AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF NURSING & MIDWIFERY SCIENCES
END OF SEMESTER DECEMBER 2025 EXAMINATIONS
BSM 326; Health Informatics (Preservice)
BSN 416; Health Informatics (Preservice)
ORDINARY EXAMINATION

DATE: 10TH DECEMBER 2025

Duration: 2 HOURS **Start**: 09:00 AM **Finish**: 11:00AM

INSTRUCTIONS

1. This exam is out of 70 marks
2. This examination comprises THREE sections. Section I: Multiple choice questions (20 arks), Section II: Short Answer Questions (30 marks) and Section III: Long Answer Questions (20 Marks)
3. Answer ALL Questions
4. Do not write on the question paper – use back of your answer booklet for rough work if need be.

SECTION I: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. Health informatics is best defined as;
    a. The study of the computer science in healthcare settings
    b. The interdisciplinary field combining healthcare, technology and data management
    c. The use of hardware and software to diagnose diseases
    d. The creation of electronic records

2. The primary goal of health informatics is to;
    a. Eliminate human error in healthcare
    b. Use digital tools to improve patient care and health outcomes
    c. Train IT professionals for clinical roles
    d. Reduce healthcare costs by automating processes

3. What is the core focus of healthcare within health informatics?
    a. Implementing complex algorithms
    b. Providing medical, preventive and diagnostic services
    c. Developing software
    d. Managing hospital finances

4. Key aspects of healthcare include;
    a. Disease prevention, health promotion and rehabilitation
    b. Creating standardized software systems
    c. Analyzing economic trends in hospitals
    d. Conducting laboratory research exclusively

5. Computer science contributes to health informatics through;
    a. Designing computational systems to enhance decision making in health care
    b. Eliminating human roles in patient care
    c. Developing hospital management policies
    d. Teaching nurses programming languages

6. Telemedicine enables;
    a. Diagnosis and treatment of diseases using physical consultations only
    b. Remote delivery of healthcare services via communication technology
    c. The replacement of doctors with automated systems
    d. Online patient reviews of healthcare facilities.

7. Which of the following is an example of health app?
    a. A database for hospital finances
    b. A mobile application for tracking daily steps
    c. A search engine for medical articles
    d. Creating new programming languages.

8. Data analysis in health informatics involves;
    a. Storing patient records for future reference
    b. Applying computational tools to derive insights from health data
    c. Archiving hospital data for long term storage
    d. Creating new programming languages.

9. The process of sharing data securely across systems is known as;
    a. Data collection
    b. Interoperability
    c. Data integrity
    d. Cloud computing
10. The primary purpose of data security in health informatics is to;
    a. Protect sensitive health information from unauthorized access
    b. Allow open access to all patient data for research purposes
    c. Eliminate the need for encryption technologies
    d. Simplify database structures

11. Which system is used for organizing and storing patient health information digitally?
    a. Electronic Health Record (HER)
    b. Diagnostic Imaging system
    c. Health Information Exchange (HIE)
    d. Clinical Trial management System

12. An HER system differs from a paper record because it;
    a. Is only accessible in hospitals
    b. Allows real time data sharing among healthcare providers
    c. Requires manual updates by staff
    d. Focuses solely on billing and payments

13. A key advantage of EHRs is;
    a. Eliminating the need for patient interaction
    b. Reducing medication errors through clinical decision support tools
    c. Replacing doctors with automated systems
    d. Ensuring universal healthcare coverage

14. A clinical decision support system assists healthcare providers by;
    a. Automating medical research
    b. Offering evidence based recommendations during patient care
    c. Replacing doctors in diagnosis
    d. Managing hospital budgets

15. Health Information Exchange primarily focuses on;
    a. Providing backup storage for hospital data

b. Facilitating secure sharing of patient data between organisations
c. Training staff in informatics tools
d. Developing health related mobile apps

16. Which system integrates clinical, financial and operational data to improve decision making?
    a. Enterprise Resource Planning (ERP)
    b. Clinical data Warehouse (CDW)
    c. Diagnostic Imaging System (DIS)
    d. Laboratory Information System (LIS)

17. Interoperability in health informatics refers to;
    a. Standardizing patient care globally
    b. Enabling different systems to work together and share data seamlessly
    c. Using only one type of technology across organizations
    d. Limiting data access to specific locations

18. Cloud computing in health informatics allows;
    a. Real time data access and storage scalability
    b. Permanent offline storage of patient records
    c. Restricted access to patient data
    d. Eliminating the need for cyber security measures

19. Big data analytics in healthcare primarily aims to;
    a. Replace manual decision making with AI
    b. Identify trends and improve patient outcomes using large data sets
    c. Increase the amount of stored data without analysis
    d. Standardize billing practices across hospitals

20. The term "data governance" refers to;
    a. Organizing a hospital's IT department
    b. Establishing policies for data integrity, security and access
    c. Storing patient information without guidelines
    d. Prioritizing IT resources for financial tasks

SECTION II: SHORT ANSWER QUESTIONS (30 MARKS)

