DEPARTMENT OF INFORMATION TECHOLOGY

FACULTY OF COMPUTING

MODULE IDENTIFICATION			
Module Name	**Operating Systems and System Administration**		
Module Code	IT 2060	Version No.	
Year/Level	2	Semester	2
Credit Points	04		
Pre-requisites	Introduction to Programming IT1010 Introduction to Computer Systems IT1020		
Co-requisites	None		
Methods of Delivery	Lectures (Face-to-face) Tutorials Labs		2 Hours/Week 1 Hour/Week 2 Hours/Week
Course Web Site	http://courseweb.sliit.lk/		
Date of Original Approval			
Date of Next Review			

MODULE DESCRIPTION	
Introduction	In this unit, students will learn the major components of the operating systems and practice with utilities of Unix system administration. Students will also apply the knowledge they learn in the lectures, tutorial and labs to complete the unit's programming assignment.
Learning Outcomes	At the end of the module student will be able to: LO1 : Evaluate the different concepts in modern and early OS LO2 : Assess different kinds of process/thread management problem and solution LO3 : Assess the methods used in memory system design and management LO4 : Assess the methods used in file system management LO5 : Evaluate the advantages and limitations of different I/O and disk technologies LO6: Assess the needs of system protection and security LO7: Design system administrative scripts
Assessment Criteria	During the semester, there will be one mid-term, an assignment and a final exam. The mid-term test will be based on the practical work and the lecture material covered until the week before it is held. The final examination will be a comprehensive exam based on the practical assignments, tutorials, lecture materials covered during the semester and project.

	The distribution of marks for the assessed components of the unit are as follows:		
	▪ Continuous Assessments o Midterm Examination	20%	LO 1, LO2
	o Assignments		
	▪ Assignment 1	20%	LO 2, LO7
	▪ End Semester Assessment o Final Examination	60%	LO2, LO 3, LO 4, LO5, LO6
	TOTAL	100%	
Module Requirement	To pass this module students are required to achieve a pass standard in both the "Continuous Assessments" component (where the marks for each component should be more than 45%) and the "End of the Semester Examination "component and achieve an overall mark that would qualify for a "C" grade or above.		
Learning Resources	**Recommended Texts** A. Silberschatz, P.B. Galvin, and G. Gagne, Operating System Concepts, 9th Edition Update (2012), John Wiley & Sons. (ISBN/ISSN: 9781118063330)		

MODULE ADMINISTRATION PROCEDURE			
Contact Information			
Lecturer-in-charge	Mr. Samantha Rajapaksha Ms.Sanvitha Kasthuriarachchi		
Telephone	0112 301904	E-mail	Samantha.r@sliit.lk Sanvitha.k@sliit.lk
Location	Metro Campus 16th Floor Malabe Campus 8th Floor		
Consultation Time			

CONTENTS OF THE MODULE

1. **Lecture 01: Introduction to OS**
   - Definition, Purpose, Development, and Design of OS
   - OS structures – System components, OS services, system calls, system programs, system structure, system design and implementation
   - Overview of Computer System structures.

2. **Lecture 02: Processes and Threads**
   - Process and Thread Concept
   - Process and Threads scheduling, Process operation and cooperation
   - Inter-process communication.

3. **Lecture 03: Process synchronization**
   - Concept of process synchronization
   - Semaphores
   - Classical problems of synchronization
   - Monitors

4. **Lecture 04: CPU Scheduling**
   - CPU scheduling: Basic concepts,
   - CPU scheduling criteria
   - Scheduling Algorithms
   - Algorithms evaluation.

5. **Lecture 05: Deadlocks**
   - Deadlocks Model
   - Characterization
   - Deadlock handling methods

6. **Lecture 06: Memory Management**
   - Memory Management Background
   - Address space
   - Swapping
   - Contiguous allocation
   - Paging

7. **Lecture 07: Virtual Memory**
   - Virtual memory Background
   - Demand Paging and its performance
   - Page replacement algorithms
   - Thrashing

8. **Lecture 08: File System**
   - File System Interface and Implementation
   - File concept
   - Access Methods
   - Protection
   - Implementation

9. **Lecture 09: I/O Devices and Secondary Storage**
   - I/O Systems
   - Mass-Storage
   - I/O hardware
   - I/O interface
   - Disk structure
   - Disk scheduling

10. Lecture 10: Protection and Security

- Protection and Security – Goals
- Access matrix
- Security Problem
- Program and System Threats

Generic Information

Any type of plagiarism is not allowed.

Plagiarism: Academic honesty is crucial to a student's credibility and self-esteem, and ultimately reflects the values and morals of the Institute as whole. A student may work together with one or a group of students discussing assignment content, identifying relevant references, and debating issues relevant to the subject. Plagiarism occurs when the work of another person, or persons, is used and presented as one's own.

----------End of Module Outline----------