

COURSE SYLLABUS
(Training level: Undergraduate)

Vietnamese name: Cơ sở dữ liệu

English name: Database

Course Code: BAD131.

Major: Information Technology

Training program: Information Technology

Version: 2021

1. General information

Number of credits: 3 (Theory: 2.5; Practice: 0.5).

- Type of knowledge:

General Education		Base core courses		Major core courses		Concentration courses		Others
Required <input type="checkbox"/>	Optional <input type="checkbox"/>	Required <input checked="" type="checkbox"/>	Optional <input type="checkbox"/>	Required <input type="checkbox"/>	Optional <input type="checkbox"/>	Required <input type="checkbox"/>	Optional <input type="checkbox"/>	
								Alternative subject of Graduation Thesis <input type="checkbox"/>

- Required courses: None

- Pre-requisite: General Informatics

- Co-requisite: None

2. Time Allocated

Total: 53 periods	Theory: 37 periods
	Big Assignments/Essays/Practice: 0/0/13.
	Number of tests: 2
	Number of theoretical test periods: 1 period Number of practice test periods: 2 periods
	Self-study: 105 periods. Other activities: 0 periods

3. Department in Change: Department of Information Systems - Faculty of Information Technology

4. Lecturer's Information

No.	Lecturer name	Phone number	Email	Note
1	MSc. Nguyen Thu Huong	0982734973	nthuong@ictu.edu.vn	Leader
2	MSc. Le Thu Trang	0983754948	ltrang@ictu.edu.vn	Member
3	MSc. Ngo Thi Lan Phuong	0975272359	ntlphuong@ictu.edu.vn	Member
4	PhD. Vu Duc Thai	0389324536	vdthai@ictu.edu.vn	Member
5	MSc. Ho Thi Tuyen	0966802169	httuyen@ictu.edu.vn	Member
6	MSc. Nguyen Huu Thai	0988552246	nhthai@ictu.edu.vn	Member
7	MSc. Duong Thi Mai Thuong	0945373858	dtmthuong@ictu.edu.vn	Member
8	MSc. Vu Thi Nguyet	0985214249	vtnguyet@ictu.edu.vn	Member
9	PhD. Nguyen Thi Thanh Nhan	0817750552	nttnhan@ictu.edu.vn	Member
10	MSc. Trinh Van Ha	0983454755	tvha@ictu.edu.vn	Member
11	MSc. Dao Tran Chung	0988552246	dtchung@ictu.edu.vn	Member
12	MSc. Pham Thi Lien	0976882196	ptlien@ictu.edu.vn	Member

5. Facility Requirements: Classrooms have projectors. The lab has software installed.

6. Course Description

The Database module is part of the basic knowledge block of the industry group, to provide students with basic knowledge of databases; knowledge of relational data models and relational algebra; Knowledge of linked entity model, conversion of linked entity model to relational model, relational database design algorithms. Skills in analyzing input information to design and standardize a database; Practical skills with SQL Server database management system in creating tables, creating links, building data query statements on standardized databases. Ability to participate in information system construction projects in practice

7. Course Objectives

Objectives	Describe	CLOs	Proficiency level
G1	Apply knowledge of databases, data models, function dependencies, closures, keys, standard forms and algorithms in relational database design. Apply knowledge of SQL language to create and manipulate data.	1.3.6	3
G2	Synthesize knowledge to detect entities and attributes from inputs, design a standard database, and execute database queries.	1.4.5	3
G3	Apply knowledge of definition languages and data manipulation on SQL Server database management systems to manage specific databases	2.1.2	2

