

LEAD CITY UNIVERSITY
FACULTY OF SCIENCES
DEPARTMENT OF BASIC SCIENCES (BIOLOGY)
SECOND SEMESTER **2017/2018 ACADEMIC SESSION**

COURSE PARTICULARS

Course code: **EMT 317**
Course Title: **WATER ANALYSIS**
No of Units: **1**
Status: **Compulsory**

LECTURER DETAIL

Name: **Dr. (Mrs.) Omonike C. Bakare**
Qualifications: **B.Sc., M.Sc., Ph.D.**
Phone: **07060518491**
Email: omonikebakare@yahoo.com
Area of Specialization: **Zoology (Fisheries and Environmental Biology)**

COURSE DESCRIPTION

EMT 318 Sampling and analysis of water for various biological and physico-chemical water quality parameters: PH, hardness, alkalinity, chloride, phosphate, nature, ammonia, sulphate, sulphide, sulphite, fecal bacteria, etc. Determination of dissolved oxygen (D.O), chemical oxygen demand (COD), biochemical (BOD) dissolved and suspended solids, conductivity, turbidity, temperature, saturation index, sodium adsorption ration, etc.

COURSE AIMS / OBJECTIVES

This course is aimed to provide a generalized survey of the different aquatic habitats and their ecological adaptations to aquatic life.

ASSESSMENT

Test(s) and Assignments	40%
Final Examination	60%
Total	100%

LECTURE PLAN

Week	Topic
Week 1	Introduction; Hydrobiology, Limnology and Oceanography; Physical and chemical parameters of water
Week 2 -5	Aquatic environment: Salinity (ologohaline, mixohaline, mesohaline and metahaline) and Habitat (freshwater, brackish water and marine water)
Week 6 - 8	The freshwater and its classification (lotic and lentic waters); Importance of water
Week 8 – 9	Benthic organisms (infauna, epifauna and demersal) and importance of benthic organisms
Week 10	Microbiological parameters of water
Week 11 – 13	Measurement of water quality (collection of water samples, determination of water quality, analysis of results, etc.)
Week 14-15	Revision

READING LIST

Abel, P.D. 1989. *Water Pollution Biology*. Ellis Horwood Limited, Chichester.

Chapman, D. [Ed.] 1996. *Water Quality Assessments. A Guide to the Use of Biota, Sediments and Water in Environmental Monitoring*. Second edition. Chapman & Hall, London.

de Zwart, D. 1995. *Monitoring Water Quality in the Future. Volume 3, Biomonitoring*. Ministry of Housing, Spatial Planning and the Environment (VROM), The Hague.

Williams, P.J., Thomas, D.N., Reynolds, C.S. (Eds.) 2002. *Phytoplankton Productivity: Carbon Assimilation in Marine and Freshwater Ecosystems*. Blackwell, Oxford, UK, pp. 78-108.

TUTORIAL QUESTIONS

- 1 (a) Define: (i) hydrobiology (ii) Limnology (iii) oceanography
(b) List and discuss any five physico-chemical nature of water.
- 2 Write an essay on the classification of aquatic environment on the basis of:
(i) salinity or chlorinity (ii) habitat
- 3 (a) Briefly discuss the freshwater ecosystem
(b) Write an essay on (i) Autotrophic organisms (ii) Heterotrophic organisms
- 4 (a) Define Benthic organisms
(b) Write short notes on: i) infauna ii) epifauna iii) demersal organisms
(c) Mention three importance of benthic microinvertebrates.
- 5 Write an ESSAY on eutrophication in freshwater, stating the: a) causes b) sources
c) symptoms/signs d) effect e) control).
- 6 (a) Define water pollution
(b) In tabular form, highlight five differences between point source and non-point source
Pollution (c) Mention five effects of water pollution on ecosystems
- 7 Extensively discuss FIVE microbiological parameters of water
- 8 Discuss methods of analysis of the following parameters: a. pH b. Dissolved oxygen
c. Heavy metals d. Lead
- 9 In tabular form, List THREE (3) examples of some of the water-borne/water-related diseases, their causative organisms, means of transmission and symptoms each of:
(a) Bacterial (b) viral (c) protozoan (d) parasite
- 10 Write an ESSAY on Diarrhea as an example of water-related disease: the disease/how it affects people, its causes, distribution, scope of the problem and interventions
- 11 Write an essay on the effects of:
(a) Atmospheric input (b) Anthropogenic input (c) Toxicity on water quality
- 12 Briefly discuss the determination of: (a) pH (b) total suspended solids (c) dissolved oxygen
(d) chemical oxygen demand (e) Nitrite level.