

**UNITED STATES INTERNATIONAL UNIVERSITY
NSC 2212: LIFE ENVIRONMENT AND SOCIETY
SEMESTER
DETAILED COURSE SYLLABUS
INSTRUCTOR:**

OBJECTIVES

The course is designed to enable students understand various aspects of life, and environment, their relationship and important scientific issues that affect society. At the end of the course, students should display a general understanding of life and its origin, human health and the effect of environment on human health and well being.

TEACHING METHODOLOGY

Lectures, power point presentations, and class discussions: The instructor will give lectures in class to explain to the students various topics on life and environment. The lectures will take a participatory approach where the instructor will involve students by frequently asking them questions that are meant to keep them alert in class and trigger class discussions. The instructor will also be free to answer questions from the students in the course of the lectures.

Video shows on life and environment will be shown in class when available after the relevant topic has been covered.

Assignment criteria: Students will be given at least one research assignment on a relevant topic the the instructor thinks is important and relevant to the course, but will not be adequately covered in class due to limited time.

COURSE CONTENT

Week 1

Living organisms and systems

Characteristics of living organisms, structure and functions of the cell,

Biological molecules: organic and inorganic molecules:

Nucleic acids; DNA and RNA,

Genes, genotype and phenotype.

Group Assignment One: Theories on the origin of life and differences between Eukaryotes and Prokaryotes

Week 2

Origin of life on earth

Emergence of life on earth: chemical phase and biological phase,

Formation and importance of ozone layer
Depletion of ozone layer: Causes and effects of ozone depletion
Ultraviolet radiation; types and effects on living organisms,
Effects of UV radiation the environment

Video show: Our Ozone layer

Week 3

Evolution

Microevolution, macroevolution, co-evolution
speciation and extinction and adaptive radiation
Effect of speciation and extinction on biodiversity

Week 4

Basic needs of life

Living systems and general needs of living systems;
Man's basic needs- food, water, air, clothing , shelter, health and education.
Malnutrition: primary and secondary malnutrition
Nutritional deficiency diseases: causes and effects on human health
Displaced people: health, food and environmental effects

Individual Assignment One: Food Production Methods

Week 5

Food, environment and health

Food production and environmental effects of food production
Food security issues: Causes of food insecurity; solutions
Genetically modified foods: benefits and adverse effects
Poverty contribution to food insecurity and poor health

Individual Assignment Two: Health issues afflicting Tropical Countries

Week 6

Health and environment

- Survey of microorganisms: viruses, bacteria, fungi, protozoa, rickettsiae, chlamydia and helminths. Importance of microorganisms;
- Disease: causes and effects;
- Routes of entry of microorganisms to the body;
- Effect of pathogens on the host
- Communicable and non-communicable diseases
- African health issues: malaria, tuberculosis, diarrhoea, HIV/AIDS

VIDEO SHOW: THE SILENT EPIDEMIC

Week 7

The Immune system

- The immune system : antigens and antibodies

- How the immune system defends the body against disease,
- Immunity: Natural and acquired immunity; active and passive
- Strategies for control and prevention of diseases
- Problems causing disease control programmes
- Drug resistance issues

MID-SEMESTER EXAMINATION

Week 8

Environmental contamination of food

- Food spoilage and post harvest losses
- Chemical residues in food: Antibiotic residues, pesticides, radionuclides, mycotoxins, bacterial and plant toxins, disinfectants.
- Sources and effects of chemical residues in food

Group Work Two: Biodiversity issues affecting our society

Week 9

Natural resources

- A survey of important natural resources available to man: air, water, land, energy, biodiversity, forests and minerals
- Classification of natural resources: renewable, potentially renewable, non-renewable
- Threats to future availability of natural resources: causes and effects
- Strategies for sustainable resource management

Week 10

Air Pollution

Definition and sources of pollution; harmful effects of pollutants

Sources of air pollution; classes of air pollutants

Effects of air pollution; On living and non-living organisms; and environment.

Prevention and reduction of air pollution

Greenhouse gases; greenhouse effect and global warming

Week 11

Water pollution

Definition and types of water pollutants

Sources and causes of water pollution;

Effluents/sewage treatment

Prevention and control of water pollution

Week 12

Land and noise pollution, hazardous wastes

Land/soil pollution sources and effect, control

Noise pollution: Sources and effects of noise pollution.

Hazardous wastes: chemical and radioactive wastes

Week 13

Solid and liquid wastes

- Classification and characteristics of solid wastes
- Storage and disposal of solid wastes
- impact of Industrializations and urbanization on environment
- Impact of tourism on the environment
- Impact of pollution on environment and society

Week14

FINAL EXAMINATION AS PER SCHEDULE

COURSE EVALUATION

Attendance	10%
Assignment 1	10%
Assignment 2	10%
Term paper	15%
Mid-quarter exam.	25%
Final examination	30%

COURSE TEXT

Miller G.T. (Jnr) (2002) Living in the Environment 12th Edition. Wadsworth Publishing Co.

Reference Books

1. Deshmukh I. (1986) Ecology and Tropical Ecology. Blackwell Scientific Publications.
- 2..Purves, W. K. & Orians G.H (1987), Life - The Science of Biology. Sinaver Assoc. Inc. Publishers Sunderland, Massachusetts.
- 3 Life, Death and The Immune System., W.H. Freeman and Company., QR 181 L53, 1994 pp 14-38.
4. Biochemistry, 3rd edition by Stryer Lubert QR 514.2 .S66, 1988.
5. Environmental Pollution: Atmosphere, Land, Water and Noise (by .Dix, H. M., London; John Willey, 1981).
6. Introduction to Environmental Science (by Moran, J. M., *et al.* San Francisco: Freeman, 1980).
7. United Nations, *Environmental issues, Population, Pollution and Economics* (New York: Norton & Company, 1972).
8. Elson, D., *Atmospheric pollution: Causes, effects and Control Policies* (Oxford: Blackwell, 1987).

GRADING

A	90-100
A-	87-89
B+	84-86
B	80-83
B-	77-79

C+	74-76
C	70-73
C-	67-69
D+	64-66
D	62-63
D-	60-61
F	0-59