8. Unit outcome standards

Objectives	CLOs	Describe (After completing this subject, learners can)	PLOs	Proficiency level
G1	G1.1	Apply knowledge of databases, associative entity models, concepts and operations in relational data models, function dependencies, closures, keys, standard forms, and algorithms to design databases at the conceptual and logical levels	1.3.6	3
	G1.2	Apply basic knowledge of database management system and basic knowledge in SQL in creating and manipulating data in database.	1.3.6	3
G2	G2.1	Synthesize database design knowledge in determining data requirements, input information of problems.	1.4.5	3
	G2.2	Synthesis of knowledge and tools in database standardization.	1.4.5	3
	G2.3	Synthesize knowledge of Database Management System in building database queries	1.4.5	3
G3	G3.1	Solve data definition language issues in creating and managing actual data tables on SQL Server database management systems.	2.1.2	2
	G3.2	Solve data manipulation language issues in creating and managing actual databases on SQL Server.	2.1.2	2

9. Scientific ethics

Actively attend theoretical lessons in class, do exercises assigned by the lecturer, fully participate in practical hours in the spirit of improving self-discipline, autonomy and complete regular tests. All acts of cheating in learning and assessment are handled according to the statute.

10. Detailed Contents

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
1, 2, 3	Chapter 1. Database overview					
	A/ In-class teaching content: (3) 1.1. Databases 1.1.1. Database Definition 1.1.2. Database Classification 1.1.3. Advantages of Databases 1.1.4. Problems that databases need to solve 1.1.5. Database users 1.1.6. Applications of databases 1.2. Database system 1.2.1. Database system concept 1.2.2. Database system components 1.2.3. Advantages of Database System 1.2.4. Types of database system architectures	[1] [2] [4]	G1.1	3	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Database; Database system.	[1] [2] [4]	G1.1	3	Guided self-study	Motivational assessment/Incorporating due diligence
4, 5, 6	Chapter 1. Database overview					
	A/ In-class teaching content: (3) 1.3. Data models 1.3.1. Network Data Model 1.3.2. Hierarchical data model 1.3.3. Hybrid entity data model 1.3.4. Relational Data Model	[1] [2] [4] [5]	G1.1	3	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
	1.3.5. Object-Oriented Data Model 1.3.6. Distributed Data Model 1.3.7. Deductive database model 1.4. Database Management System 1.4.1. Concept of database management system 1.4.2. Database management system architecture 1.4.3. Functions of database management system					
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: know how to distinguish data models; understand the concepts.	[1] [2] [4] [5]	G1.1	3	Guided self-study	Motivational assessment/Incorporating due diligence
	Chapter 2. Relational Data Models					
	A/ In-class teaching content: (3) 2.1. Basic concepts 2.1.1. Properties 2.1.2. Relationship 2.1.3. Key of a relationship 2.2. Relational algebraic operations 2.2.1. Fusion 2.2.2. Assignment 2.2.3. Subtraction 2.2.4. The accumulation of the 2.2.5. Projection 2.2.6. Selection 2.2.7. Connection 2.2.8. Division	[1] [2] [4] [5]	G1.1 G2.1	3 3	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
7, 8, 9	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Basic concepts of	[1] [2] [4] [5]	G1.1 G2.1	3 3	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
	relational data model; Relational algebraic operations. + Complete assigned assignments.					
10, 11, 12	Chapter 3. Database Design Theory					
	A/ In-class teaching content: (3) 3.1. Function dependencies and standard forms 3.1.1. Function dependencies + Definition + Types of function dependencies + Armstrong axiomatic system 3.1.2. Standard forms + Relational schema + Encapsulation	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Theories related to function dependencies. + Complete assigned assignments.	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
13, 14, 15	Chapter 3. Database Design Theory					
	A/ In-class teaching content: (3) 3.1.2. Standard forms (Continued) + Lock of relational schema + Overlay of function dependency set	[1] [2] [4] [5]	G1.1 G2.1 G2.2	3 3 3	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Concepts; Algorithms.	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
	+ Complete assigned assignments.					
16, 17, 18	Chapter 3. Database Design Theory					
	A/ In-class teaching content: (3) 3.1.2. Standard forms (Continued) + Definition of standard forms + Standardize the relational scheme to 3NF	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Concepts; Algorithms. + Complete assigned assignments.	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
	Chapter 3. Database Design Theory					
19, 20, 21	A/ In-class teaching content: (3) 3.2. Database Design 3.2.1. Database Design Process 3.2.2. Combined entity model (ERD) 3.2.3. Basic concepts in ERD	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Concepts; Algorithms. + Complete assigned assignments.	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
	Chapter 3. Database Design Theory					
	A/ In-class teaching content: (3) 3.2. Database Design 3.2.1. Database Design Process 3.2.2. Combined entity model (ERD) 3.2.3. Basic concepts in ERD	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Concepts; Algorithms. + Complete assigned assignments.	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
22, 23, 24	Chapter 3. Database Design Theory					
	A/ In-class teaching content: (3) 3.2. Database Design 3.2.4. Extensible Combined Entity Model (EER) 3.2.5. Transfer of ERD model to relational model	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Concepts; Algorithms. + Complete assigned assignments.	[1] [2] [4] [5]	G1.1 G2.1 G2.2 G3.1	3 3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
25, 26, 27	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (3) Test number 1 4.1. Introduction to SQL Server Database Management System 4.2. Data Definition Language 4.2.1. Syntax of T_SQL 4.2.2. Create database command	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
	+ Complete assigned assignments.					
28, 29, 30	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (3) 4.2. Data Definition Language 4.2.3. Command to create and modify data table structure	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server. + Complete assigned assignments.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
31, 32, 33, 34, 35	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (5) 1.1. Sample Exercises 1.2. Basic exercises 1.3. Advanced Exercises	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(10) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server. + Complete assigned assignments.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
36, 37, 38	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (3) 4.3. Data manipulation language 4.3.1. Data query command – Select	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server. + Complete assigned assignments.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
39, 40, 41	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (3) 4.3. Data manipulation language 4.3.2. Nested Data Query Commands	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comments; test, evaluate the process
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server. + Complete assigned assignments.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
42, 43, 44, 45, 46	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (5) Exercise No. 2 – Advanced Data Queries 1.1. Sample Exercises 1.2. Basic exercises 1.3. Advanced Exercises	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Classroom practical instruction; Raise and solve problems	Evaluation by comment/Combination of due diligence reviews
	B/ Self-study content:(10) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server. + Complete assigned assignments.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence
47, 48	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (3) 4.3. Data manipulation language (continued) 4.3.3. Data entry orders 4.3.4. Data update orders 4.3.5. Data deletion order	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Present; Raise and solve problems; discussion groups	Evaluation by comment/Combination of due diligence reviews
	B/ Self-study content:(6) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

