

UNDERGRADUATE PROGRAMME

Apply for 2019 or later

*(Issued by Decision No. 1864/QĐ-ĐHM on August 28, 2019,
 Signed by the Rector of Ho Chi Minh City Open University)*

I. General information

1. Major in Vietnamese: **Khoa học máy tính**
2. Major in English: Computer Science
3. Major code: 7480101
4. Level of training: Undergraduate
5. Mode of training: Fulltime
6. Time of the programme: 4 years
7. Program's knowledge volume (total credits): 126 credits
8. Name of degree: Bachelor of Science

II. Programme Objectives

1. General Objective

The Computer Science programme aims to train bachelor degree holders with ethical qualities, disciplined and responsible in the work; fully equipped with general knowledge; master professional knowledge and have practical skills; be capable of applying specialized knowledge to solve real-world problems of Computer Science and Information Technology in the context of integration and development of the country.

2. Specific Objectives

Specific Objectives	Description
Knowledge Objectives	
PO1	Equip learners with fundamental knowledge of nature, society, and people to serve professional development and self-improvement.
PO2	Learners have fundamental knowledge of computer science. Learners have in-depth knowledge in the fields of software engineering, information systems, computer networks, information security, artificial intelligence (data mining, computer vision).

Skill Objectives	
PO3	Learners analyze, design, develop and operate information systems, design computer networks. Learners manage information technology projects and solve artificial intelligence problems such as data mining, computer vision.
PO4	Learners work independently, teamwork, share knowledge and experiences, write reports, give presentations, negotiate, and solve problems.
Autonomy and Accountability	
PO5	Learners have a sense of responsibility for the community; a sense of serving the country; have good political qualities; have a sense of discipline; have a right working style, have professional ethics; be aware of the role of the information technology industry in the constructing and developing the economy and the society.

III. Job opportunities after graduation

After graduation, learners be able to work in these following positions:

- Job Position 1: Software/application developer, application trainer (programmer trainer/ developer trainer). Career prospects: be promoted as team leader, technical director, software project manager.
- Job Position 2: Administrator and Operator of Information Systems / Database Systems / Web Systems; Data Analysts – Data-mining Specialists. Career prospects: be promoted as information systems analyst, head of information systems management department, director of information systems (CIO).
- Job Position 3: Information System Architect, Information System Administrator; Information security specialist. Career prospects: be promoted as head of information systems management, information systems manager (CIO).
- Job Position 4: Trainer / researcher in the field of computer science / information technology. Career prospects: be specialized consultant in the field of computer science/information technology, be able to move up to study at higher levels and carry out in-depth research.

IV. Programme Learning Outcomes

Program Learning Outcome	Description
Program Learning Outcomes of Knowledge	
PLO1	Apply fundamental knowledge of the natural sciences and mathematics to analyze and to solve problems which occur in work and life.
PLO2	Apply basic knowledge of politics, law, economics, the social sciences and humanities to analyze the problems in work and life.
PLO3	Apply the fundamental knowledge of Computer Science.
PLO4	Apply computer science knowledge in solving professional problems.
Program Learning Outcomes of Skill	
PLO5	Apply professional skills in solving problems in the direction of database / computer network / computer graphics.
PLO6	Apply professional practice skills, apply complementary knowledge in applying and solving professional problems in computer science.
PLO7	Analyze and solve complex problems in computer science.
PLO8	Be able to impart knowledge in researching/teaching fields.
PLO9	Have communication skills in work and life
PLO10	Be able to communicate in spoken and written, verbal and non-verbal languages and work in an international environment.
Program Learning Outcomes of Autonomy and Accountability	
PLO11	Be able to work independently and can work in a team.
PLO12	Be able to organize their works, learn from experiences, and develop themselves.
PLO13	Be aware of rules of professional ethics and a sense of responsibility

V. Candidates for admission

Refer to the School Annual Admission Proposal.

VI. Delivery of the programme and graduation criteria

1. Delivery of the programme

The program is implemented with the current *Undergraduate Full Time Training Regulation* according to the teaching-credit system of Ho Chi Minh City Open University.

2. Graduation criteria

Students are accredited to graduate when they meet the conditions prescribed by the current *Undergraduate Full Time Training Regulation* according to the teaching-credit

system of Ho Chi Minh City Open University.

VII. Student assessment

The program uses a scale of 10 to evaluate courses, equivalent to a grade of letters and a scale of 4 according to the current *Undergraduate Full Time Training Regulation* according to the teaching-credit system of Ho Chi Minh City Open University.

VIII. Programme content

1. Curriculum structure

No.	Curriculum structure	Number of credits			Proportion
		Total	Compulsory	Optional	
1. General knowledge		41	35	6	30.2%
1.1.	<i>Political reasoning</i>	11	11		
1.2.	<i>Knowledge of economic, law and social sciences - humanities</i>	6		6	
1.3.	<i>Knowledge of mathematics, informatics and natural sciences</i>	12	12		
1.4.	<i>Foreign language</i>	12	12		
1.5.	<i>Physical education</i>	3	1.5	1.5	
1.6.	<i>Defense and security Education</i>	8	8		
2. Professional knowledge		75	66	9	61.9%
2.1.	<i>Basic knowledge (major sector, major group, major)</i>	18	18		
2.2.	<i>Industry knowledge</i>	29	29		
2.3.	<i>Specialized knowledge</i>	25	16	9	
2.4.	<i>Additional knowledge</i>	3	3		
3. Graduation internships and Graduation Thesis (or alternative courses)		10	4	6	7.9%
3.1.	<i>Graduation internships</i>	4	4		
3.2.	<i>Graduation thesis</i>	6		6	
3.3.	<i>Alternative courses</i>	6		6	
Total		126	105	21	

2. Programme content

No.	Name of courses	Courses code	Teaching hours/credits	Remarks (Previous
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	(Vietnamese/English)		Theory	Practice	course)
1	General education knowledge		32.5	8.5	
a)	<i>Political reasoning</i>		10.5	0.5	
1.	Triết học Mác - Lênin Marxist – Leninist philosophy	POLI1304	3		
2.	Kinh tế chính trị Mác – Lênin Marxist – Leninist Political Economics	POLI1205	2		
3.	Chủ nghĩa Xã hội khoa học Scientific Socialism	POLI1206	2		
4.	Tư tưởng Hồ Chí Minh Ho Chi Minh's Ideology	POLI1208	1.5	0.5	
5.	Lịch sử Đảng Cộng sản Việt Nam History of Vietnamese communist party	POLI1207	2		
b)	<i>Knowledge of economic, law, social sciences, and humanities</i>		6		
	<i>Economics - Humanities Social Sciences and Humanity</i> Choose 1 course in the following courses:		3		
	Xã hội học đại cương Introduction to Sociology	SOCI1301	3		
	Tâm lý học đại cương Introduction to Psychology	SOCI1317	3		
	Đại cương văn hóa Việt Nam Vietnamese Culture	VIET1305	3		
	An sinh xã hội Social Welfare	SWOR1302	3		
	Kinh tế học đại cương General Economics	SEAS2301	3		
	Kinh tế Vi mô 1 Microeconomics 1	ECON1301	3		
	Kinh tế Vĩ mô 1 Macroeconomics 1	ECON1302	3		
	Nguyên lý kế toán Principles of Accounting	ACCO1325	2	1	
	Quản trị học Principles of Management	BADM1364	2	1	

