



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF HEALTH SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE
(EPIDEMIOLOGY AND DISEASE CONTROL/BIOSTATISTICS), MPH

(SEPTEMBER – DECEMBER 2024)

1ST YEAR 1ST SEMESTER 2024/2025 ACADEMIC YEAR

KISUMU CAMPUS

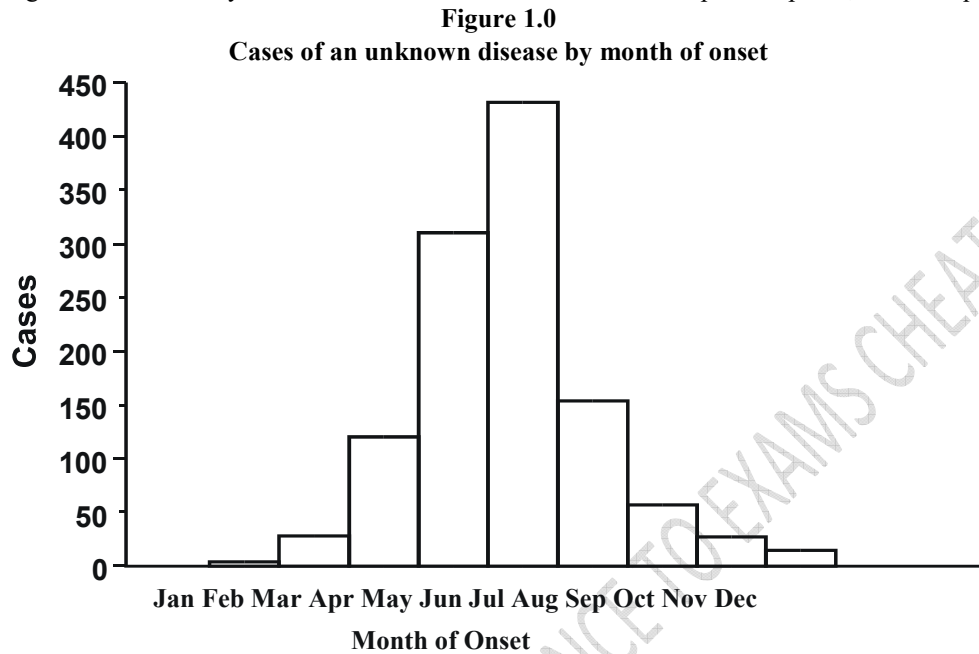
COURSE CODE: HMP 5112
COURSE TITLE: PRINCIPLES OF EPIDEMIOLOGY
EXAM VENUE: STREAM: MSc (Epidemiology & Disease Control/Biostatistics), MPH
DATE: 14/1/25 EXAM SESSION: 14-17.00 HRS
TIME: 3.00 HOURS

Instructions:

- 1. Answer FOUR questions. Question ONE is compulsory.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the Examination Room.**

Answer QUESTION ONE and any other THREE Questions

1. The first action of a health department when it receives a report of a case or a cluster of cases of a disease is to investigate. Figure 1.0 is the analyzed cases of unknown disease. Use it to respond to part a, and b of question 1.



- a. Describe how you would carry out an investigation study for the case (9 marks).
 - b. If it was an epidemic, explain factors that may cause it (6 marks).
2. a. Potentially, screening could be done for every disease for which there is a diagnostic test or diagnostic signs and symptoms. Discuss criteria, of Wilson and Jungner, used to guide the rational development of screening programs (9 marks).
- b. Compiling and analyzing data by time, place, and person is desirable for several reasons. Explain the reasons (6 marks).
3. a. "Seasonality" is one of the common types of time-related graphs used in epidemiology. Describe how this graph may be useful to a researcher (9 marks).
- b. Age, race, and sex are some of the examples of inherent characteristics of "person" used in descriptive epidemiology to organize and summarize data. Age is probably the single most important "person" attribute. Explain (6 marks).
4. a. 650 patients known to have a particular disease were screened with a new test. 550 controls without this disease were also screened. Of the 650 patients, 567 had a positive test. Of the healthy group without disease, 9 had a positive test.
- i. Create a 2*2 table and reflect on the interpretation of the data.
 - ii. Calculate sensitivity and specificity of the test.
 - iii. What are the implications for those wrongly classified by the test (9 marks)?
- b. Explain the importance of continuing with immunization programs in the face of declining vaccine-preventable diseases (6 marks).
5. a. Some of the risk factors for heart disease are smoking, hypertension, obesity, diabetes, high cholesterol, inactivity, stress, and type A personality. Are these risk factors necessary causes, sufficient causes, or component causes? Use Causal Pies Model to respond (9 marks).
- b. Through public health surveillance, a health department systematically collects, analyzes, interprets, and disseminates health data on an ongoing basis. Discuss the most common source of surveillance data at local level (6 marks).