Period	Contents	References	CLOs	Proficiency level	Teaching Methodology	Assessment Methodology
	+ Complete assigned assignments.					
49, 50, 51, 52, 53	Chapter 4. Data manipulation and definition language					
	A/ In-class teaching content: (5) Practice No. 3 - Practice on Data Entry, Deletion, and Correction Commands 1.1. Sample Exercises 1.2. Basic exercises 1.3. Advanced Exercises Test number 2	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Classroom practical instruction; Raise and solve problems	Judging by comments/Rating by scores
	B/ Self-study content:(10) + Read the material according to the content instructions for the next school week. + Review the content of the week: Statements in SQL Server. + Complete assigned assignments.	[3] [6] [7]	G1.2 G2.3 G3.2	3 3 2	Guided self-study	Motivational assessment/Incorporating due diligence

11. Student Assessment: Scale: 10.

11.1 Plan for tests and exam:

No.	Content	Time (Period)	CLOs	Proficiency level	Assessment Method	Assessment Tool	Weight %
Attendance							10
In-class tests							30
1	Chapter 1, 2, 3	25	G1.1 G2.1 G2.2	3 3 3	Written	Question	15
2	Chapter 4	52-53	G1.2 G2.3 G3.1 G3.2	3 3 2 2	Practice	Assignments	15
Final exam							60