	Khởi nghiệp Entrepreneurship	BADM1390	2	1	
	<i>Law</i> Choose 1 course in the following courses:		3		
	Pháp luật đại cương Introduction to Law	GLAW1315	3		
	Lý luận nhà nước và pháp luật Theories of State and Law	BLAW1301	3		
c)	<i>Knowledge of mathematics, informatics and natural sciences</i>		8	4	
	Đại số tuyến tính Linear Algebra	MATH1313	2	1	
	Giải tích Analytics	MATH1314	2	1	
	Xác suất thống kê Probability and Statistics	MATH1315	2	1	
	Nhập môn tin học Introduction to Informatics	ITEC1401	2	1	
d)	<i>English (or secondary foreign languages)</i>		8	4	
	Tiếng Anh nâng cao 1 Academic English 1	GENG1339	2	1	
	Tiếng Anh nâng cao 2 Academic English 2	GENG1340	2	1	
	Tiếng Anh nâng cao 3 Academic English 3	GENG1341	2	1	
	Tiếng Anh nâng cao 4 Academic English 4	GENG1342	2	1	
e)	<i>Physical education</i>			3	
	Compulsory				
	Giáo dục thể chất 1 Physical Education 1	PEDU0201		1.5	
	Physical education 2: Choose one of the following courses:				
	PE2 – Bóng chuyền Physical Education 2 – Volleyball	PEDU0202		1.5	
	GDTC2 – Bóng đá Physical Education 2 – Football	PEDU0203		1.5	
	GDTC2 – Cầu lông	PEDU0204		1.5	

	Physical Education 2 – Badminton				
	GDTC2 – Võ thuật Physical Education 2 – Martial Art	PEDU0205		1.5	
	GDTC2 – Bóng bàn Physical Education 2 – Table Tennis	PEDU0206		1.5	
	GDTC2 – Bơi lội Physical Education 2 – Swimming	PEDU0207		1.5	
	GDTC2 – Bóng rổ Physical Education 2 – Basketball	PEDU0208		1.5	
f)	<i>Defense and security education</i>			8	
	Giáo dục quốc phòng National Defense and Security Education	DEDU1801		8	
2	Professional knowledge		54	21	
a)	<i>Fundamental knowledge (major sector, major group, major)</i>		15	3	
	Cơ sở lập trình Introduction to Programming	ITEC1505	3	1	
	Kiến trúc máy tính Computer Architecture	ITEC1303	3		Introduction to Informatics
	Ứng dụng Web Programming Techniques	ITEC1504	3	1	Introduction to Programming
	Ứng dụng Web Web Applications	ITEC1404	2	1	Introduction to Programming
	Toán tin học Discrete Mathematics	MATH3401	4		
b)	<i>Major knowledge</i>		23	6	
	Cấu trúc dữ liệu và thuật giải 1 Data Structures and Algorithms 1	ITEC1427	3	1	Programming techniques
	Cấu trúc dữ liệu và thuật giải 2 Advanced Data Structures and Algorithms 2	ITEC1328	2	1	Data structure and algorithms 1
	Lập trình hướng đối tượng Object-Oriented Programming	ITEC2504	3	1	Programming techniques
	Hệ điều hành Operating System	ITEC2301	3		Computer architecture
	Cơ sở dữ liệu Database	ITEC2502	3	1	Introduction to

					Programming
	Mạng máy tính Computer Networks	ITEC2503	3	1	Computer architecture
	Lập trình giao diện GUI Programming	ITEC2401	2	1	Programming techniques
	Phân tích thiết kế hệ thống System Analysis and Design	ITEC3401	4		Database
c)	<i>Specialized major knowledge</i>		14	11	
	Compulsory courses: Students choose 1 of the following 3 directions:		8	8	
	Database Direction <i>Specialized in database</i>				
	Cơ sở dữ liệu nâng cao Advanced Database	ITEC3402	2	1	Database
	Lập trình cơ sở dữ liệu Database Programming	ITEC3406	2	1	Database, GUI Programming
	Công cụ thiết kế hệ thống thông tin Information System Design Tools	ITEC3407	2	1	System design analysis
	Quản trị hệ cơ sở dữ liệu Database System Administration	ITEC4402	2	1	Database
	Đồ án ngành Major Project	ITEC4401		4	
	Computer Network Direction <i>Specialized in Computer Networks</i>				
	Mạng máy tính nâng cao Advanced Computer Networks	ITEC3409	2	1	Computer network
	Lập trình mạng Network Programming	ITEC3408	2	1	Computer networks, Data structures, and algorithms
	Lập trình web Web Programming	ITEC3403	2	1	Database, Web Applications
	Quản trị mạng Network Administration	ITEC4403	2	1	Computer network
	Đồ án ngành	ITEC4401		4	

	Major Project				
	Hướng Đồ họa máy tính <i>Specialized in Computer Graphics</i>				
	Đồ họa máy tính Computer Graphics	ITEC3410	2	1	Data structure and algorithms, Object-oriented programming
	Công cụ thiết kế đồ họa Graphics Design Tools	ITEC3411	2	1	Analytics, Programming Techniques
	Xử lý ảnh Image Processing	ITEC3404	2	1	Discrete Mathematics, Programming Techniques
	Lập trình đồ họa Graphics Programming	ITEC4404	2	1	Computer graphics
	Đồ án ngành Major Project	ITEC4401		4	
	Elective Courses: <i>Students choose 3 courses in the following courses (or choose the courses in the compulsory courses of other majors)</i>		6	3	
	Trí tuệ nhân tạo Artificial Intelligence	ITEC3413	2	1	Computer mathematics, Object-oriented programming, Data structure, and algorithms
	An toàn hệ thống thông tin Information System Security	ITEC3412	2	1	Programming Techniques, Computer Networks
	Lập trình Java Java Programming	ITEC4407	2	1	Object-oriented programming
	Công nghệ mã nguồn mở Open Source Technology	ITEC4410	2	1	Database, Operating System
	Công nghệ phần mềm Software Engineering	ITEC4409	2	1	Programming techniques, databases

