Course Name: SYSTEM ADMINISTRATION   **Course Code: ITEC-454**

General Information						
Course Code	**ITEC-454**	**Level/Year**	**7th/4th**	**Required (R) / Selected Elective (SE)**		**R**
Credit Hours	**Theory**	**2**	**Lab**	**1**	**Total**	**3**
Prerequisites	**NIL**	**Course Coordinator**		**Ms. TAYYABA RASHEED**		
Corequisites	**NIL**	**Track Leader**		**Dr. ALI TAHER**		

Course Description

 This course provides a comprehensive introduction to the principles and practices of system administration. Students will learn to manage and maintain computer systems and networks, ensuring their efficient and secure operation. Key topics include user and group management, file systems, system performance monitoring, backup and recovery strategies, network configuration, and security measures. Through hands-on labs and real-world scenarios, students will develop the skills necessary to troubleshoot and resolve system issues, automate administrative tasks, and implement best practices for system maintenance. By the end of the course, students will be equipped to handle the responsibilities of a system administrator in various IT environments.

Course Objectives : On completion of the course, the student will be able to:

Gain a thorough understanding of the fundamental concepts and principles of system administration.

♦ Learn to manage user accounts, groups, and permissions to ensure secure and efficient system operations.

♦ Develop skills in managing file systems, including disk partitions, file permissions, and storage solutions.

♦ Acquire the ability to monitor and optimize system performance, including CPU, memory, and network resources.

♦ Implement effective backup and recovery strategies to protect data and ensure business continuity.

♦ Configure and manage network settings, including IP addressing, routing, and network services.

♦ Apply security best practices to protect systems from threats and vulnerabilities

Course Contents

List of Topics	Weeks

UNIT 1: Introduction to System Administration	1, 2, 3
UNIT 2: Working with User Accounts, Groups, and Permissions	4, 5 ,6
UNIT 3: File Systems, Storage Solutions, Network Settings, and Elements Related to System Performance	7, 8, 9
UNIT 4: System Administration Techniques and Tools, & Backup and Recovery Strategies	10, 11, 12
UNIT 5: Security Best Practices to Protect Data, and Systems	13, 14, 15

Textbook

- Mastering Linux System Administration, 1 st Edition, By Christine Bresnahan, and Richard Blum, John Wiley & Sons (Sybex), 2021, ISBN 10: 1119794455, ISBN 13: 9781119794455.

- Modern System Administration, 1st Edition, By Jennifer Davis, O'Reilly Media, 2023, ISBN 10: 1492055212, ISBN 13: 9781492055211.

- Essential System Administration, 3rd Edition, By Æleen Frisch, O'Reilly Media, 2010, ISBN 10: 059610328X, ISBN 13: 9780596103286

Reference Materials

- The Practice of System and Network Administration, 3rd Edition, By Thomas A. Limoncelli, Christina J. Hogan, Strata R. Chalup, 2017, Addison-Wesley Professional, ISBN 10: 0321919165, ISBN 13: 9780321919168.

- UNIX and Linux System Administration Handbook, 5th Edition, By Evi Nemeth & Garth Snyder & Trent R. Hein & Ben Whaley & Dan Mackin, 2017, Pearson Education, ISBN 10: 0134277554, ISBN 13: 9780134277554.

Course Learning Outcomes

CLO	Description	Mapped PI
CLO#01	**Define** the fundamental concepts and principles of system Administration.	PI 1.1
CLO#02	**Explain** user accounts, groups, and permissions to ensure secure and efficient system operations.	PI 1.2
CLO#03	**Identify** file systems, including disk partitions, file permissions, storage solutions, and elements related to system performance like CPU, memory, and network resources.	PI 1.3

CLO#04	**Implement** network settings, including IP addressing, routing, and network services.	PI 2.3
CLO#05	**Evaluate** the effectiveness of various system administration techniques and tools, as well as backup and recovery strategies, in managing and maintaining computer systems.	PI 2.4
CLO#06	**Apply** security best practices to protect data, and systems from threats and vulnerabilities.	PI6.3,PI 6.4

CLO-PI-SO Mapping

	SO-1	SO-2	SO-3	SO-4	SO-5	SO-6
CLO#01	PI 1.1					
CLO#02	PI 1.2					
CLO#03	PI 1.3					
CLO#04		PI 2.3				
CLO#05		PI 2.4				
CLO#06						PI 6.3, PI 6.4