



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTERS OF SCIENCE IN
HEALTH INFORMATICS
1ST YEAR 2ND SEMESTER 2024/2025 ACADEMIC YEAR
KISUMU CAMPUS

COURSE CODE: ITM5111

COURSE TITLE: RESEARCH METHODS

EXAM VENUE:

STREAM: HEALTH INFORMATICS

DATE: 22/4/2025

EXAM SESSION: 9.00-12.00

TIME: 3HOURS

INSTRUCTIONS

- 1. Question ONE is COMPULSORY**
- 2. Answer ANY THREE questions**
- 3. Candidates are advised not to write on the question paper**
- 4. Candidates must hand in their answer booklets to the invigilator while in the examination room**

Question 1 [20 marks]

Beating the Odds: Wearable Tech and Heart Health in Africa

In Kisumu, Kenya, 62-year-old Mzee Otieno had always been strong, but lately, simple tasks left him breathless. One day, he collapsed on his way to the market. At the clinic, the doctor diagnosed him with hypertension and early-stage heart disease. Regular check-ups were costly, but a health worker introduced him to a wearable smartwatch that tracked his heart rate and blood pressure, sending real-time alerts to doctors. One evening, the watch vibrated—his heart rate was dangerously high. Moments later, a nurse called. “Mzee Otieno, please get to the clinic immediately.” Rushed to the hospital, he was stabilized just in time. Across Africa, wearable health tech is transforming lives, allowing early detection of heart disease, diabetes, and hypertension. Farmers, traders, and elders who once lacked access to medical care could now monitor their health daily. For Otieno, the device became a lifeline. He changed his diet, took his medication, and walked more. “This little thing,” he told his grandson, tapping the watch, “is like having a doctor in my pocket.” With wearable technology, Africa is fighting heart disease—one heartbeat at a time.”

Answer the following questions

- a) Identify the research problem (2 marks)
- b) State any two research objectives (4 marks)
- c) State any two research questions (4 marks)
- d) Identify the research philosophy that informed your choices of the research paradigm above. (2 marks)
- e) Briefly discuss any three possible research strategies you would use in this study. (6 marks)
- f) Discuss the data analysis technique you would adopt for this study (2 marks)

Question 2 [20 marks]

The relationship between class attendance and academic performance has been an important area of research, with a positive association being posited between the two. The setting for this study is an International Branch Campus (IBC) of a British university that needs to demonstrate the quality of its service delivery both to the parent institution and to the fee-paying students. The study used a dataset of over 900 students in an undergraduate degree programme and subjected it to statistical techniques, namely quantile regression and two-stage quantile regression. The results show that class attendance has a beneficial influence on academic performance and this benefit persists at higher percentile of grades. The study proposes that IBCs could consider an attendance policy that encourages students to attend classes and an attendance system for tracking students attendance (*Ajit Karnik, Pallavi Kishore, and Mohammad Meraj*).

- a) Propose a title for your proposed solution (2 marks)
- b) Identify the research problem (2 marks)

- c) State the purpose of this study (2 marks)
- d) State any three research Objectives (3 marks)
- e) State any three research questions (3 marks)
- f) Discuss any four benefits of the proposed solution (4 marks)
- g) Briefly discuss the methodology you would use to develop the solution (4 marks)

Question 3 [20 marks]

The purpose of the unit ITB 2407 is to provide the student with knowledge of Information Systems Research. It also prepares students to understand the process, purpose and goals of academic literature review. Students are expected to prepare research concept and a project proposal at the end of the semester

- a) Briefly discuss the structure and contents of the research concept. What are the expected deliverables? (5 marks)
- b) Using your own project proposal you presented in this course, discuss the structure and the content of a project proposal. Identify the key deliverables. (15 marks)

Question 4 [20 marks]

The research onion was developed by Saunders et al. (2007). It illustrates the stages that must be covered when developing a research strategy. When viewed from the outside, each layer of the onion describes a more detailed stage of the research process (Saunders et al., 2007). The research onion provides an effective progression through which a research methodology can be designed. Its usefulness lies in its adaptability for almost any type of research methodology and can be used in a variety of contexts (Bryman, 2012).

- a) In reference to this model, discuss seven different types of research strategies (5 marks)
- b) Discuss four different types of research philosophies (5 marks)

Question 5 [20 marks]

You have completed your master's coursework and have approached Prof. Ogara for approval to present your project proposal. Your research will follow the Interpretivist research method. Prepare a PowerPoint presentation outlining the research process you intend to follow, using bullet points only. To ensure a structured and well-organized presentation, apply the "Peel the Onion Layers Approach", which involves systematically progressing from broad philosophical assumptions to research paradigm, and finally to research techniques and procedures. While presenting, consider the key aspects of research rigor, including validity, reliability, and appropriate research tools. Keep in mind that the research philosophy you adopt reflects fundamental assumptions about how you perceive reality, which in turn shapes your research paradigm, methodology, and methods. Ensure that your presentation effectively communicates your research approach while addressing critical methodological concerns. (20 marks)