	Quản lý dự án phần mềm Software Project Management	ITEC4408	2	1	System design analysis
	Kiểm thử phần mềm Software Testing	ITEC4415	2	1	System design analysis
	Điện toán đám mây Cloud Computing	ITEC4416	2	1	Operating system
	Hệ thống quản lý nguồn lực doanh nghiệp Enterprise Resource Management System	MISY4403	2	1	System design analysis
	Lập trình trên thiết bị di động Mobile Programming	ITEC4417	2	1	Object-oriented programming
	Chuyên đề Special subject	ITEC4418	2	1	
	Khai phá dữ liệu Data Mining	ITEC3417	2	1	Database
	Thị giác máy tính Computer Vision	ITEC3419	2	1	Programming techniques
76.	Các công nghệ lập trình hiện đại Modern Programming Technologies	ITEC3421	2	1	Web applications
<i>d)</i>	<i>Additional knowledge</i>		2	1	
77.	Tiếng Anh nâng cao 5 Academic English 5	GENG1343	2	1	
3 Internships and graduation thesis (or alternative courses)				10	
78.	Graduation internships	ITEC4899		4	
79.	Graduation thesis	ITEC4699		6	
	Or substitute courses				
	Selected major course		2	1	
	Selected major course		2	1	
Total:			86.5	39.5	

IX. Delivery of the curriculum (*expected*)

No.	Course name	Course code	Credit Volume of knowledge (Theory, Practise, Self-Study)	Remarks
SEMESTER 1				

1.	Linear Algebra	MATH1313	3(2,1,5)	
2.	Academic English 1	GENG1339	3(3,0,6)	
3.	Academic English 2	GENG1340	3(3,0,6)	
4.	Introduction to Informatics	ITEC1401	3(2,1,5)	
5.	Introduction to Programming	ITEC1505	4(3,1,7)	
SEMESTER 2				
1.	Analytics	MATH1314	3(2,1,5)	
2.	Academic English 3	GENG1341	3(3,0,6)	
3.	Academic English 4	GENG1342	3(3,0,6)	
4.	Programming Techniques	ITEC1504	4(3,1,7)	
5.	Computer Architecture	ITEC1303	3(3,0,6)	
SEMESTER 3				
1.	Academic English 5	GENG1343	3(3,0,6)	
2.	Data Structure and Algorithms 1	ITEC1427	4(3,1,7)	
3.	Web Applications	ITEC1404	3(2,1,5)	
SEMESTER 4				
1.	Probability and statistical	MATH1315	3(2,1,5)	
2.	Marxist-Leninist philosophy	POLI1304	3(3,0,6)	
3.	Data Structure and Algorithms 2	ITEC1328	3(2,1,5)	
4.	Operating System	ITEC2301	3(3,0,6)	
5.	Database	ITEC2502	4(3,1,7)	
SEMESTER 5				
1.	Marxist – Leninist Political Economics	POLES120 5	2(2,0,4)	
2.	Object-Oriented Programming	ITEC2504	4(3,1,7)	
3.	Computer Network	ITEC2503	4(3,1,7)	
4.	Discrete Mathematics	MATH3401	4(4,0,8)	
SEMESTER 6				
1.	Scientific Socialism	POLES120 6	2(2,0,4)	
2.	GUI Programming	ITEC2401	3(2,1,5)	
3.	System Analysis and Design	ITEC3401	4(4,0,8)	
SEMESTER 7				

1.	History of Vietnamese Communist Party	POLES120 7	2(2,0,4)	
2.	Elective 1		3(2,1,5)	
	Choose one of the following directions.			
	<i>Database Direction</i>			
3.	Advanced Database	ITEC3402	3(2,1,5)	
4.	Database Programming	ITEC3406	3(2,1,5)	
	<i>Computer Network Direction</i>			
5.	Advanced Computer Network	ITEC3409	3(2,1,5)	
6.	Web Programming	ITEC3403	3(2,1,5)	
	<i>Computer Graphics Direction</i>			
7.	Image Processing	ITEC3404	3(2,1,5)	
8.	Computer Graphics	ITEC3410	3(2,1,5)	
SEMESTER 8				
1.	Ho Chi Minh's Ideology	POLI1208	2(2,0,4)	
2.	Law: Select a course in the Law courses.			
3.	Elective 2			
	Choose one of the following directions.			
	<i>Database Direction</i>			
4.	Database System Administration	ITEC4402	3(2,1,5)	
5.	Information System Design Tools	ITEC3407	3(2,1,5)	
	<i>Computer Network Direction</i>			
6.	Network Administration	ITEC4403	3(2,1,5)	
7.	Network Programming	ITEC3408	3(2,1,5)	
	<i>Computer Graphics Direction</i>			
8.	Graphic Design Tools	ITEC3411	3(2,1,5)	
9.	Graphic Programming	ITEC4404	3(2,1,5)	
SEMESTER 9				
1.	Economic, Social Sciences and Humanities Choose 1 course in the Economics, Social Science and Humanities courses.		3(3,0,6)	

2.	Elective 3		3(2,1,5)	
3.	Major project	ITEC4401	4(0,4,4)	
SEMESTER 10				
1.	Graduation internships	ITEC4899	4(0,4,4)	
SEMESTER 11				
1.	Graduation thesis	ITEC4699	6(0,6,6)	
	<i>Alternative Courses of thesis</i>			
2.	Elective 4		3(2,1,5)	
3.	Elective 5		3(2,1,5)	

X. Curriculum mapping (*Appendix 1*)

XI. Guidelines for implementing the programme (*Appendix 4*)

XII. Course Overview

Course name: **Marxist-Leninist Philosophy**

Course code: POLI1304 Credit: 03

Prerequisites: None

Course description: Marxism-Leninist Philosophy is one of the three constituent parts of Marxism-Leninism, a compulsory course in the curriculum of the *University Sector* throughout the country.

Marxist-Leninist philosophy is about the basic philosophical principles written by Marx, Ph. Eatgghen and V.I. Lenin based on the creation and development of the essence of human philosophy. It is briefly about the practical and intellectual of the time; being the scientific materialistic world and dialectical and revolutionary methodologies. The course includes the most general laws of movement and development of the world in general and the movement and development of society.

The deep meaning and methodology derived from the study of Marxist-Leninist philosophy is of the right guiding value for all human cognitive and practical activities.

Course name: **Marxist-Leninist Political Economy**

Course code: POLI1205 Credit: 02

Prerequisites: None

Course description: The content of the course consists of 6 chapters: In which, chapter 1 discusses the object, research methods and functions of Marxist-Leninist political economy.

From chapters 2 to 6 present the core content of Marxist-Leninist political economy according to the objectives of the course. Specific issues such as: Goods, markets and the role of subjects in the economy and the market; Production of surplus value in the market; Competition and exclusivity in the economy; Socialist-oriented economy and economic interests relations in Vietnam; Vietnam's industrialization, modernization and international economic integration.

Course name: **Scientific Socialism**

Course code: POLI1206 Credit: 02

Prerequisites: *Marxist-Leninist Philosophy, Marxist-Leninist Political Economy*

Course description: The course of scientific socialism is one of the three components of Marxism-Leninism, which is the application of the Marxism-Leninist philosophical methodology and the doctrines of Marxist-Leninist political economy to the study of the inevitable law about the birth and the formation of socialist socio-economic; the legal socio-political issues in the process of socialist revolution in the world and in real life in Vietnam today.

