurate and complete information	All four elements included with accurate and complete information	
Language Competence • Clarity • Grammar • Punctuation • Spelling	Clarity, coherence and organisation of the content is severely compromised by major language errors of all types.	Clarity, coherence and organisation of the content is compromised by many deficiencies in language competence.	Ideas are fairly well expressed but several deficiencies in language competence compromise the quality of the work.	Ideas are well-organised and expressed. There are a few deficiencies in language competence,	Ideas are well organised, clearly and coherently expressed and free from deficiencies in language competence.	
Quality of the report	No details	Details are way below the expected quality	Satisfactory to good details	Good to high quality details	Excellent details	
Written Accuracy of the report	Largely Inaccurate	Many inaccuracies	Some inaccuracies	Few inaccuracies	No inaccuracies	
Diagrams and Photos	None	Diagrams and photos included for few areas visited	Diagrams and photos included for some visited	Diagrams and photos included for many areas visited	Diagrams and photos included for all areas visited	

GRADING:

Lower Boundary	Upper Boundary	Grade	Grade Points
90	100	A+	4.0
85	89	A	4.0
80	84	A-	3.7
77	79	B+	3.3
73	76	B	3.0
70	72	B-	2.7
67	69	C+	2.3
63	66	C	2.0
60	62	C-	1.7
55	59	D+	1.3
50	54	D	1.0
0	49	D-	0.0

COURSE POLICIES:

Class Structure:

The structure of this class will be a combination of instructor-led discussion, in-class activities, individual lab work, quizzes, field trips and projects. Any final project or assignment is due before the last week of class. No assignments will be accepted after the last day.

Attendance:

The study Science is cumulative (i.e., an understanding of earlier material is necessary to grasp later covered concepts.) Past experience has shown a high relationship between absences and low grades. Furthermore, absences will severely limit interaction with other students. It is very important that you make every effort to attend every class. Please be guided by UTT's policy on class attendance to qualify to graduate from this course.

Late Assignment:

All assignments are due according to the course calendar. Please be guided by UTT's policy on late assignments.

Schedule

The schedule for the course is listed on the course calendar. All due dates are section specific and will be supplied to you by your instructor at the first class meeting. The Module tests are not scheduled on this course calendar. The instructor will assign all Module test dates. Absence from an exam will only be rescheduled if a medical certificate or supporting official documentation in the case of a death in the immediate family..

Academic Integrity

Academic integrity is submitting one's own work and properly acknowledging the work of others. Any violation of this principle constitutes academic dishonesty and is liable to result in disciplinary action. Forms of academic dishonesty include:

- Plagiarism - submitting all or part of another's work as one's own in an academic exercise, such as an examination, computer program, or written assignment. Please note that allowing someone to submit your work also constitutes plagiarism on your part.
- Cheating - using or attempting to use unauthorized materials on an examination or assignment, such as using unauthorized texts or notes or improperly obtaining, or attempting to obtain, copies of an examination or answers to an examination.
- Facilitating Academic Dishonesty - helping another commit an act of dishonesty, such as substituting for an examination or completing an assignment for someone else.
- Fabrication - altering or transmitting, without authorization, academic information or records.

COURSE SCHEDULE

Week	Unit/Session Topics	Methodology
1 & 2	<p>1 Water: Hydrologic Cycle and Human Use</p> <p>1.1 Hydrologic Cycle: Natural Cycle, Human Impacts Evaporation, Condensation, and Purification Precipitation Groundwater Pools and Fluxes in the Cycle Human Impacts on the Hydrologic Cycle</p> <p>1.2 Water: A Resource to Manage, a Threat to Control Uses and Sources Surface Waters Groundwater</p> <p>1.3 Water Stewardship: Public Policy Challenges Obtaining More Water Using Less Water Public-Policy Challenges</p>	Lectures, group presentations, Laboratory demonstrations and assignments. Field Trips
3 & 4	<p>2 Soil: Foundation for Land Ecosystems</p> <p>2.0 Soil and Plants Soil Characteristics Soil and Plant Growth The Soil Community</p> <p>2.1 Soil Degradation Erosion Drylands and Desertification Causing and Correcting Erosion Irrigation and Salinization</p> <p>2.2 Conserving the Soil Public Policy and Soils Helping Individual Landholders</p>	Lectures, group presentations, Laboratory demonstrations and assignments. Field Trips

Week	Unit/Session Topics	Methodology
5, 6 & 7	<p>3 The Production and Distribution of Food</p> <p>3.1 Crops and Animals: Major Patterns of Food Production The Development of Modern Industrialized Agriculture The Green Revolution Subsistence Agriculture in the Developing World Animal Farming and Its Consequences Prospects for Increasing Food Production</p> <p>3.2 From Green Revolution to Gene Revolution The Promise The Problems Policies</p> <p>3.3 Food Distribution and Trade Patterns in Food Trade Food Security</p> <p>3.4 Hunger, Malnutrition, and Famine Nutrition vs. Hunger Extent and Consequences of Hunger Root Cause of Hunger Famine Hunger Hot Spots Food Aid</p> <p>Closing Thoughts on Hunger</p>	<p>Lectures, group presentations, Laboratory demonstrations and assignments. Field Trips</p>
8, 9 & 10	<p>4 Wild Species and Biodiversity</p> <p>4.1 The Value of Wild Species Biological Wealth Two Kinds of Value Sources for Agriculture, Forestry, Aquaculture, and Animal Husbandry Sources for Medicine Recreational, Aesthetic, and Scientific Value Value for Their Own Sake</p> <p>4.2 Saving Wild Species Game Animals Protecting Endangered Species</p> <p>4.3 Biodiversity and Its Decline The Decline of Biodiversity Reasons for the Decline Consequences of Losing Biodiversity</p> <p>4.4 Protecting Biodiversity International Developments Stewardship Concerns</p>	<p>Lectures, group presentations, Laboratory demonstrations and assignments. Field Trips</p>

Week	Unit/Session Topics	Methodology
11 & 12	5 Ecosystem Capital: Use and Restoration 5.1 Global Perspective on Biological Systems Major Systems and Their Goods and Services Ecosystems as Natural Resources 5.2 Conservation, Preservation, Restoration Conservation Versus Preservation Patterns of Human Use of Natural Ecosystems Restoration 5.3 Biomes and Ecosystems under Pressure Forest Biomes Ocean Ecosystems 5.4 Public and Private Lands National Parks and National Wildlife Refuges National Forests Protecting Nonfederal Lands Final Thoughts	
13	Revision and Presentations	
14	Revision	
15	Final Examination	

TEXT(S).

Environmental Science - Toward a Sustainable Future by Richard T. Wright: Prentice Hall, Inc., 2008.

Environmental Science – Working with the Earth by Tyler Miller: Thompson, 2008

RECOMMENDED READINGS, MATERIALS

Environmental Issues: An Introduction to Sustainability (3rd Edition)
by Robert L. McConnell & Daniel C. Abel: Prentice Hall, Inc., 2007

WEBSITE.

<http://www.itlrc.com>