**EHS 1111 PUBLIC HEALTH MICROBIOLOGY (5 CU)**

**Course description:** The course covers terminologies used in microbiology, major groups of microorganisms and their role in causing disease in populations and methods of controlling diseases. Beneficial roles of micro-organisms are also described.

**Course Objectives**

By the end of this course, the student should be able to:

i) Define common terminologies in Microbiology.

ii) Recognize the differences between the major groups of micro-organisms.

iii) Explain the factors that influence microbial growth and distribution patterns.

iv) Identify the major reservoirs of infectious agents and transmissions routes.

v) Explain the role of micro-organisms in disease.

vi) Demonstrate the ability to observe and accurately identify micro-organisms

**Detailed Course Outline**

* Common terminologies in microbiology, characteristics and classification of micro-organisms;
* Growth patterns of micro-organisms. Concepts in microbial physiology and the structure and function of microbial cells. Mechanisms of gene transfer, gene regulation, and genetic analysis in bacteria and single-celled fungi (yeasts).
* Pathogenic and non-pathogenic organisms. The role of bacterial structures and products in the disease processes initiated by pathogens.
* Reservoirs of infection and transmission routes. Current and future trends in the prevention, treatment and control of bacterial and parasitic diseases.
* The biochemistry, physiology, pathogenicity, immunology and mechanism of drug action and resistance of medically important parasitic protozoa, trematodes, nematodes, and cestodes.
* Pathogenesis and molecular biology of viruses.
* Describe the host response to infection including the interaction of T-cells, B-cells and antigens leading to humoral and cell mediated responses.
* Sampling methods including human samples, water and food samples for laboratory analysis.
* Growth media and techniques used in a microbiological laboratory. Basic techniques for the examination, isolation, cultivation, and identification of micro-organisms in the laboratory. Emerging or re-emerging organisms.

# Mode of delivery:

* Lectures, laboratory practical

**Mode of Assessment**

- Continuous assessment **40%**

- End of semester exam: MCQ’s, short answer and long assay questions **60%**.

**Suggested Reading List**

1. Lecture handouts and additional materials on reserve at the MUSPH Resource Centre.

2. Duerden B. I., Reid T. M. S. and Jewsbury J. M. 1993. *Microbial and Parasitic Infection*. Arnold. Oxford University Press Inc

3. Thomas D. Brock and Michael T. Madigan, 1991. *Biology of Microorganisms*. 6th Ed. Prentice-Hall International, Inc

4. Johri, R.M. Sneh Lata and Sandhya Sharma. *A Textbook of Algae*. New Delhi, Dominant Pub., 2004. 5. Christiaan Hoek, D. J. Mann, Hans Martin Jahns *Algae: an introduction to phycology*

Cambridge University Press. 1996

6. Webster John and Weber Roland. *Introduction to Fungi*, 3rd Ed. Cambridge University Press 2007

7. Frazer, W.C. and Westhoff, D.C. 1988. Food Microbiology, 4th Ed. Mcgraw Hill, New York.

8. Jay, J.M. 1992. Modern Food Microbiology, 4th edition, Van Nostraaand Reinhold Co., New York.