21. Outline any five sources of information for a clinician in a health institution (4marks)
22. Outline any five challenges of implementing a clinical decision support system (5 marks)
23. Explain any five technologies used to implement a clinical decision support system (5 marks)
24. Highlight any five importance of keeping information in a database management information system as compared to a manual file system (5 marks)
25. Explain any five issues related to standard and interoperability in healthcare information systems and communication (5 marks)

26. Outline any five information quality issues in a medical institution that may require a relook at the information system (5 marks)

SECTION III: LONG ANSWER QUESTIONS (20 MARKS)

27. Explain five guidelines considered to enhance data access and confidentiality (10 marks)
28. Design a workflow diagram to represent information flow in the process of admitting, diagnosing, treating and discharging a patient from a health institution (10 marks)

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END OF SEMESTER DECEMBER 2025 EXAMINATIONS
COURSE CODE AND TITLE: BSN 416 HEALTH INFORMATICS (UPGRADING)
SUPPLEMENTARY EXAMINATION

DATE: 19 SEPTEMBER 2025

Duration: 2 HOURS **Start**: 09:00 AM **Finish**: 11:00AM

INSTRUCTIONS

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SECTION I: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. Artificial intelligence (AI) in health informatics is primarily used to;
    a. Automate patient admissions
    b. Analyze large datasets and provide predictive insights
    c. Eliminate the need for healthcare professionals
    d. Simplify billing processes

2. Wearable technology contributes to health informatics by;
    a. Recording patient financial transactions
    b. Limiting communication between patients and providers
    c. Storing patient data offline

3. The Internet of Things (IoT) in healthcare refers to;
    a. A network of connected that collect and exchange health data;
    b. Social media platforms used for healthcare education
    c. Online tools for scheduling patient
    d. Cloud based storage systems for hospitals

4. Block chain technology in health informatics provides;
    a. Unlimited data storage
    b. Enhanced security and transparency for healthcare data
    c. Real time patient monitoring
    d. Software development for hospitals

5. Which technology is most effective for remote patient monitoring?
    a. Chatbots
    b. IoT enhanced devices
    c. HER systems
    d. Financial management software

6. Predictive analytics in healthcare uses historical data to;
    a. Improve patient outcomes by identifying future risks
    b. Develop hospital financial strategies
    c. Replace decision making by healthcare providers
    d. Eliminate human in diagnostics

7. Which of the following is an example of augmented (AR) in health informatics?
    a. Simulated surgery training for medical students
    b. Students' patient records securely in the cloud
    c. Tracking patients' medications

d. Automating appointment scheduling

8. Mobile health (mhealth) apps are primarily to;
    a. Provide patients with tools for self care and health management
    b. Create new clinical trial databases
    c. Replace HER systems in hospitals
    d. Automate patient admissions

9. Genomics and personalized medicine in health informatics focus on;
    a. Standardizing treatments for all patients
    b. Developing therapies based on an individual's genetic profile
    c. Analyzing only population level data
    d. Reducing the role of healthcare providers

10. Virtual reality (VR) in health informatics is used for;
    a. Physical therapy simulations and pain management
    b. Financial modelling for hospitals
    c. Cloud based data storage
    d. Managing appointment schedules

11. Electronic Health Records (EHR) or Electronic Medical Records (EMR) are an example of which form of health informatics?
    a. Public health informatics
    b. Bioinformatics
    c. Clinical informatics
    d. Social informatics

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SECTION II: SHORT ANSWER QUESTIONS (30 MARKS)

21. List five (5) examples of eHealth solutions that can be employed in hospitals (5 marks)
22. Outline five (5) ethical challenges with health informatics (5 marks)
23. State five ways in which computers can be applied in healthcare? (5 marks)
24. Outline five (5) reasons that has led to increase in popularity of online health information (5 marks)
25. Identify five importance of using computers in a hospital (5 marks)
26. Outline five sources of healthcare data. (5 marks)

SECTION III: LONG ANSWER QUESTIONS (20 MARKS)

27. Explain five ways how health informatics is an interdisciplinary concept (10 marks)
28. Data storage alone is not enough to enhance information management in an organization but how to use data is what is critical. Explain (10 marks)

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SCHOOLOF MEDICAL SCIENCES

DEPARTMENT OF NURSING & MIDWIFERY SCIENCES

COURSE DESCRIPTION.

BSM 326; HEALTH INFORMATICS (PRESERVICE)

BSN 416; HEALTH INFORMATICS (PRESERVICE)

LECTURER: DICKSON ANYONA

LECTURER'S CONTACT: 0726771211 EMAIL: Dickson.anyona@mcampus.amref.ac.ke
anyonadee22@gmail.com

CONTACT HOURS (45 Credit Hours)

PRE-REQUISITES:-

AIU 111: Communication skills

AIU112: Critical Thinking and Academic Writing in Health

AIU113: Information Communication Technology

BSN 232: Biostatistics

Co-requisites: None

PURPOSE OF THE COURSE

The purpose of this course is to enable the learner be able to acquire, store, retrieve and use health care information to foster collaboration among various health care providers.

