هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد
NCAAA

2024
TP-153

Course Specification
(Bachelor)

Course Title Network Operating System
Course Code: CNET 452
Program: Computer & Network Engineering
Department: Electrical and Electronics Engineering
College: College of Engineering & Computer Science
Institution: Jazan University
Version: 15
Last Revision Date: 22-09-2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (level 7 / year 4)					
4. Course General Description:					
This course focuses on the key issues that need to be considered when deciding to use a network operating system. Some of the questions raised are what is a network operating system (NOS) and when do user need one, what are the main types of NOS and how do they differ; can user buy a cheap NOS for small LAN. How does user choose suitable NOS for network systems, and can user have more than one NOS running on network. This Course goes on to demonstrate the linkage between NOS and other elements of the overall IT platform: network management, application programming interfaces and network computing. This Course also describes the core elements of Active Directory and Security related Issues.					
5. Pre-requirements for this course (if any)**:**					
212 CNET – 3 Operating System Architecture					
6. Co-requisites for this course (if any)**:**					
7. Course Main Objective(s):					
This course will develop the students' ability to learn: ● Describe the functions which are unique to network operating systems vs other operating systems. ● Differentiate different NOS's and their characteristics. ● Describe different types of Hypervisors. ● Discuss Network Operating System as per user requirement. ● Analysis of Directory Services and its main Security Issues. ● How to manage and maintain components of Active Directory.					

- Compare and contrast main aspects of different categories of Distributed Systems.
- Describe three tier architecture of client Server.
- Measure different Architectural aspects of Multiprocessor.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid ● Traditional classroom ● E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	26
2.	**Laboratory/Studio**	26
3.	**Field**	--
4.	**Tutorial**	--
5.	**Others (specify)**	8
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Describe the concepts and components of Network Operating System	K1	Visual &Verbal [Lectures / Presentations]	● Exam-1 ● Final exam. ● Assignment 1 ● Case study.

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.2	Explain different categories of distributed system architectures.	K2	Visual &Verbal [Lectures / Presentations]	• Exam-1 • Final exam. • Assignment 1 • Case study.
1.3	Outline the strategy to choose a network operating system as per the organizations need based on latest trends.	K3	• Lectures • Classroom discussions • Lab exercises	• Exam-2 • Final exam. • Assignment 1 • Case study.
2.0	Skills			
2.1	Design and analyze the logical structure of Active directory for an organization	S5	• Lectures • Classroom discussions • Lab exercises	• Exam-1 • Final exam. • Assignment 1 • Assignment 2 / Case study.
2.2	Demonstrate steps an administrator should use to manage and maintain Network Administration.	S2	• Lectures • Classroom discussions Lab exercises	• Exam-2 • Final exam. • Lab Exam • Assignment 1 • Assignment 2 / Case study.
2.3	Implement different architectures in advanced distributed system.	S3	• Lectures • Classroom discussions Lab exercises	• Final exam. • Assignment 1 • Assignment 2 / Case study.
2.4	Communicate effectively presenting their assignments and case study.	S4	• Lectures • Classroom discussions Lab exercises	• Final exam. • Lab Exam • Assignment 1 • Assignment 2 / Case study.
3.0	Values, autonomy, and responsibility			
3.1	Show team work attribute, working on group assignment related to Network operating systems.	V1	• Lectures • Classroom discussions Lab exercises	• Assignment 1 • Assignment 2 / Case study.

C. Course Content

No	List of Topics	Contact Hours
1.	Chapter 1: Network Operating System: ● Network operating system ● Peer-to-peer and client/server network operating systems. ● System Models: Virtual Machines, Implementation of VMMs ● Key features of each network operating systems	4T + 4P
2.	Chapter 2: Network Services and Software: ● Different Network Services offered by NOS ● Types of network operating systems with their architecture. ● Components of a Linux System, Design principles of Linux system ● Selecting NOS as per Organizations requirement.	4T + 4P
3	Chapter 3: Introduction to Distributed Systems: ● Distributed System Architecture ● Reasons of DS ● Middleware ● Multiprocessor Architecture ● Multiprocessor Traffic Control System ● Client Server Architecture ● Thin and Fat layers	4T + 4P
4	Chapter 4: Advanced Distributed Systems: ● Three Tier Architecture ● Distributed Object Architecture ● Advantages and uses of Distributed Object Architecture ● Distributed Operating System, Design issues of Distributed systems ● Data Mining System ● COBRA and Application Structure ● COBRA Standards and objects ● Object request Broker (ORB)	4T + 4P
5	Chapter 5: Windows Server Administration Fundamentals: ● Revolutionary system management and administration concepts introduced with Windows Server ● System components, Kernel, Kernel – process and threads, scheduling ● Domain Controllers and Member Servers ● Understanding and Using Server Roles ● Frequently Used Tools ● Using Control Panel Utilities ● Using Command based Utilities	5T + 5P
6	Chapter 6: Active Directory: ● Managing and Maintaining Physical and Logical Devices. ● Managing Users, Computers, and Groups	5T + 5P

	• Managing and Maintaining Access to Resources • Managing and Maintaining a Server Environment • File System NTFS, internal layout, recovery, security • Managing and Implementing Disaster Recovery • Windows Server Active Directory • Active Directory Objects, Active Directory Schema • Active Directory Logical Structure and Components • Active Directory Communications Standards • Active Directory Physical Structure	
7	**Revision all contents**	2T+2P
8	**Final Exam**	2T + 2P
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	4th Week	10%
2.	Midterm Exam	8th Week	20%
3.	Mini Project	12th Week	10%
4.	Lab Exam	13th Week	20%
5.	Final Exam	15th Week	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. Linux with Operating System Concepts By Richard Fox, ISBN 9781138455498 Published June 29, 2017 by Chapman and Hall/CRC 2. Coulouris, Dollimore and Kindberg, Distributed Systems: Concepts and Design. 3. Network operating system A Complete Guide Paperback – August 19, 2021 by Gerardus Blokdyk, ISBN-10 : 0655328688 ISBN-13 : 978-0655328681

	4. Ciccarelli, .Faulkner "CCNA" Jumpstart Sybax San Franciso International publication.
Supportive References	
Electronic Materials	Blackboard:- https://lms.jazanu.edu.sa/webapps/portal/execute/tabs/tabAction?tab_tab_group_id=_1_1 Online Fedora support: http://technet.microsoft.com/en-us/windowsserver/default.aspx www.Fedora.org
Other Learning Materials	Windows server Latest Version and Linux Server/Fedora 24

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classroom equipped with projector and whiteboard and sufficient seating arrangements.** **Lab with software installed and individual computer terminal for each student.**
Technology equipment (projector, smart board, software)	**A well dedicated Linux based Lab with the following facilities:** **A Data show and a Smart / White board.** **Linux Server and clients** **An active internet connection.**
Other equipment (depending on the nature of the specialty)	**None**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students, HOD**	**Indirect, Direct**
Effectiveness of Students assessment	**CT / CC / HoD**	**Direct**
Quality of learning resources	**TL / CRC / PQC**	**Indirect, Direct**
The extent to which CLOs have been achieved	**CT / CC /TL / PQC**	**Indirect, Direct**
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**DEPARTMENT COUNCIL**

REFERENCE NO.	**ENGCSEEE2411**
DATE	**10/10/24**