

**MURANG’A UNIVERSITY OF TECHNOLOGY**

**COURSE OUTLINE**

**Unit Code: SIT 202: UNIT TITLE: Network Design and Management**

**Pre-requisites:** SIT104 Computer Network Fundamentals

**Department:** Information Technology

**Lecturer’s Name:** Racheal Ndung’u

**Lecturer’s Tel. No.** 0722273171 **Email Address:** catwil2011@gmail.com

**Contact Hours:** 45 **Credit hours:** 3 hours

**Semester:** Jan-Apr 2020 **Academic Year:** 2019/2020

**Purpose of the Course**

The aim of the course is to give students the background they will need to plan, design and manage networks.

**Learning Outcomes**

Upon successful completion of this course, the student should be able to:

1. Demonstrate ability to assess the customer requirements and the customer’s existing situation
2. Demonstrate skills in design a network addressing plan
3. Describe security criteria for the network
4. Demonstrate skills in design the Enterprise network in a hierarchical modular fashion
5. Explain the network design and its impact to the customer

**Teaching Methodologies**

Lectures, practical and tutorial sessions in Computer Laboratory, individual and group assignments, exercises and project work

**Instructional Materials/Equipment**

Overhead projector and computer, handouts, white boards, Textbooks, appropriate software. Network and internetworking devices, Operating Systems, networking toolkit

**Course Assessment**

30% Continuous Assessment (Tests 10%, Assignment 10%, Practical 10%)

70% End of Semester Examination.

**Course Textbooks**

1. Mani Subramanian (2012). Network Management, Principles and Practice, ISBN-13: 978-8131734049
2. Peter Hodson (1992). Local Area Network, Letts Educational, ISBN 1-85805-230-0
3. Shaun Lloyd, Network Design Fundamentals 1st Edition, ISBN-13: 978-1482074987

**Reference Textbooks**

1. William Stallings (2008). Business Data Communications, ISBN-13: 978-0136067412
2. Microsoft Press (2013). ALS Networking Essentials, ISBN-13: 978-0735609129
3. Microsoft Press (1997). Networking Essentials: MCSE Self-Paced Kit, ISBN-13: 978-1572315273

**Course Journals**

1. Acta Informatica ISSN 0001-5903
2. Advances in Computational Mathematics ISSN 1019-7168
3. Advances in data Analysis and Classification ISSN1 1862-5347
4. Annals Of software Engineering ISSN 1022-7091

**Reference Journals**

1. Journal of computer science and Technology ISSN 1000-9000
2. Journal of Science and Technology ISSN 1860-4749
3. Central European Journal Of Computer Science ISSN 1896-1533
4. Cluster computing ISSN 1386-7857

**Course Description**

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| **WEEK** | **TOPIC** | **SUBTOPIC** |
| 1 | Design Basics,  Design Issues for Communication of wired and wireless media. | Network design models:  Hierarchical Models,  Redundant Models,  Secure Models. |
| 2 | Design Scenarios LAN Design: | LAN Design Considerations,  Selecting a LAN Technology,  Selecting the LAN Hardware. |
| 3 | WAN Design: | WAN Design Considerations  Selecting a WAN Technology,  Selecting the WAN Hardware. |
| 4 | Designing IP addressing and subnetting. |  |
| 5 | Designing and managing Network Security. |  |
| 6 | **CAT ONE** |  |
| 7-8 | Network Management tools, systems and applications: | Network statistics measurement systems: NMS,  Commercial NMS (e.g. Cisco Works, HP open View network node manager, Using  [Multi Router Traffic Grapher](http://www.google.co.ke/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CHYQFjAA&url=http%3A%2F%2Foss.oetiker.ch%2Fmrtg%2F&ei=avW1T5HCMdS2hAe90s3_CA&usg=AFQjCNGXUKDlVESUw0fywcw-b7o4HcggzQ) (MRTG)  To collect Traffic Statistics and Ethereal-Network Analyzer). |
| 9-10 | Introduction to network management: | Configuration management,  Fault management,  Performance management,  Security management,  Simple Network Management Protocol (SNMP). |
| 11 | **CAT TWO** |  |
| 12-13 | Active Directory: | Creating and Managing Organizational Units,  Creating and Managing trees and Forests,  Creating and managing user accounts,  Computer accounts and group accounts, Group policies, Backup and  Recovery of Active Directory, network troubleshooting. |
| 14 | Operating system updates, patches, and configuration of changes in networks, backups and documentation. |  |
| 15-16 | **EXAMS** |  |