COURSE SYLLABUS

DISCRETE MATHEMATICS

Course code: 110003

1. General information:

Course type		*Number of credits*	*Number of learning periods*
General ☑ Basic ☐ Specialized ☐ Required ☑ Elective ☐		Theory: 01 Exercise: Practice: 01	Theory: 15 Exercise: Practice: 30

*Learners***:**

Level	Bachelor
Discipline	Information Technology

Course requirements:

Prerequisites	None
Parallels	None
Other requirements	None

2. Learning resources:

Books	[1] Rosen, K. H., & Krithivasan, K. (2012). *Discrete mathematics and its applications: with combinatorics and graph theory*. Tata McGraw-Hill Education. [2] Nguyễn Hữu Anh (1999). *Toán rời rạc*. NXB Giáo dục
References	
Other learning materials	[3] Websites: 1. https://www.tutorialspoint.com/discrete_mathematics/index.htm

	2. https://www.javatpoint.com/discrete-mathematics-tutorial

3. Course description:

The course provides students basic knowledge of applied mathematics in computer science. The course also aims to teach students skills in applying mathematics to real world problem in IT. Additionally, the course develops students' appropriate awareness and attitudes of learning initiative and teamwork skills.

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**			
L1.	Solve problems of propositional Logic, induction, and inference	*1.2.4*	*B.1.2* *B.1.5*
L2.	Utilize counting theory to solve counting problems		
L3.	Identify properties of relations: equivalence relations, order relations		
L4.	Draw Hasse diagrams		
L5.	Utilize Karnaugh Maps to minimize Boolean		
❖ *Topic 2: Personal and Professional Skills and Attributes*			
L6.	Problem Identification and Formulation	*2.1.1*	
L7.	Inferencing and solving	*2.1.3*	
❖ *Topic 3: Interpersonal Skills: Teamwork and Communication*			
L8.	Team Operation	*3.1.2*	
❖ *Topic 4: Conceiving, Designing, Implementing and Operating Systems in The Enterprise, Societal and Environmental Context – The Innovation Process*			

5. Course content:

Course content	CLOs	Number of learning periods		
		Theory	Practice	Others
Chapter 1. Logic	*L1*	3	**7**	
1.1. Propositional Logic				
1.2. Predicates, quantifiers				
1.3. Mathematical reasoning				
1.4. Principle of Induction				
☑ *Personal and Professional Skills and Attributes*	L6(I) L7(U)			
☑ *Interpersonal Skills: Teamwork and Communication*	L8(U)			
☑ *CDIO in the enterprise, societal and environmental context*				
Chapter 2. Counting Theory	*L2*	**4**	**10**	
2.1. Sets				
2.2. mapping				
2.3. Counting Theory				
☑ *Personal and Professional Skills and Attributes*	L6(I) L7(U)			
☑ *Interpersonal Skills: Teamwork and Communication*	L8(U)			
☑ *CDIO in the enterprise, societal and environmental context*				
Chapter 3. Relations	*L3, L4*	**3**	**8**	
3.1. Relations				
3.2. Equivalence Relation				
3.3. Order Relation				
☑ *Personal and Professional Skills and Attributes*	L6(I)			

	L7(U)			
☑ *Interpersonal Skills: Teamwork and Communication*	L8(U)			
☑ *CDIO in the enterprise, societal and environmental context*				
Chapter 4. Boolean algebra	*L5*	**5**	**5**	
4.1. Boolean Algebra				
4.2. Boolean Function				
4.3. Logic Gate Networks				
4.4 Minimization of Boolean Functions using Karnaugh Maps				
☑ *Personal and Professional Skills and Attributes*	L6(I) L7(U)			
☑ *Interpersonal Skills: Teamwork and Communication*	L8(U)			
☑ *CDIO in the enterprise, societal and environmental context*				
Summary of skills in course level				
☑ *Personal and Professional Skills and Attributes*	L6(I) L7(U)			
☑ *Interpersonal Skills: Teamwork and Communication*	L8(U)			
☑ *CDIO in the enterprise, societal and environmental context*				

6. Teaching and learning methods:

ID	Teaching method/technique		Description
M1.	Lecturing	☑	
M2.	Questions – Answers	☐	
M3.	Group-based Learning	☑	

ID	Teaching method/technique		Description
M4.	Problem-based Learning	☑	
M5.	Project-based Learning	☐	
M6.	Case studies	☐	
M7.	Roleplay	☐	
M8.	Demo	☑	
M9.	Simulations	☐	
M10.	Debate	☐	
M11.	Game	☐	
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*
T2.	Text-based final exam	☑	01	25%	*L3, L4, L5*
T3.	Practice midterm exam	☐			
T4.	Practice final exam	☐			
T5.	Report	☐			
T6.	In-class exercises	☐			
T7.	Homework assignments	☐			
T8.	Question – Answer	☐			
T9.	Term Project	☐			
T10.	Final Exam	☑	01	50%	*L1, L2, L3, L4, L5*
Formula for Overall score		**T1*0.25+T2*0.25+T10*0.5**			

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:

Tram Hoang Nam

DEAN	DEPARTMENT HEAD	LECTURER
		Tram Hoang Nam