Course name: **Ho Chi Minh 's Ideology**

Course code: POLI1208 Credit: 02

Prerequisites: *Scientific Socialism*

Course description: The course of Ho Chi Minh's Ideology is organized to teach students in the second year of the University. The course equips students with knowledge of the content of Ho Chi Minh's perspective on the fundamental issues of the Vietnamese revolution; About the Communist Party and the State of Vietnam; On national unity and international solidarity; In terms of culture, ethics, people, in which the core content is national independence associated with socialism.

Through this subject, students are enhanced by political bravery, love, loyalty to the goal, ideals of national independence associated with socialism; Understand self-responsibility in learning and training to contribute, to build and to protect the Country.

Course name: **History of the Communist Party of Vietnam**

Course code: POLI1207 Credit: 02

Prerequisites: *Scientific Socialism*

Course description: The course is given to students an understanding of the purpose, mission, research method, the study of the history of the Communist Party of Vietnam including: the basic, core and systematic knowledge of the birth of the Party (1920-1930) the Party's leadership of the struggle for government (1930-1945), leading two resistance wars against French colonialism and American imperialist aggression, completing national liberation, national unification (1945-1975), leading the country to transition to socialism and conducting renovations (1975-2018). Thereby affirming the successes, raising limitations, summary the experiences of the Party's revolutionary leadership to help learners raise awareness, trust in the Party and the ability to apply the learned knowledge in the work and practice, contributing to building and protecting the Socialist of Vietnam.

Course name: **General Sociology**

Course code: SOCI1301

Credit: 03

Prerequisites: None

Course description: This course provides some basic concepts of sociology. This is the foundational course for students to be able to study further courses such as Social History and Modern Sociological Theories, Research Methods in The Social Sciences...

Provide the basic concepts of sociology, introducing some of the basic topics, theories, methods of sociology. At the same time, the course analyzes some social problems by applying the theories and concepts learned.

After completing this course, students have an initial understanding of approaches to sociological theory and characteristics of sociological perspectives; on sociology methods; understanding of the social and cultural constituents; understand the factors that constitute personality; understand the types of social organizations and social institutions; understand social strategic; understanding of the phenomenon of social deviation; Learn the types of collective behavior and social movements and eventually understand social change and modernization.

Course name: **General Psychology**

Course code: SOCI1317

Credit: 03

Prerequisites: None

Course description: General Psychology is a foundational course that provides basic

knowledge of psychology to students. This course will help students understand the object, the research method of general psychology; the nature of psychological phenomena; the basic concepts and terms in psychology as well as partly explain the neural basis of psychological phenomena. This is the premise subject before students have access to specialized knowledge.

Course name: **Vietnam Culture**

Course code: VIET1305

Credit: 03

Prerequisites: None

Course description: This course provides students with a foundational knowledge of Vietnamese culture. Help students better understand the culture of the people to properly recognize the traditional cultural values of Vietnam. Looking back on the national identity and cultural character to preserve, build and develop an advanced Vietnamese culture, national identity.

Course name: **Social Security**

Course code: SWOR1302

Credit number: 03

Prerequisites: None

Course description: The course provides learners with the basic knowledge to be able to study specialized subjects such as individual social insurance, group social insurance, Community Development, ... The course addresses the social security system in the world and in Vietnam and provides a more general, comprehensive, more complete, and scientific perspective to explain and interpret the context of forming some social problems that Vietnamese society is facing such as the problems of the elderly, people with disabilities, prostitution, drugs, poverty, labor migration, ...

Course name: **General Economics**

Course code: SEAS2301

Credit: 03

Prerequisites: None

Course description: General economics is to equip students with the basic knowledge in micro-economic analysis (mechanisms of operation in an economy; decision-making models of individual actors in the economy: consumers and manufacturers...) and the tools needed to analyze macro-economic problems (nation yield, inflation, unemployment,...).

Course name: **Microeconomics 1**

Course code: ECON1301

Credit: 3

Prerequisite: None

Course description: In a centrally planned economy, decisions on resource allocation are made by planners from the Central. In contrast, in a market economy, resources are allocated through a price mechanism. In a market economy, decisions related to consumption and production are decentralized: households decide for themselves how much to do and what to consume; Businesses decide for themselves what, how much and how to produce.

This course consists of four main sections.

The first section will introduce the simple supply, demand and operation model of the market. In addition, the concept of a consumer surplus and a production surplus will also be introduced and used to analyze the impact of price control, tax policy and government subsidies.

The second part of the course studies consumer choice theory and from the fundamentals of optimizing consumer behavior that will build the form of the market bridge line.

The third part studies the behavior of the business in a logical sequence from production theory to cost theory and the principle of profit maximization. Finally, build the supply chain of the business and the market supply chain in a competitive industry.

The fourth part of the course will present models of Exclusivity, group monopolies and exclusive competition to complete the study of product market structures.

Course name: **Macroeconomics 1**

Course code: ECON1302

Credit: 3

Prerequisites: None

Course description: With the basic knowledge of Macroeconomics provided in this course, students can understand the meaning of basic macroeconomic indicators (such as GDP, GNI, CPI, economic growth rate, inflation rate,...), how interest rates are formed in the currency market, as well as the central bank's use of discounted interest rates, reserves and open market operations as tools to change the money supply in the economy. In addition, students can distinguish between the concepts of devaluation - up price, price raising -

devaluation of a currency and explain the formation of exchange rates in the foreign currency market and how the government can intervene in the foreign currency market in each exchange rate mechanism.

On the basis of how balanced output is defined in Keynes's multiplier model, combined with knowledge in the currency and foreign currency markets, students will be introduced to the IS-LM model, the total supply-demand model so that it can be understood that when the government implements monetary and fiscal policy, the output How is inflation and unemployment affected? Finally, through the total supply-demand model, students can explain the relationship between inflation and unemployment in the short and long term.

Course name: **Principles of Accounting**

Course Code: ACCO1325

Credit: 03

Prerequisites: None

Course description: The course equips the basic knowledge base of accounting for students to read and understand accounting information and describe the accounting process in a business, serving for the decision making of management and finance. In addition, the subject is equipped with some accounting techniques such as account, double bookkeeping, pricing, ... to practice accounting in commercial and manufacturing enterprises.

Course name: **Principles of Management**

Course Code: BADM1364

Credit: 03

Prerequisites: None

Course description: Principles of Management is the foundational course of Business Administration, which will be studied first in the program, helping students to have core knowledge of management. On the basis of academic management, students will study subjects such as Human Resource Management, Marketing Management, Project Management, Strategic Management, and a lot of other majors and disciplines.

Course name: **Entrepreneurship**

Course code: BADM1390

Credit: 03

Prerequisites: None

Course description: This course provides basic knowledge of the process of starting a

new business in a market. The course presents the core contents such as: Overview of start-ups, the process of creating and generating business ideas, assessing the opportunities of business projects in the market, legal issues in entrepreneurship, start-up plans and development strategies of enterprises in the early stages of formation and development.

