

COURSE SYLLABUS

DATABASE MANAGEMENT SYSTEMS

Course code: 220060

1. General information

<i>Course type</i>	<i>Number of credits</i>	<i>Number of learning periods</i>
General <input type="checkbox"/>	Theory: 02 Exercise: Practice: 01	Theory: 30 Exercise: Practice: 30
Basic <input type="checkbox"/>		
Specialized <input checked="" type="checkbox"/>		
Required <input checked="" type="checkbox"/>		
Elective <input type="checkbox"/>		

Learners:

Level	Bachelor
Discipline	Information Technology

Course requirements:

Prerequisites	Data structure and Algorithms Information system analysis and design
Parallels	None
Other requirements	None

2. Learning resources

Books	[1] Raghu Ramakrishnan, Johannes Gehrke (2007). <i>Database Management Systems, 3rd Edition</i> . McGraw-Hill. [2] Avi Silberschatz, Henry F. Korth, S. Sudarshan (2019). <i>Database System Concepts, Seventh Edition</i> . McGraw-Hill
References	[3] Nguyễn Thái Nghe, Trần Ngân Bình, Đặng Quốc Việt (2014). <i>Giáo trình Hệ quản trị Cơ sở dữ liệu</i> , NXB Đại học Cần Thơ

Other learning materials	<p>[4] Microsoft, <i>Microsoft SQL Server 2016</i></p> <p>[5] Websites:</p> <ol style="list-style-type: none"> 1. http://www.cse.iitb.ac.in/~sudarsha/db-book/slide-dir/ 2. http://pages.cs.wisc.edu/~dbbook/openAccess/secondEdition/solutions/answers2ed-odd.pdf 3. http://pages.cs.wisc.edu/~dbbook/openAccess/thirdEdition/solutions/ans3ed-oddonly.pdf 4. https://technet.microsoft.com/en-us/library/bb510424(v=sql.100).aspx

3. Course description

The course provides students specialized knowledge on database management systems (DBMSs). The covered knowledge and skills including: presenting main components of a DBMS; categorizing transaction schedules; analyzing concurrent control techniques; utilizing data backup, data management and data mining techniques; presenting data storage structures; estimating execution time and optimizing queries; and data management on a specific DBMS. The course also aims to provide opportunities to practice professional skills including empirical techniques in knowledge discovery, utilizing knowledge in design, and designing system components. Additionally, the course develops students' appropriate awareness on important soft skills, e.g., group working and communication, and attitudes on the role of Information Technology engineer.

4. Course learning outcomes (CLOs)

After finishing the course, students will be able to:

		<i>Satisfy LOs of the program</i>	<i>Satisfy LOs of the ABET</i>
❖ Topic 1: Disciplinary Knowledge and Reasoning			B.1.1
L1.	Present main components of a DBMS	1.2.x	B.1.2
L2.	Categorize transaction schedules		B.1.3
L3.	Analyze concurrent controlling techniques		B.1.4
L4.	Utilize data backup, data management and data mining techniques		B.1.5
			B.1.6

L5.	Present data storage structures	
L6.	Estimate execution time and optimize SQL query	
L7.	Implement an database on a specific DBMS	
❖ Topic 2: Personal and Professional Skills and Attributes		
L8.	Modeling	2.1.2
L9.	Survey of print and electronic literature	2.2.2
L10.	Creative thinking	2.4.3
L11.	Time and resource management	2.4.7
L12.	Professional ethics, integrity, responsibility and accountability	2.5.1
❖ Topic 3: Interpersonal Skills: Teamwork and Communication		
L13.	Team operation	3.1.2
L14.	Communications structure, written and electronic/multimedia communication	3.2.2, 3.2.3, 3.2.4
L15.	Communications in foreign languages: English	3.3.2
❖ Topic 4: Conceiving, Designing, Implementing and Operating Systems in The Enterprise, Societal and Environmental Context – The Innovation Process		
L16.	Utilization of knowledge in design	4.3.3
L17.	Disciplinary design	4.3.4
L18.	Software implementation process	4.4.2

5. Course content

<i>Course content</i>	<i>CLOs</i>	<i>Number of learning periods</i>		
		<i>Theory</i>	<i>Practice</i>	<i>Others</i>

