

**MASINDE MULIRO UNIVERSITY OF SCIENCE & TECHNOLOGY**  
**FACULTY OF SCIENCE**  
**DEPARTMENT OF COMPUTER SCIENCE**

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**COURSE CODE: BIT 317/ CSC 371E**

**COURSE TITLE: NETWORK PROGRAMMING**

**INSTRUCTOR:** Mr. Omieno K.K (MSc,BSc); Tel: +254726849197

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**PURPOSE**

- Students should be able to appreciate networking concepts, and the emerging trends in the area of network programming

**OBJECTIVES**

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

- ❖ Understanding the underlying principles of networking
- ❖ Write some client and server programs to demonstrate networking concepts

**COURSE CONTENT**

**Week #1:** Basic Network Concepts

- The Internet and IP addresses
- Networks and MAC addresses
- Connectionless vs Connection-Oriented communication

**Week #2:** Basic Web Concepts

- Clients and servers
- Assignment 1 X/5

**Week #3:** Streams

- Coding exercises

**Week #4:** Sockets

Continuous Assessment 1 X/10

**Week #5:** Datagrams and Sockets

- Non-blocking sockets
- Assignment 2 X/5

**Week #6:** Multicast Sockets

- Advanced methods of polling
- TCP and UDP Socket Design
- Broadcast and Multi-cast

**Week #7:** Servlets and JSP: Overview and Setup

Servlet Basics

**Week #8:** Network Implementation Design

- I/O Multiplexing
- Remote procedure calls
- IP V<sub>4</sub> and IPV<sub>6</sub> Interoperability

*Network programming [3<sup>rd</sup> Yr -BSc. (Computer Science & Information technology) ]*

**Week #10:** Session Tracking

- JSP Introduction and Overview
- Continuous Assessment 2 X/10

**Week #11: Review/**Revision of CATs and Assignments

**TEACHING AND LEARNING METHODOLOGIES**

- Lectures
- Class/ Group Discussions
- Case studies
- Questions
- Group Assignments/ Projects

**MODE OF EVALUATION**

- Assignments , Tests, practical exercises ----- 30 %
- Written / main Exam----- 70 %

**REFERENCES:**

Java Network Programming, 3rd Edition, By Elliott Rusty Harold, Publisher: O'Reilly,  
Pub Date: October 2004, ISBN: 0-596-00721-3.

Consultation Time:

Tuesday- 8.00-10.00 Hours & Wednesday – 8.00- 10.00 Hours

**Summary:** Overview of Networks; Networks and MAC Addresses, The Internet and IP Addresses, Ports, Connectionless and Connection-Oriented Communication, Clients and Servers. The Server Program. The Client Program. Role of the OS. Basic Operation. Non-blocking Sockets, Advanced Methods of Polling. TCP and UDP socket design, I/O multiplexing, Remote procedure calls, broadcasting, multicasting, and IPv4 and IPv6 interpretability.