Course name: **Introduction to Law**

Course Code: GLAW1315

Credit: 3

Prerequisites: None

Summary description: Introduction to Law is a course in general education knowledge. The course presents the basic concepts of the State and law, including: Origin, nature, characteristics, functions of the State, state type, state form and structural analysis of the State apparatus, functions and competences of state agencies in the State apparatus of Vietnam; Origin, nature, characteristics of law, legal type, legal regulation, legal relations, consciousness and implementation of law, violations of law, liability, and form of law; An overview of the legal system and legal branches in the Legal System of the State of Vietnam, presenting the basic contents of the Administrative Law, Criminal Law, Criminal Procedure Law, Civil Law and Civil Procedure Law, Labor Law, Marriage and Family Law, Anti-corruption law.

Course name: **Theories of State and Law**

Course Code: BLAW1301

Credit: 3

Prerequisites: None.

Course description: The course of state theory and law is the subject in the general education knowledge. This subject equips students with theories of origin, originality, and state style; functions, forms and apparatus of the state; origin, nature and legal type; functions and forms of law; legal provisions; legal relations; legal awareness; implementation and application of the law; Violations of law and liability.

Course name: **Linear Algebra**

Course Code: MATH1313

Credit: 3

Prerequisites: None.

Course description: This course is organized to teach first-year students at the

University. The course equips students with the knowledge of: Matrix, Determinant, Linear Equation System, Vector Space, Eigenvalues and eigenvectors, Duality, Global Forms, and some Practical Applications.

Through this subject, students are trained in the skills of synthesis, analysis, reasoning, and problem solving.

Course name: **Analytics**

Course code: MATH1314

Credit: 03

Prerequisites: None

Course description: This course is organized to teach first-year students at the University. This course equips students with knowledge about functions, derivatives, differential, integral, applications of integral, differential equation, multivariable function.

This course trains students in the skills of synthesis, analysis, reasoning, and problem solving.

Course name: **Probability and Statistics**

Course code: MATH1315

Credit: 03

Prerequisites: None

Course description: This course belongs to the foundational knowledge section, which has a role to provide basic knowledge of probability and statistics as the fundamentals for the major and can be applicable in life. The course introduces the basics of probability theory and applied statistics including: probability, the law of probability distribution of random variables, descriptive statistics, sample theory, parameter estimates, hypothetical testing and single linear regression, and statistical processing with R software at a basic level.

Course name: **Introduction to Informatics**

Course code: ITEC1401

Credit: 03

Prerequisites: None

Course description: Introduction to Informatics is the first course about Information Technology (IT) in the training program.

The course equips students with an overview of the IT major, general overview and the history about the development and formation of the IT industry, fundamental knowledge

of basic informatics such as: structure and operation of computers, data representation in computers, common counting systems, operating system concepts, basic about computer networks.

The course provides knowledge as a foundation for students to have a good sense of office informatics software (text editing, worksheet processing, presentation). In addition, the course also introduces a generalization of IT careers to students.

Course name: **Academic English 1**

Course Code: GENG1339

Credit: 03

Prerequisites: None

Course description: Academic English 1 is a mandatory course in the official training program framework for non-English-major students. This is the first of 5 courses to supplement language knowledges and skills to help students achieve intermediate level (equivalent to B1) under Vietnam's foreign language proficiency framework.

Course name: **Academic English 2**

Course Code: GENG1340

Credit: 03

Prerequisites: None

Course description: Academic English 2 is a mandatory course in the official training program framework for non-English-major students. This is the second of 5 courses to supplement language knowledges and skills to help students achieve intermediate level (equivalent to B1) under Vietnam's foreign language proficiency framework.

Course name: **Academic English 3**

Course Code: GENG1341

Credit: 03

Prerequisites: None

Course description: Academic English 3 is a mandatory course in the official training program framework for non-English-major students. This is the third of 5 courses to supplement language knowledge and skills to help students achieve intermediate level (equivalent to B1) under Vietnam's foreign language proficiency framework.

Course name: **Academic English 4**

Course Code: GENG1342

Credit: 03

Prerequisites: None

Course description: Academic English 4 is a mandatory course in the official training program framework for non-English-major students. This is the fourth of 5 courses to supplement language knowledges and skills to help students achieve intermediate level (equivalent to B1) under Vietnam's foreign language proficiency framework.

Course name: **Physical Education 1**

Course Code: PEDU0201

Credit: 1.5

Prerequisites: None

Course description: Physical Education 1 belongs to the general education knowledge in the training program of all faculties. The course equips students with the necessary knowledge, skills and attitudes to help students know how to use exercise as a means to improve health, the ability to coordinate movement and promote the beauty of the body.

Course name: **Physical Education 2 - Volleyball**

Course Code: PEDU0202

Credit: 1.5

Prerequisites: None.

Course description: Physical Education Subject 2 –Volleyball belongs to the general education knowledge in the training program of all faculties. The course provides the basic knowledge and skills of volleyball such as: history about the formation and development of volleyball, the meaning of the effect of volleyball training, volleyball techniques - tactics and volleyball exercises to develop physical fitness, how to prevent common injuries in volleyball training and competition.

Course name: **Physical Education 2 - Football**

Course Code: PEDU0203

Credit: 1.5

Prerequisites: None

Course description: Physical Education 2 - Football belongs to the general education knowledge in the training program of all faculties. The course aims to equip and provide the basic knowledge and skills of football: History of Football formation and development, the meaning of the effect of Football training, tactical techniques of Football, methods of

organizing Football competitions, Football exercises to develop fitness, tactical exercises in football competitions.

Course name: **Physical Education 2 - Badminton**

Course Code: PEDU0204 Credit: 1.5

Prerequisites: None

Course description: Physical Education 2 – Badminton belongs to the general education knowledge in the training program of all faculties. The course aims to equip and provide the basics of Badminton. Introducing the history of Badminton formation and development, the meaning of the effect of Badminton training, tactical techniques of Badminton, methods of organizing Badminton competitions, exercises to develop physical fitness, tactical exercises in Badminton.

Course name: **Physical Education 2 - Martial Arts**

Course Code: PEDU0205 Credit: 1.5

Prerequisites: None

Course description: Physical education 2 - Martial Arts belongs to the general education knowledge in the training program of all faculties. The course provides the basics of Martial Arts, helping students improve their health while equipping them with the skills and techniques of Martial Arts and Self-Defense associated with daily life.

Course name: **Physical Education 2 - Table Tennis**

Course Code: PEDU0206 Credit: 1.5

Prerequisites: None

Course description: Physical Education 2 - Table Tennis belongs to the general education knowledge in the training program of all faculties. The course provides the basic knowledge and skills of Table Tennis such as: History of Table Tennis formation and development, the meaning of the effect of Table Tennis training, techniques - tactics and exercises to develop fitness, how to prevent common injuries in the practice and how to run a competition of Table Tennis.

