**EHS 1103 PRINCIPLES OF BIOSTATISTICS (3 CU)**

**Course description:** The course describes the principles and concepts of Biostatistics, and is designed to introduce students to the application of these principles and concepts in environmental health management.

**Course Objectives**

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

1. Define the concept of Biostatistics and common terminologies used in biostatistics
2. Describe the different types of scales of measurement
3. Explain the importance of Biostatistics as a tool for data collection, processing and analysis
4. Demonstrate ability to process, analyze and appropriately present data using simple statistical summary measures (e.g. central tendency, measures of dispersion, etc), and graphical tools
5. Should be able to critically appraise environmental health information using simple statistical methods.
6. Demonstrate the ability to make appropriate conclusions, take appropriate decision and action on the basis of statistical data results.
7. Demonstrate the use of computer packages e.g. EPIINFO, SPSS, and/or STATA in the application of the different statistical methods taught

**Detailed Course Outline**

* Introduction to the concept and application of Biostatistics
* The different sources of data
* The different types of scales of measurements
* Data summary measures (measures of central tendency, measures of dispersion, etc), and data presentation methods (tabular and graphical)
* Confidence intervals, their application and interpretation
* Population, target population, study population, sample, and the different methods of selecting a sample (sampling techniques)
* Sampling distributions (Normal distribution, t-distribution, chi-square distribution and the F-distribution)
* Introduction to statistical hypothesis testing, the concept of “p-value” and its interpretation; and application of the t-test, Z-test & chi-square test
* Sample size calculation

# Mode of delivery:

* Lectures, tutorials/Seminars
* As much as possible students will be expected to use computer packages (EPIINFO, SPSS and/or STATA) in the class exercises and assignments.

**Mode of Assessment**

- Continuous assessment **40%**.

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

**Suggested Reading List**

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

2. Moore D. S and McCabe G. P (2002) Introduction to the Practice of Statistics, 5th ed. Freeman. Additional materials are on reserve at the Health Sciences Library.

3. Moore D. S (1997) Statistics: Concepts and Controversies, 4th ed. WH Freeman and Co., New York, 526 pp.

4. Rosner B (1995) Fundamentals of Biostatistics, 4th ed. Duxbury Press.

**Course Facilitators**

*Dr. David Guwatudde BStat, MSc, PhD*

*Dr. Nazarius Mbona Tumwesigye BStat, MSc, MA, PhD*

*Mr. Simon Kasasa BStat, MS*

*Mr. David Odaka Mukanga BPharm, MPH*

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*Mr. Francis Muwonge BStat, MSc*

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