Expected Learning Outcomes

By the end of this course, the learner will be able to:

1. Define basic concepts in informatics
2. Explain the intergrated health information system
3. Apply informatics in nursing practice, education, research and community health.
4. Manage health informatics ethical and security challenges

COURSE CONTENT

S/NO	TOPIC	SUB-TOPIC
1.	**Introduction to Health Informatics**	• Define terms • Health informatics • Electronic health records • Electronic medical records • Data, information and knowledge • History of Medical Informatics • Advantages of health informatics • Disadvantages of health informatics
2.	**Taxonomy of Medical Informatics**	• Introduction to Taxonomy of Medical Informatics • Health data management • Benefits of health data management • Challenges of health data management
3.	**Principles of Health Informatics**	• Health informatics – needs, objectives and limitations

		• Use of data, information and knowledge for more effective healthcare and better health • Functionalities of Nursing Information System (NIS) system in nursing.
4.	**Integrated health Information systems**	• Health Information; Sources, types, systems, Data collection methods, storage, analysis, Information utilization; applications, policy development and decision making. • Use of information system in healthcare for patient care and utilization of nursing data. • Interoperability standards in clinical setting.
5.	**Application of health Informatics**	• Health Informatics applications • Administrative applications • Practice applications • Application in nursing education • Application in nursing research • Application in community health • Tele-nursing.
6.	**CAT 1**	
7.	**Health Information Privacy and Security**	• Health Information Privacy and Security • Health information ethics. • Use of computer and technology in patient care, nursing education, practice, administration and research. • Use of health information system privacy in hospital setting
8.	**Information Systems in Healthcare**	• Introduction to information systems is healthcare • The role of information systems in modern healthcare environments • Clinical Information System (CIS)/Hospital information system (HIS) • Hospital management information system
9.	**Health Records**	• Introduction to health records

		• Types of health records • Benefits of health records • Challenges of capturing patient histories in a computable form
10.	**Patient Safety & Clinical Risk**	• Relationship between patient safety and informatics • Function and application of the risk management process • Standardized languages used in health informatics
11.	**Clinical Knowledge & Decision Making**	• Systematized Nomenclature of Medicine, Clinical Terms • Role of knowledge management in improving decision-making in both the clinical and policy contexts • Latest global developments and standards to enable lifelong electronic health records to be integrated from disparate systems.
12.	**eHealth: Patients and the Internet**	• Introduction to eHealth • Advantages of eHealth • Challenges of eHealth • Using Information in Healthcare Management • Components of Nursing Information system(NIS) • Use of information and communication technology to improve or enable personal and public healthcare
13.	**Information Law & Governance in Clinical Practice**	• Ethical-legal issues pertaining to healthcare information in contemporary clinical practice • Ethical-legal issues related to digital health applied to nursing. • Healthcare Quality & Evidence Based Practice • Use of scientific evidence in improving the quality of healthcare and technical and professional informatics standards

14.	**Emerging trends in Health Informatics**	• Current trends in Health Informatics ✓ Health data interoperability ✓ Artificial Intelligence ✓ Data Analytics
15.	END SEMESTER EXAMINATION	

Mode of Delivery

- Lecture cum Discussion
- Visit to health informatics department of the hospital to understand use of healthcare data in decision making
- Case discussion
- Role play
- Case study

Instructional Materials and/or Equipment

Textbooks, hand-outs, internet sources, Computer and LCD projector

Course assessment

Continuous Assessment Tests (CATs)	30%
End of Semester Examination (ESE)	70%
Total	**100%**

References Materials

a) Core Reading Materials

1. Wager, K. A., Lee, F. W. & Glaser, J. P. (2017). *Health Care Information Systems: A Practical Approach for Health Care Management*. John Wiley & Sons
2. Hersh, W. R. & Hoyt, R. E. (2018). *Health Informatics: Practical Guide* (7th Ed.). ISBN: 9781387642410
3. William, R.,H., & Robert, E. (2018). *Health Informatics: Practical Guide* (7th Ed.).

USA: Lulu

b) Further Reading Materials

1. Ramona, N., & Nancy, S.(2014). *Health Informatics: An Interprofessional Approach* (2nd Ed.) St. Lous Missaouri: Elselveir
2. Hoyt, R., & Yoshihashi, A., K. (2014). *Health Informatics: Practical Guide for Healthcare and Information Technology Professionals* (6th Ed.). UK: AMIA

c) E- Books

1. Botin, L., Bertelsen, P., & Nøhr, C. (2014). *Techno-Anthropology in Health Informatics: Methodologies for Improving Human-Technology Relations*. IOS Press

2. Mantas, J., Househ, M., & Hasman, A. (2014). *Integrating Information Technology and Management for Quality of Care*. IOS press
3. Courtney, K., Kuo, A., & Shabestari, O. (2015). *Driving Quality in Informatics: Fulfilling the Promise*. IOS press
4. Patricia, S., & Boicey, C. (2015). *Mastering Informatics: A Healthcare Handbook for Success*. Sigma Theta Tau International
5. McBride, S., & Mari, T. (2015). *Nursing Informatics for the Advanced Practice Nurse: Patient Safety, Quality, Outcomes, and Interprofessionalism*. Springer Publishing Company