AFRICA UNIVERSITY
A United Methodist-Related Institution

"Investing in Africa's Future"

COLLEGE OF ENGINEERING AND APPLIED SCIENCES (CEAS)

NCIS 401: SYSTEMS ANALYSIS AND DESIGN

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2025

LECTURER: MS ELIZABETH MAFU

TIME: 3 HOURS

INSTRUCTIONS

1. Answer ALL questions.
2. Begin each section on a new page.
3. Use diagrams where necessary.
4. State all assumptions clearly.

Section A – Short Answer Questions (20 Marks)

1. Define System Design and list two key outputs of the design phase. (4)

2. State four differences between Agile and Waterfall development approaches. (4)

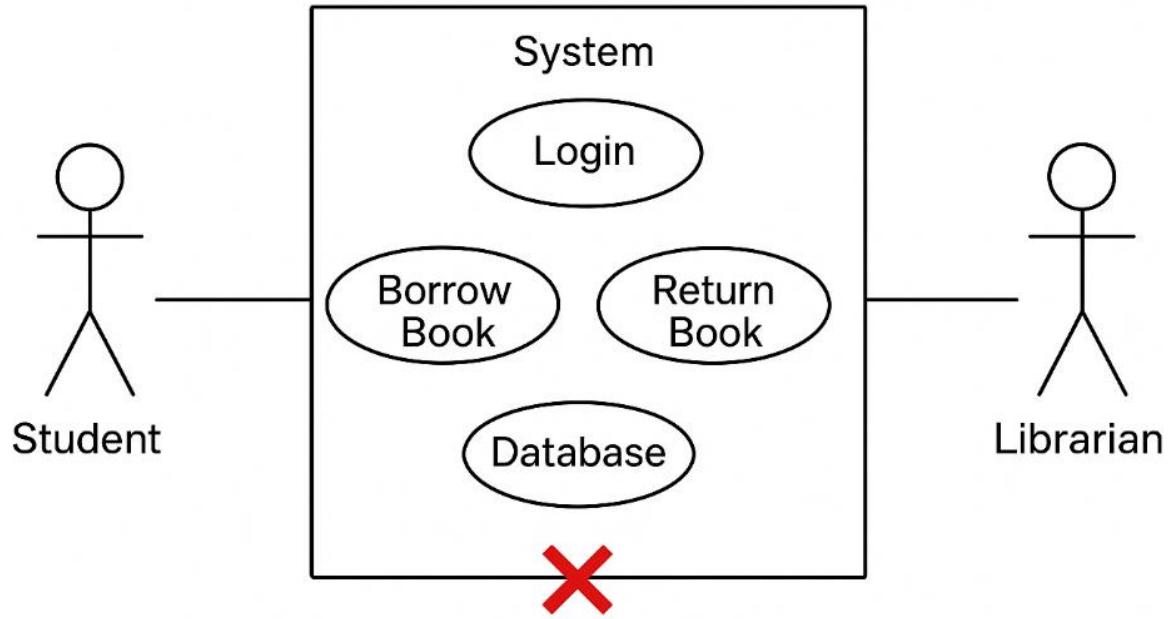
3. What is Requirement Traceability, and why is it important in system development? (4)

4. Explain the term Context Diagram and its purpose. (4)

5. List and explain two benefits and two limitations of prototyping. (4)

Section B – Diagram Interpretation and Creation (20 Marks)

6. (a) Review the supplied flawed Use Case Diagram of an e-Library system and identify four mistakes. (4)



(b) Redraw a correct version of the diagram. (6)

7. Create a Level-1 DFD for a University Course Registration System. (10)

Section C – Case Study-Based Questions (30 Marks)

Case Study:

SwiftRide Logistics operates a fleet of delivery vans and motorcycles. The company currently schedules deliveries manually using spreadsheets. Management wants a centralized online system that allows customers to book deliveries, track vehicle locations in real time, generate invoices, and send automated notifications.

a. List five functional and three non-functional requirements for the system. (8)

b. Develop a Use Case Diagram showing key actors and system functions. (7)

c. Describe three requirements gathering techniques suitable for this project, with an advantage and a limitation for each. (7)

d. Draw an ERD with at least four entities, showing relationships, PKs, and FKs. (8)

Section D – System Documentation Tasks (30 Marks)

a. Write an SRS outline for SwiftRide Logistics, including at least five major sections with brief descriptions. (10)

b. Sketch wireframes for: Delivery Booking Page, Tracking Dashboard, Customer Invoice Page (9)

c. Prepare a Test Plan for the Delivery Tracking module with: Two test cases and expected results; Test type and technique for each; Pass/Fail criteria. (11)

END OF EXAMINATION