COURSE SYLLABUS

OPERATING SYSTEMS

Course code: 220101

1. General information

Course type		Number of credits	Number of learning periods
General	☐	Theory: 02	Theory: 30
Basic	☑		
Specialized	☐	Exercise: 00	Exercise: 00
Required	☑		
Elective	☐	Practice: 01	Practice: 30

*Learners***:**

Level	Bachelor
Discipline	Information Technology

Course requirements:

Prerequisites	Computer Architecture
Parallels	None
Other requirements	Basic knowledge on C programming

2. Learning resources

Books	[1] A. Silberschatz *et al.*, *Operating System Concepts with Java 8th Edition.* Wiley, 2007.
References	[2] Thái Hùng Văn, *Hệ điều hành*, ĐH Khoa học Tự nhiên TP HCM, 2006. [3] Nguyễn Phú Trường, *Hệ điều hành*, Đại học Cần Thơ, 2005.
Other learning materials	X-Ways Software Technology AG, *Winhex19.9, 2019*

3. Course description

The course provides students basic knowledge of main components of a computer and its operating principles. In particular, the course will cover processes and threads, mutual exclusion, CPU scheduling, deadlocks, memory management, I/O management and file management systems. Additionally, the course develops students' appropriate awareness and attitudes on the roles of soft skills improvement such as group working and report presentation.

4. Course learning outcomes (CLOs)

After finishing the course, students will be able to:

		Satisfy LOs of the program	Satisfy LOs of the ABET
❖ **Topic 1: Disciplinary Knowledge and Reasoning**			B.1.1
L1.	Present general concepts of operating system	1.2.3	B.1.2
L2.	Present major components of operating systems such as memory management system, file management system, process management system and input/output management system		B.1.3 B.1.4
L3.	Manage major components of an operating system		B.1.5
L4.	Evaluate performance of management algorithms for major components of operating systems.		B.1.6
❖ **Topic 2: Personal and Professional Skills and Attributes**			
L5.	Recognize the hazard in using different OSs	2.1.1 2.4.5	
❖ **Topic 3: Interpersonal Skills: Teamwork and Communication**			
L6.	Forming Effective Teams	3.1.1	
L7	Communications Structure	3.2.2	
❖ **Topic 4: Conceiving, Designing, Implementing and Operating Systems in The Enterprise, Societal and Environmental Context – The Innovation Process**			
L8.	Adapting process coordination strategies to more effectively solve practical problems	4.1.1	
L9.	Recognize the pros and cons of different types of operating systems	4.2.1	

5. Course content

Course content	CLOs	Number of learning periods		
		Theory	Practice	Others
Chapter 1. Introduction to Operating Systems	**L1, L9**	**2**	**1**	
1.1. Introduction to Computers				
1.2. What is an Operating Systems?				
1.3. Operating System Architectures and Components				
1.4. History of the Operating Systems				
1.5. Operating System roles				
☐ *Personal and Professional Skills and Attributes*	L5 (U)			
☐ *Interpersonal Skills: Teamwork and Communication*				
☐ *CDIO in the enterprise, societal and environmental context*				
Chapter 2. File Management Systems	**L2, L3, L4**	**8**	**5**	
2.1. File Systems concepts				
2.2. File Allocation				
2.3. File Organization				
2.4. Free Space Management				
2.5. File Access Techniques				
☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*	L6, L7 (U)			
☐ *CDIO in the enterprise, societal and environmental context*	L9 (U)			

Chapter 3. Secondary Storage and Memory Management Systems	**L2, L3, L4**	**4**	**5**	
3.1. Hard disk Organization				
3.2. Logical disk Organization				
3.3. Secondary Storage Management				
3.4. Virtual Memory Organization				
3.5. Virtual Memory Management				
☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*				
☐ *CDIO in the enterprise, societal and environmental context*				
Chapter 4. Process Management Systems	**L2, L3, L4**	**3**	**4**	
4.1. Process Concepts				
4.2. Thread Concepts				
4.3. Process state transitions				
☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*				
☐ *CDIO in the enterprise, societal and environmental context*				
Chapter 5. Processor Scheduling	**L3, L4, L8**	**4**	**5**	
5.1. Introduction to Processor Scheduling				
5.2. CPU scheduling criteria				
5.3. Processor scheduling algorithms				

☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*				
☐ *CDIO in the enterprise, societal and environmental context*	L8 (T)			
Chapter 6. Synchronization	**L3, L4**	**3**	**5**	
6.1. Introduction				
6.2. Problems of concurrent processes				
6.3. Semaphores				
6.4. Dining philosopher behaviour				
☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*				
☐ *CDIO in the enterprise, societal and environmental context*	L8 (T)			
Chapter 7. Deadlock	**L3, L4**	**4**	**5**	
7.1. Introduction				
7.2. Example of Deadlock				
7.3. Deadlock Solutions				
7.4. Deadlock Prevention				
☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*	L6, L7 (U)			
☐ *CDIO in the enterprise, societal and environmental context*	L8, L9 (U)			
Chapter 8. Input/ Output Management Systems	**L2, L3, L4**	**2**	**0**	

8.1. Introduction to I/O Management Systems				
8.2. I/O Management Systems				
☐ *Personal and Professional Skills and Attributes*				
☐ *Interpersonal Skills: Teamwork and Communication*	L6, L7 (U)			
☐ *CDIO in the enterprise, societal and environmental context*				
Summary of skills in course level				
☐ *Personal and Professional Skills and Attributes*	L5 (U)			
☐ *Interpersonal Skills: Teamwork and Communication*	L6, L7 (U)			
☐ *CDIO in the enterprise, societal and environmental context*	L8, L9 (U) (T)			

6. Teaching and learning methods

ID	Teaching method/technique		Description
M1.	Lecturing	☒	
M2.	Questions – Answers	☐	
M3.	Group-based Learning	☐	
M4.	Problem-based Learning	☐	
M5.	Project-based Learning	☐	
M6.	Case studies	☐	
M7.	Role play	☐	
M8.	Demo	☒	
M9.	Simulations	☐	
M10.	Debate	☐	
M11.	Game	☐	

ID	Teaching method/technique		Description
M12.	Brainstorming	☒	
M13.	Think-Pair-Share	☒	

7. Course assessment

ID	Assessment activity		Quantity	Weight	LOs assessed
T1.	Text-based midterm exam	☒	01	25%	L1, L2, L3
T2.	Text-based final exam	☐			
T3.	Practice midterm exam	☐			
T4.	Practice final exam	☒	01	25%	L1, L2, L3, L4
T5.	Report	☐			
T6.	In-class exercises	☐			
T7.	Homework assignments	☐			L1, L2, L3
T8.	Question – Answer	☐			
T9.	Term Project	☐			
T10.	Final Exam	☒		50%	L1, L2, L3, L4
Overall score formula	((T2+T3)/2+T10)/2				

8. Course requirements and expectations

8.1. Requirements on attendance

- Students are responsible for attending in all classes. In case of absence due to force majeure circumstances, there must be sufficient and reasonable evidence.
- Students who do not attend more than 20% of the class sections, whether for reason or not, are deemed not to have completed the course and must re-enroll in the following semester.

8.2. Requirements and expectations on student behaviors

- Students must show their respects for teachers and other learners.
- Students must be on time. Students who are late more than five minutes will not be allowed to attend the class.

- Students should not make noise and interfere with others in the learning process.
- Students should not eat, chew gum, and use devices such as cell phones, music players during class hours.
- Laptops and tablets can only be used in class for the purpose of learning.
- Students who violate the above principles will be asked to leave the class and considered absent from the class.

8.3. Requirements on learning issues

Issues related to applying for score reservation, scoring complaints, scoring, exam disciplines are done according to the Learning Regulation of Tra Vinh University.

9. Tentative course instructor

Huỳnh Văn Thanh

DEAN   **DEPARTMENT HEAD**   **LECTURER**

Huỳnh Văn Thanh