Course name: **Physical Education 2 - Swimming**

Course Code: PEDU0207

Credit: 1.5

Prerequisites: None

Course description: Physical Education 2 - Swimming belong to the general education knowledge in the training program of all faculties. The course equips students with the necessary knowledge and skills and attitudes, helping students understand the implications of Swimming practice, breaststroke technical exercises and how to effectively use them in life to improve health and prevent accidents in water environments.

Course name: **Physical Education 2 - Basketball**

Course Code: PEDU0208

Credit: 1.5

Prerequisites: None

Course description: Physical Education 2 - Basketball belongs to the general education knowledge in the training program of all faculties. The course aims to equip and provide the basics of basketball. Introducing the history of Basketball formation and development, the meaning of the effect of training, tactical techniques of Basketball, methods of organizing Basketball competitions, exercises to develop fitness, tactical exercises in basketball competitions.

Course name: **National Defense and Security Education**

Course Code: DEDU1801

Credit: 08

Prerequisites: None

Course description: The course equips students with the necessary knowledge about Defense and Security, a number of tasks of Defense and Security of the Party and the State in the new situation, including the main contents on building militia and self-defense forces, reserved military, high-tech war prevention, defeating the strategy of "peaceful evolution", subversion riots of hostile forces against the Vietnamese revolution; protecting territorial sovereignty, borders, national security; combating violations and social evils, building a movement of the whole people to protect the national security.

Training army-team skills, practicing AK submachine gun shooting; training the basic movements of infantry combat tactics, the actions of each person in the military, in addition to the offensive and defensive combat.

Course name: **Introduction to Programming**

Course code: ITEC1505

Credit: 04

Prerequisites: None

Course description: Introduction to Programming is the first programming course for IT students, gives students step-by-step access to the knowledge and skills to write the program on a computer.

This course provides the foundational knowledge in programming such as how to find out an algorithm, represent an algorithm, data types, programming operations and control structures of the programming language used to write computational programs from simple to complex. The programming language used for illustration is C++.

Course name: **Computer Architecture**

Course code: ITEC1303

Credit: 03

Prerequisites: *Introduction to Informatics*

Course description: Computer Architecture provides students with basic knowledge of the structure and operation of computers. The content of the course includes: Introduction to computer architecture, logic circuit, clock and bus, processor, memory, script. Master the knowledge of computer architecture as the foundation so that students can continue to study courses such about the computer system such as Operating System, Computer Network.

Course name: **Programming Techniques**

Course code: ITEC1504

Credit: 04

Prerequisites: *Introduction to Programming*

Course description: Programming Engineering equips students with some subsequent knowledge of structural programming that has not been mentioned in the course of Introduction to Programming.

Course content includes multidimensional arrays, recursive, cursors, character strings, self-generated data types, and file operations. The programming language used for illustration is C++.

Course name: **Web Application**

Course code: ITEC1404

Credit: 03

Prerequisites: *Introduction to Programming*

Course description: This subject equips students with the basics of HTML, JavaScript language, CSS, jQuery; how programming handles dynamic websites on the browser side, using some popular Web design software

The above knowledge enables students to design web applications at a basic level and provides the foundation for learning web programming course later. This course also equips students with the knowledge and skills needed to handle coursework projects, graduation project and practical application after graduation.

Course name: **Discrete Mathematics**

Course code: MATH3401

Credit: 04

Prerequisites: None.

Course description : Discrete Mathematics is the theoretical basis for the representation and study of discrete objects in Computer Science and Engineering, especially on abstract issues, which is also the type of specific object that digital computers can store and handle the best. Discrete Mathematics is the mathematical basis for the modeling, and formalization of computer-based information systems. These contents are important to help students further understand abstract aspects of the structure and operation of computing systems.

Course name: **Data Structure and Algorithm 1**

Course code: ITEC1427

Credit: 04

Prerequisites: *Programming Techniques*

Course description: Data structure is one of the fundamental courses of computer science, equips students with problem-solving algorithms and helps them identify the complexity of algorithms.

This subject includes the following contents: static list, linked list, binary search tree, hash table, B-tree and sorting and searching algorithms.

Course name: **Data Structure and Algorithm 2**

Course code: ITEC1328

Credit: 03

Prerequisites: *Data Structure and Algorithm 1*

Course description: this course is fundamental knowledge, equips students with

approaches to solve problems, to design and to analysis algorithms.

This course includes the following contents: heapsort, quick sort, counting sort, bucket sort. Besides, the course also includes graphs, graph searching algorithms (BFS, DFS), the shortest path algorithm (Dijkstra, Bellman-Ford), the smallest spanning-tree algorithm (Kruskal, Prim).

Course name: **Object-Oriented Programming**

Course code: ITEC2504 Credit: 04

Prerequisites: *Programming Techniques*

Course description: This course equips students with general knowledge of object-oriented programming, gives students the ability to solve problems in an object-oriented mindset, and uses Unified Modeling Language (UML) class diagram to design classes and relationships between classes. Completing the subject, students are well aware of object-oriented programming characteristics including abstraction, packaging, inheritance and polymorphism, and have the ability to program in the object-oriented Java language.

Course name: **Operating System**

Course code: ITEC2301 Credit: 03

Prerequisites: *Computer Architecture*

Course description: Operating system is a course of the fundamental knowledge, provides basic knowledge of operating system principles including process/thread management, memory management, file management and input/output devices.

Course name: **Database**

Course code: ITEC2502 Credit: 04

Prerequisites: *Introduction to Informatics*

Course description: The course equips students with basic knowledge of the database, helping students understand the meaning and role of the database, knowledge of relational databases, SQL database query language, and database standardization.

The course provides the knowledge that helps students' continuing studies in Advanced Database and System Design Analysis and helps students in building software applications that use databases when making projects, topics, or working after graduation.

Course name: **Computer Network**

Course code: ITEC2503 Credit: 04

Prerequisites: Computer Architecture

Course description: Computer network is a course of the major knowledge in the university training program of Information Technology, Computer Science and Management Information Systems. This course is to provide basic knowledge and skills about computer networks

Course name: **GUI Programming**

Course code: ITEC2401 Credit: 03

Prerequisites: Programming techniques

Course description: This course provides students with knowledge about GUI programming, improving programming skills with graphical interface with intuitive tools, building Windows Form application using C#.Net language with professional programming environment in Microsoft Visual Studio .NET

This subject is a premise for students to study well other programming languages, and a support platform for students to do programming topics as well as software projects after graduation.

Course name: **System Analysis and Design**

Course code: ITEC3401 Credit: 04

Prerequisites: *Database*

Course description: The course equips students with the knowledges about the concepts, principles, and contents of the work that needs to be done to improve / to build a new part or all parts of the Information System.