Chapter 1. Overview about components of a DBMS	L1	3	0	
1.1. Development process of data processing systems in computer				
1.2. Data characteristics in databases				
1.3. Architecture of a DBMS				
1.4. Types of DBMS				
<input type="checkbox"/> <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)			
<input type="checkbox"/> <i>Interpersonal Skills: Teamwork and Communication</i>	L15(U)			
<input type="checkbox"/> <i>CDIO in the enterprise, societal and environmental context</i>				
Chapter 2. Transaction schedule	L2, L7	5	5	
2.1. Transactions				
2.2. Serial schedule				
2.3. Serializable schedule				
<input type="checkbox"/> <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)			
<input type="checkbox"/> <i>Interpersonal Skills: Teamwork and Communication</i>	L13(U)→ L15(U)			
<input type="checkbox"/> <i>CDIO in the enterprise, societal and environmental context</i>				
Chapter 3. Concurrent accessing control	L3, L7	9	0	
3.1. Problems of concurrent accessing				
3.2. Lock-based protocols				
3.3. Timestamp-based protocols				
<input type="checkbox"/> <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)			

□ <i>Interpersonal Skills: Teamwork and Communication</i>	L13(U)→ L15(U)			
□ <i>CDIO in the enterprise, societal and environmental context</i>				
Chapter 4. Data recovery	L4, L7	5	25	
4.1. Data security				
4.2. Data recovery				
4.3. Implement, management and mining data				
□ <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)			
□ <i>Interpersonal Skills: Teamwork and Communication</i>	L13(U)→ L15(U)			
□ <i>CDIO in the enterprise, societal and environmental context</i>	L16(U)→ L18(U)			
Chapter 5. Data storage structures	L5	3	0	
5.1. Components related to data management and data accessing				
5.2. Disk space management				
5.3. Cache memory management				
5.4. Files and indexes				
□ <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)			
□ <i>Interpersonal Skills: Teamwork and Communication</i>	L13(U)→ L15(U)			
□ <i>CDIO in the enterprise, societal and environmental context</i>	L16(U)→ L18(U)			
Chapter 6. Estimation execution time of queries	L6	5	0	
6.1. Estimation execution time of one-relation operations				
6.2. Estimation execution time of multiple-relation operations				

<input type="checkbox"/> <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)
<input type="checkbox"/> <i>Interpersonal Skills: Teamwork and Communication</i>	L13(U)→ L15(U)
Summary of skills in course level	
<input type="checkbox"/> <i>Personal and Professional Skills and Attributes</i>	L8(U)→ L12(U)
<input type="checkbox"/> <i>Interpersonal Skills: Teamwork and Communication</i>	L13(U)→ L15(U)
<input type="checkbox"/> <i>CDIO in the enterprise, societal and environmental context</i>	L16(U)→ L18(U)

6. Teaching and learning methods:

ID	Teaching method/technique		Description
M1.	Lecturing	<input checked="" type="checkbox"/>	
M2.	Questions – Answers	<input checked="" type="checkbox"/>	
M3.	Group-based Learning	<input checked="" type="checkbox"/>	
M4.	Problem-based Learning	<input type="checkbox"/>	
M5.	Project-based Learning	<input checked="" type="checkbox"/>	
M6.	Case studies	<input type="checkbox"/>	
M7.	Role play	<input type="checkbox"/>	
M8.	Demo	<input checked="" type="checkbox"/>	
M9.	Simulations	<input type="checkbox"/>	
M10.	Debate	<input type="checkbox"/>	
M11.	Game	<input type="checkbox"/>	
M12.	Brainstorming	<input type="checkbox"/>	
M13.	Think-Pair-Share	<input type="checkbox"/>	

7. Course assessment:

ID	Assessment activity		Quantity	Weight	LOs assessed
T1.	Text-based midterm exam	<input type="checkbox"/>			
T2.	Text-based final exam	<input checked="" type="checkbox"/>		25%	L1 → L6
T3.	Practice midterm exam	<input type="checkbox"/>			
T4.	Practice final exam	<input checked="" type="checkbox"/>		25%	L2 → L7
T5.	Report	<input type="checkbox"/>			
T6.	In-class exercises	<input type="checkbox"/>			
T7.	Homework assignments	<input type="checkbox"/>			
T8.	Question – Answer	<input type="checkbox"/>			
T9.	Term Project	<input checked="" type="checkbox"/>		50%	L1 → L7
T10.	Final Exam	<input type="checkbox"/>			
Formula for Overall score		$T2*25\% + T4*25\% + T9*50\%$			

8. Course requirements and expectations:

8.1. Requirements on attendance

- Students are responsible for attending 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

Phan Thi Phuong Nam

DEAN

DEPARTMENT HEAD

LECTURER

Phan Thi Phuong Nam