

Introduction to Operating System

Course Title: Student Development					
Course Code:	Student Workload:	Credits:	Semester:	Frequency:	Duration:
CIT620 04	5.67 Hours / Weeks	2 Credits (3.00 ECTS)	2 nd Semester	Even Semester	16 Weeks/ Semester (Lecture: 14 weeks; Midterm assessment : 1 week; Final assessment : 1 week)
1	Types of Courses: Information technology Fundamentals	Contact Hours: <i>Lecturing: 1.67 Hours/ Week; Practical Work: 0.00 Hours/ Week</i>	Independent Study: <i>Self-study: 2.00 Hours/ Week; Strcutured Assignment: 2.00 Hours/ Week</i>	Class Size: 40 Students	
2	Prerequisites for Participation (If Applicable): -				
3	Learning Outcomes: <ol style="list-style-type: none"> 1. M1: Able to explain the general device computer system 2. M2: Able to explain the basic concepts of operating systems 3. M3: Able to explain the structure of the operating system 4. M4: Able to explain process management in operating system 5. M5: Able to explain the concept of concurrency 6. M6: Able to explain the concept of concurrency 7. M7: Able to explain scheduling in operating system 8. M8: Able to explain the concept of I/O and DISK management 9. M9: Able to explain the concept of file management in operating systems 10. M10: Able to explain the concept of security and security in operating systems 				
4	Subject aims/Content: At the end of the course, students are expected: <ol style="list-style-type: none"> 1. L1: Able to explain data representation in computer systems 2. L2: Capable of converting decimal, binary and Hexa numbers 3. L3: Able to use Boolean algebra in logic design 4. L4: Able to explain the main components that make up a computer and the relationship between components 5. L5: Able to explain the steps of executing instructions by the processor 6. L6: Able to explain the concept of interrupt and why interrupt is needed 7. L7: Able to explain the hierarchy of computer memory 8. L8: able to explain the characteristics of multiprocessor and multicore organizations 9. L9: able to explain stack operations and their use in supporting procedure calls and returns 10. L10: able to explain the main functions in the operating system 11. L11: able to discuss the development of operating systems in the form of batch systems to more complex modern systems 12. L12: Able to explain the concept of virtual machines and virtualization 13. L13: Able to use Linux operating system 14. L14: Able to explain kernel data structure 15. L15: Able to explain computing environment 16. L16: Able to define services in the operating system 17. L17: Able to explain user interface and operating system 18. L18: able to explain system calls and types of system calls 19. L19: able to explain the system program 20. L20: able to define the structure of the operating system that has developed 21. L21: able to name the generation of computer systems 22. L22: able to explain how the boot system works 23. L23: able to define processes in the operating system 				

	<p>24. L24: able to explain the relationship between the process and the process control block</p> <p>25. L25: able to explain the concept of process state and translate state transitions to ongoing processes</p> <p>26. L26: able to explain the difference between process and thread</p> <p>27. L27: able to explain the difference between user-level thread and kernel-level thread</p> <p>28. L28: able to explain thread management in operating system</p> <p>29. L29: able to explain the basic concepts related to concurrency</p> <p>30. L30: able to explain hardware approach to support multiple exclusion</p> <p>31. L31: able to explain semaphore</p> <p>32. L32: able to explain monitor</p> <p>33. L33: able to explain the reader/writer problem</p> <p>34. L34: able to explain the conditions that cause deadlocks</p> <p>35. L35: able to explain the prevention of deadlocks and strategies developed to prevent deadlocks</p> <p>36. L36: able to explain the difference between deadlock prevention and deadlock avoidance</p> <p>37. L37: able to explain the basic difference between deadlock detection and deadlock prevention or avoiding deadlocks</p> <p>38. L38: able to analyze dining philosopher problem</p> <p>39. L39: able to explain the synchronization and concurrency methods used in Linux and Windows</p> <p>40. L40: able to explain the basic need for memory management</p> <p>41. L41: able to explain memory partitioning and techniques used</p> <p>42. L42: able to explain the concept of paging</p> <p>43. L43: able to explain the concept of segmentation</p> <p>44. L44: able to explain the advantages of paging and segmentation techniques</p> <p>45. L45: able to explain the concept of loading and linking</p> <p>46. L46: able to explain the concept of virtual memory theory</p> <p>47. L47: able to explain the structure of hardware and controls that support virtual memory</p> <p>48. L48: able to explain virtual memory mechanism on some OS</p> <p>49. L49: able to explain the difference between short, medium and long scheduling terms</p> <p>50. L50: able to perform assessment on scheduling policy performance</p> <p>51. L51: able to explain scheduling techniques in the Linux operating system</p> <p>52. L52: able to explain the main categories of I/O devices on a computer</p> <p>53. L53: able to explain the organization of I/O functions</p> <p>54. L54: Describe the operating system components to support I/O work</p> <p>55. L55: able to explain the implications of the I/O buffering mechanism</p> <p>56. L56: Able to explain the working concept of disk storage and storage media access mechanism</p> <p>57. L57: Able to explain RAID concept and explain RAID level</p> <p>58. L58: Be able to explain the implications of the disk cache mechanism</p> <p>59. L59: Able to describe I/O mechanism on Linux and Windows</p> <p>60. L60: Able to describe the basic concepts of files and file systems</p> <p>61. L61: Able to explain the basic techniques of file organization and how to access files</p> <p>62. L62: Able to explain the concept of file directory</p> <p>63. L63: able to explain the need for file sharing</p> <p>64. L64: Able to explain the concept of record blocking</p> <p>65. L65: Able to explain the concept of secondary storage</p> <p>66. L66: Able to explain things related to computer security</p> <p>67. L67: Able to define computer security attacks</p> <p>68. L68: able to distinguish the types of intruder behavior patterns and understand the intrusion techniques used to attack computer security</p> <p>69. L69: able to define the types of malicious software</p> <p>70. L70: Able to define and distinguish viruses, worms and bots</p>
5	Teaching Methods: Lecturing, Group Discussion, Case-Based Learning
6	Assessment Methods: Essay, portfolio, performance test, peer assessment
7	This Course is Used in The Following Study Programme/s as Well: -
8	Responsibility for Course: -

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Other Information:

Bibliography:

1. Stallings, William, Operating System: Internal and Design Principles 7th Edition, Pearson, 2011
2. Silberschatz, Abraham, Operating System Concepts, 9th Edition, Wiley, 2013