The course provides the fundamental knowledge that students can implement the basic tasks and works, specific tasks and works in each stage of the process to build a new part or all parts of the Information System

Course name: **Advanced Database**

Course code: ITEC3402 Credit: 03

Prerequisites: *Database*

Course description: The course provides students with basic knowledge and skills about distributed databases, design principles, and the basic tasks of a fragmented database.

Course name: **Database Programming**

Course code: ITEC3406 Credit: 03

Prerequisites: *Database, GUI Programming*

Course description: The course provides students with knowledges and skills of application programming that interacts with databases (relational databases, XML) by ADO.NET. The application is built in a 3-layer architecture and uses modern programming techniques in application development such as LINQ, Entity Framework.

Course name: **Information System Design Tools**

Course code: ITEC3407 Credit: 3

Prerequisites: *System Analysis and Design*

Course description: The course gives students the reinforcement and development of skills in analysis, design, development of a part or all parts of an information system. Specifically, students can approach analysis, design, and implementation of management information systems using modern tools (such as Power Designer). In addition, skills in database analysis and design based on a combined entity model that uses SQL language to query data have also been developed. Through this, students can present the concepts of software technology and software manufacturing processes, specific in software analysis, design, and construction.

In addition, the course creates an environment for students to practice a sense of responsibility and professional ethics: virtuosity, prestige, professional behavior and awareness of the importance and ability to fulfill responsibility for individuals, communities, and the country.

Course name: **Database System Administration**

Course code: ITEC4402 Credit: 03

Prerequisites: *Database*

Course description: This course equips students with the basics of managing a database

system (DATABASE) including system administration of databases, management of data storage files, user administration, security and decentralization administration, automation of administrative tasks.

The course provides knowledge of the mechanism of operation of the environment using client-server-based databases, knowledge of backup, data recovery, operational monitoring to fix errors and improve database systems.

This course provides DBA skills so that students after graduate can work as database administrators in a real-world environment.

Course name: **Major Project**

Course code: ITEC4401

Credit: 04

Prerequisites: *Students who have studied all the fundamental courses and specialized courses of the major related to the content of the taken project.*

Course description: This subject is for students who have completed all the fundamental courses and specialized courses in the program, related to the content of the major project. The course requires students to implement a project of the major that the students are attending to.

The content of the project includes the knowledge, skills which are provided and relevant expanded knowledge and skills. The result of the project requires learning and formulating a solution to a problem in theory or/application and writing a report on the project. During the implementation of the project, students are given scientific guidance by the instructor. At the end of the course, if approved by the instructor, students will report the project to be tested and evaluated results.

Course name: **Advanced Computer Network**

Course code: ITEC3409

Credit: 03

Prerequisites: *Computer Network*

Course description: This course provides students with knowledge of the process of transmitting information online, the operating principles of networked devices, the principles of operation and structure of the basic protocols in the TCP/IP protocol family, the basic concepts of cybersecurity and the implementation of the installation of network infrastructure services.

This course knowledge is the basis for students to study other parts in the network major.

Course name: **Network Programming**

Course code: ITEC3408 Credit: 03

Prerequisites: *Computer Network, Data Structure and Algorithms*

Course description: This course provides students with basic knowledge and skills about network application modeling and how to program network applications through the socket programming interface.

The course also introduces a number of libraries that support network programming in an object-oriented approach, with students capable of developing network applications based on the Windows Socket API (Winsock API) and support libraries.

Course name: **Web Programming**

Course code: ITEC3403 Credit: 03

Prerequisites: *Databases, Web applications*

Course description : Web Programming course provides students with the knowledge and skills needed to build Web applications using PHP language and ASP.NET technology.

This subject is the foundation for students to carry out coursework projects, graduation thesis courses, while providing the knowledge and skills that employers of software companies often require from candidates.

Course name: **Network Administration**

Course code: ITEC4403 Credit: 03

Prerequisites: *Computer Network*

Course description: Network management is a subject of computer networking in the computer science training program.

The course focuses on the role of computer network management, the components that constitute computer network management systems, and provides the basic knowledge and skills in establishing and managing local network systems.

Course name: **Major Project**

Course code: ITEC4401

Credit: 04

Prerequisites: *Students who have studied all the fundamental courses and specialized course of the major related to the content of the taken project.*

Course description: This subject is for students who have completed all the fundamental courses and specialized courses in the program, related to the content of the major project. The course requires students to implement a project of the major that the students are attending to.

The content of the project includes the knowledge, skills which are provided and relevant expanded knowledge and skills. The result of the project requires learning and formulating a solution to a problem in theory or/application and writing a report on the project. During the implementation of the project, students are given scientific guidance by the instructor. At the end of the course, if approved by the instructor, students will report the project to be tested and evaluated results.

Course name: **Computer Graphics**

Course code: ITEC3410

Credit: 03

Prerequisites: *Data structure and algorithms, Object-oriented programming*

Course description: Belonging to the specialized course of computer graphics, the course provides the basics of computer graphics processing processes and basic algorithms in two-dimensional and three-dimensional graphics.

Course name: **Graphic Design Tool**

Course Code: ITEC3411

Credit: 03

Prerequisites: *Calculus, Programming Techniques*

Course description: The course provides students with knowledge and skills in programming of image processing, image transformation, schema, contouring, ... by OpenCV

Course name: **Photo Processing**

Course code: ITEC3404

Credit: 3

Prerequisites: *Calculus, Programming Techniques*

Course description: An overview of digital images and methods of performing and processing digital images through the problems of: Compressing photos, transforming photos,

processing advanced image quality, image partitioning, image recognition

Course name: **Graphic Programming**

Course code: ITEC4404

Credit: 3

Prerequisites: *Computer Graphics*

Course description: This is a subject in the computer graphics class, the subject provides the basics of three-dimensional graphics processing programming with OpenGL graphics programming interface

Course name: **Major Project**

Course code: ITEC4401

Credit: 04

Prerequisites: *Students who have studied all the fundamental courses and specialized courses of the major related to the content of the taken project.*

Course description: This subject is for students who have completed all the fundamental courses and specialized courses in the program, related to the content of the major project. The course requires students to implement a project of the major that the students are attending to.

The content of the project includes the knowledge, skills which are provided and relevant expanded knowledge and skills. The result of the project requires learning and formulating a solution to a problem in theory or/application and writing a report on the project. During the implementation of the project, students are given scientific guidance by the instructor. At the end of the course, if approved by the instructor, students will report the project to be tested and evaluated results.

Course name: **Artificial Intelligence**

Course code: ITEC3413

Credit: 3

Prerequisites: *Informatics mathematics, Data Structure & algorithm, Object-oriented programming*

Course description: This course provides students with basic concepts of artificial intelligence along with research and application orientations, fundamental techniques for complex problem solving, several methods of knowledge representation and reasoning. Students are also introduced to some other techniques of AI such as machine learning,

artificial neural networks. In terms of application, students will learn some small application design patterns of the type of knowledge base systems or intelligent systems.