	Chapter 1, 2, 3, 4		G1.1 G1.2 G2.1 G2.2 G2.3 G3.1 G3.2	3 3 3 3 3 2 2	Question answering	Assignments	60
--	-----------------------	--	--	---------------------------------	-----------------------	-------------	----

CLOs	Contents				Test method		
	Periods 1-20	Periods 21-30	Periods 31-38	Periods 39-53	Progress test 1 - Practice	Progress test 2 Practice	Final exam Question Answering
G1.1	x				x		x
G1.2		x	x	x		x	x
G2.1	x				x		x
G2.2	x	x			x		x
G2.3		x	x	x		x	x
G3.1	x	x			x		x
G3.2		x	x	x		x	x

11.2 Assessment Rubrics

* Rubric 1: Attendance Score Assessment

Criteria assessment	Weight (%)	Very Good	Good	Average	Below Average	Poor
		(8,5-10 point)	(7,0-8,4 point)	(5,5-6,9 point)	(4,0-5,4 point)	(0-3.9 point)

Full level of attendance in lessons	70	Full attendance	Absent from 1-9% of periods	Absent from 10-15% of the period	Absent from 16-20% of periods	20% absence (exam forbidden)
Initiative in lessons, self-study	30	Very actively participate in asking questions, discussing, Complete the assignment fully	Quite actively participate in asking questions, discussing, doing exercises	Less actively involved in asking questions, discussing, doing homework.	It takes the influence of new teachers to participate in questioning, discussion, and homework.	Only attend classes but do not actively participate in asking questions, discussing, doing homework

* **Rubric 2: Test 1 score Assessment** (Time to do the test: 50 minutes; Format: Written; Total number of questions 02; Scale: 10)

Evaluation criteria		Weight (%)	Quality level description				
Question	CLOs		Very Good	Good	Average	Below Average	Poor
			(8,5-10 point)	(7,0-8,4 point)	(5,5-6,9 point)	(4,0-5,4 point)	(0-3.9 point)
Question 1	G1.1	20	Beautiful, clear presentation . The content solves 90-100% of the requirements set forth	Clearly presented. Content addresses 70 to less than 90 percent of the requirements	Relatively clear presentation. Content that addresses 50 to less than 70% of the requirements set forth	The presentation is similarly unclear. Content that addresses 40 to less than 50% of the requirements set forth	The presentation is similarly unclear. Content that addresses less than 40% of the requests set forth
Question 2	G2.1 G2.2	80	Beautiful, clear presentation . The content solves 90-100% of the requirements set forth	Clearly presented. Content addresses 70 to less than 90 percent of the requirements	Relatively clear presentation. Content that addresses 50 to less than 70% of the requirements set forth	The presentation is similarly unclear. Content that addresses 40 to less than 50% of the requirements set forth	The presentation is similarly unclear. Content that addresses less than 40% of the requests set forth

* **Rubric 3: Test 2 score Assessment** (Time to do the test: 50 minutes; Format: Machine FQA; Total number of questions: 02; Scale: 10)

Evaluation criteria		Weight (%)	Quality level description				
Question	CLOs		Very Good	Good	Average	Below Average	Poor
			(8,5-10 point)	(7,0-8,4 point)	(5,5-6,9 point)	(4,0-5,4 point)	(0-3.9 point)
Question 1	G2.3 G3.1	80	Beautiful, clear	Clearly presented.	Relatively clear	The presentation	The presentation

	G3.2		presentation. The content solves 90-100% of the requirements set forth	Content addresses 70 to less than 90 percent of the requirements	presentation. Content that addresses 50 to less than 70% of the requirements set forth	n is similarly unclear. Content that addresses 40 to less than 50% of the requirements set forth	is similarly unclear. Content that addresses less than 40% of the requests set forth
Question 2	G1.2	20	Beautiful, clear presentation. The content solves 90-100% of the requirements set forth	Clearly presented. Content addresses 70 to less than 90 percent of the requirements	Relatively clear presentation. Content that addresses 50 to less than 70% of the requirements set forth	The presentation is similarly unclear. Content that addresses 40 to less than 50% of the requirements set forth	The presentation is similarly unclear. Content that addresses less than 40% of the requests set forth