Course name: **Information System Security**

Course code: ITEC3412

Credit: 03

Prerequisites: *Programming Techniques, Computer Networks*

Course description: This course provides knowledge of information system safety principles and techniques, detection and prevention of cyber intrusions, and the preservation of personal computer and network data.

After completing this course, students can understand the importance of data security. Students can establish, maintain, and secure the information systems

Course name: **Java Programming**

Course code: ITEC4407

Credit: 03

Prerequisites: *Object-oriented Programming*

Course description: This subject provides students with basic to advanced Java programming knowledge, focusing on introducing JavaFX technology to develop RIA (Rich Internet Application) and JSF applications for web applications. Besides using JDBC to interact with the database, the course provides knowledge using an ORM (Object Relational Mapping) solution that interacts with the database, it is Hibernate framework.

Course name: **Open-Source technology**

Course code: ITEC4410

Credit: 03

Prerequisites: *Database, Operating System*

Course description: The course provides students with a fundamental knowledge of open-source technology such as: concepts, business models of open source, types of copyright, advantages and limitations of open source, some open source operating systems, some applications of the open source community are being commonly used.

The course also showcases some of the typical technologies for software developers that are commonly used in the open-source community such as GitHub, Eclipse, Maven, and PostgreSQL.

Course name: **Software Technology**

Course code: ITEC4409

Credit: 03

Prerequisites: *Programming Techniques, Databases*

Course description: This subject equips students with general knowledge about software technology, software development processes. Completing the subject students grasp important methods in each stage of the software development process such as identifying, analyzing requirements, modeling systems and testing software

Course name: **Software Project Management**

Course code: ITEC4408

Credit: 03

Prerequisites: *System design analysis*

Course description: The course aims to equip the basics of progress, activities, methods, tools, and some skills to manage a software project. Through the course, students can participate in the construction of a software project, control the project, and can use several tools for project administration.

Course name: **Software Testing**

Course code: ITEC4415

Credit: 03

Prerequisites: *System Analysis and Design*

Course description: This course equips students with general knowledge of software testing, analytical skills, software requirements assessment to design test cases, methods to detect potential errors that are likely to occur from software requirements. The course also offers manual software testing techniques and automated testing.

Course name: **Cloud Computing**

Course code: ITEC4416

Credit: 03

Prerequisites: *Operating System*

Course description: This subject equips students with general knowledge of cloud computing, virtualization, private cloud setup skills with VMware vSphere. Completing the course, students understand and apply cloud computing services, develop cloud applications, and install their own cloud.

Course name: **Enterprise Resource Management System**

Course code: MISY44

Credit: 03

Prerequisites: *System Analysis and Design*

Course description: The course provides basic knowledge of integrated business enterprise systems (ERP) through the analysis of the production and business activities of the enterprise based on the specific ERP system.

Therefore, the subject develops analytical skills, designs and develops part or all of the information system. Students will be trained in problem identification and solving skills, a sense of responsibility and professional ethics: honesty, prestige; professional behavior; a sense of importance and the ability to fulfill responsibility for individuals, communities and the country.

Course name: **Mobile Programming**

Course code: ITEC4417

Credit: 3

Prerequisites: Object-oriented programming

Course description: The course provides students with knowledge and skills in the field of application development for mobile devices such as application development environments, application design approaches, tools and support libraries for creating, testing and deploying applications. Key topics include user interface design, application lifecycle, multi-submission, communication between applications, data storage and access, background services, location, maps, networks, web services, phones, messages, etc. Illustrated subject content on Android operating system

Course name: **Special Subject**

Course code: ITEC4418

Credit: 03

Prerequisites: *All compulsory courses and specialized knowledge courses*

Course description: This course belongs to the elective courses, equips students with insight-view about the solutions/technologies that are/will be applied in practice of the industry. For this purpose, this course has the following characteristics:

- It is possible to organize specific topic for each sub-major.
- The specific content of the course will be decided at the time of the implementation of the course

Course name: **Data mining**

Course code: ITEC3417

Credit: 03

Prerequisites: *Database*

Course description: Data discovery is the process of discovering new and useful knowledge in the form of potential in an existing data source. The goal of data mining is to use data processing algorithms to turn raw data into understandable structured data for further use. These algorithms are synthesized from a variety of fields in computer science such as artificial intelligence, machine learning, statistics, and database systems.

Course name: **Computer Vision**

Course code: ITEC3319

Credit: 03

Prerequisites: *Programming Techniques*

Course description: The course contributes to the question of how computers understand the human visual world. The main topics of the subject include the problem of camera image creation, identification through global performance, local characteristics, object classification, motion estimate

Course name: **Modern Programming Technologies**

Course code: ITEC3421

Credit: 03

Prerequisites: *Web Application*

Course description: The course aims to provide students with new technological updates in application development programming. Upon completion of the course, students can research on their own, learn new technologies for application development, especially the ability to develop client-server interaction applications with Restful APIs, and hybrid applications.

Course name: **Academic English 5**

Course Code: GENG1343

Credit: 03

Prerequisites: None.

Course description: Academic English 5 is mandatory course in the official training

program framework for non-English-major students. This is the last of 5 courses to supplement language knowledge and skills to help students reach the pre-intermediate level (equivalent to B1) under Vietnam's foreign language competence framework.

Course name: **Graduation Internship**

Course code: ITEC4899 Credit: 04

Prerequisites: None.

Course description: A graduation internship is a course held in the last semester of the training program, when students have been equipped with the basic knowledge, as well as specialized knowledge. This course not only gives students the opportunity to apply the learning knowledges and skills in practice, but also help students to have practical environment, understand how the operation and working process of a business takes place when there is the application of Information Technology.

This course requires students to perform their assigned works / tasks, required at the internship partner. These jobs can be activities of intern employees. In particular, they may be the form of a project, or major assignment. When performing a graduate internship, students will be in charge of a faculty for follow-up and at the same time professional guidance. During the internship period, students will submit the graduation internship report and the assessment slip of the internship place for the Faculty to examine and evaluate the results. The implementation of graduation internships must comply with regulations, according to the faculty's notice of specific timelines, explanation report forms and other regulations.

Course name: **Graduation Thesis**

Course code: ITEC4699 Credit: 6

Prerequisites: None

Course description: The graduation thesis is for students who have completed all the compulsory specialized courses. The students must meet the conditions of the academic score of the Faculty and have the desire to conduct the Graduation Thesis.

The graduation thesis requires students to undertake a course in the form of a project or a big assignment, which relates to the specialized knowledge of the major. When conducting the thesis, students will propose or be assigned the topic and given scientific

guidance by the instructor. After completing, students will submit the course report and the products, solutions and software that have been implemented to be tested and evaluated results.

The implementation of the graduation thesis, students must comply with the regulations and notifications of the Faculty on the timelines, the form of the explanation report and other regulations on the defense of the thesis. Previous course: students must study all the compulsory specialized courses.

XIII.Detailed course specifications (Appendix 3)

**Rector of Ho Chi Minh City
Open University**

Nguyen Minh Ha