*** Rubric 4: Final exam assessment** (Time to do the test: 60 minutes; Total number of questions: 03; Scale: 10, Format: Machine FAQ)

Evaluation criteria		Weight (%)	Quality level description				
Question	CLOs		Very Good	Good	Average	Below Average	Poor
			(8,5-10 point)	(7,0-8,4 point)	(5,5-6,9 point)	(4,0-5,4 point)	(0-3,9 point)
Question 1	G2.1 G2.2	40	Beautiful, clear presentation. The content solves 90-100% of the requirements set forth	Clearly presented. Content addresses 70 to less than 90 percent of the requirements	Relatively clear presentation. Content that addresses 50 to less than 70% of the requirements set forth	The presentation is similarly unclear. Content that addresses 40 to less than 50% of the requirements set forth	The presentation is similarly unclear. Content that addresses less than 40% of the requests set forth
Question 2	G2.3 G3.1 G3.2	40	The content solves 90-100% of the questions posed well	Content that addresses 70 to less than 90 percent of the	Content that addresses 50 to less than 70% of the questions posed	Content that addresses 40 to less than 50% of the questions posed	Content addresses less than 40% of questions posed

Evaluation criteria		Weight (%)	Quality level description				
Question	CLOs		Very Good	Good	Average	Below Average	Poor
			(8,5-10 point)	(7,0-8,4 point)	(5,5-6,9 point)	(4,0-5,4 point)	(0-3.9 point)
				questions posed			
Question 3	G1.1 G1.2	20	The content solves 90-100% of questions and answers posed by teachers	Content addresses 70 to less than 90 percent of questions asked by teachers	Content resolves from 50 to less than 70% of questions and answers asked by teachers	Content solves from 40 to less than 50% of questions and answers asked by teachers	Content solves less than 40% of questions and answers asked by teachers

12. Learning Materials

A. Main syllabus

[1]. Le Tien Vuong, (2001), *Introduction to relational databases*, Statistical Publishing House.

[2]. Vu Duc Thi (1997), *Database textbook*, Statistical Publishing House.

[3]. Pham Huu Khang (2010), *SQL Server 2005 - Programming T - SQL*, Social Labor Publishing House.

B. References

[4]. Vu Duc Thai (2016), *Database Design Textbook*, Thai Nguyen University Press.

[5]. Nguyen Xuan Huy (2003), *Database exercise*, Statistical Publishing House.

[6]. Doan Thien Ngan (2007), *Basic SQL Programming*, Science and Technology Publishing House.

[7]. Nguyen Nam Thuan (2010), *Self-study guide for SQL Server 2005 Express*, Science and Technology Publishing House.

C. Software (if practical)

[1] Microsoft *SQL Server* (Minimum 2014).

13. First approval date: August 30th, 2021

14. Grant approval: University of Information and Communication Technology

Vice Rector



PhD. Do Dinh Cuong

Dean



PhD. Nguyen Hai Minh


Head of Department



PhD. Nguyen Thi Thanh Nhan

Composer Team

MSc. Nguyen Thu Huong 

MSc. Le Thu Trang 

MSc. Ngo Thi Lan Phuong 


PhD. Vu Duc Thai 

PhD. Nguyen Thi Thanh Nhan 

MSc. Ho Thi Tuyen 

MSc. Nguyen Huu Thai

MSc. Duong Thi Mai Thuong 

MSc Vu Thi Nguyet 

MSc. Trinh Van Ha 

MSc. Dao Tran Chung 

MSc. Pham Thi Lien 