

PROGRAM SPECIFICATION

GENERAL INFORMATION
1. Title of program, Program code
Bachelor of Engineering in Information System (BEIS), 7480104
2. Vietnam Qualifications Framework level of award
Undergraduate - Level 6
3. Cohorts that this program specification is relevant to
2018
4. Awarding institution
Thu Dau Mot University
5. Administrative faculty
Institute of Engineering and Technology
6. Website of the faculty
https://et.tdmu.edu.vn
7. Final award title
Degree of Engineer in Information System
8. Job titles of graduates
<ul style="list-style-type: none"> - Database and information system administrator - Analyst and designer of information systems - Data analyst and designer - Specialist in developing desktop, Web and mobile applications - Information technology project manager - Information system consultant - Researching in scientific institutes and research institutes; - Teaching Informatics for High Schools or Schools with Informatics Training; - Studying for postgraduate studies in IT majors.
9. Competency of program graduates
<ul style="list-style-type: none"> A. Analyze user requirements B. Determine system requirements C. Develop a system development plan D. Design systems E. Design system components F. Conduct detailed design G. Building program H. Deploy, maintain and upgrade the system I. Conduct general testing J. Think critically, systematically and creatively K. Communicate effectively, build and develop relationships with colleagues, partners and customers L. Conduct lifelong learning M. Qualities, attitudes, professional behavior, service to the community and society O. Apply natural and social knowledge to solve information system problems.
10. Admission criteria
<p>The university applies the entrance enrollment method in 04 methods:</p> <ul style="list-style-type: none"> - Method #1: Reviewing the candidates' academic records (through 02 approaches) + Approach #1: Reviewing the candidates' average score from their Grade 11 (semester 1 & 2) and Grade 12 (semester 1) for selected courses. + Approach #2: Reviewing the candidates' total average score from their Grade 12 (semester 1 & 2) for all courses.

- Method #2: Reviewing the candidates' results for the High School Graduation Exam in 2021 for selected courses.
- Method #3: Direct admission (for 02 special cases).
- + Special Case #1: Candidates who achieved excellent performance during at least one of their high school year (grades 10, 11 or 12)
- + Special Case #2: Based on the current regulations for admission from the Ministry of Education and Training.
- Method #4: Reviewing the candidates' results from the Academic Performance Test organized by the National University, Ho Chi Minh city. This is a 150-minute test consisting of 120 multiple-choice questions with a 3-part structure: language use; mathematics, logical thinking, and data analysis; problem solving.

The preferred subject groups for the program include: A00, A01, C01, D90, which are suitable for the requirements for learning of the program.

11. Length of program and mode of study

Mode of study: Face to face

Length of program: 4 years

12. Language of delivery

Vietnamese

13. Academic quality assurance

Quality Assurance

Quality is conformity. Quality assurance in universities is viewed as systematically managed and has evaluation processes to monitor university performance. Source: The Regional Report of Asia and the Pacific, UNESCO, 2003b

Internal quality assurance system

The university's internal quality assurance system consists of three levels: strategic, systemic and operational according to the AUN-QA model. The strategic level sets out development orientations and affirms the quality goals that the whole university has agreed to set. The system level plays the role of planning and action plan, directing the implementation, monitoring, collecting feedback from stakeholders to evaluate the educational quality of the university and implement the university's external assessment and inspection plans. The operational level implements action plans and programs to achieve the university's quality goals, studies stakeholder feedback, self-assessment, and participates in external accreditation and assessment to draw conclusions. Lessons learned for continuous quality improvement. The university has a mechanism to collect comments and feedback from stakeholders. All programs of the University are reviewed and improved every 5 years, and minor improvements at course level every year.

14. Program leaders and recruitment support staff

- Director: Dr. Bui Thanh Hung, hungbt@tdmu.deu.vn

- Deputy Director: Nguyen Thi Thuy, thuynt1982@tdmu.edu.vn

- Secretary: Vo Thi Diem Huong, huongvtd@tdmu.edu.vn

DETAILED INFORMATION

15. Internationalization/ globalization

The program has links with universities, businesses at home and abroad.

- Universities: Ho Chi Minh City University of Information Technology, Ho Chi Minh City University of Technology, University of Natural Sciences, Ton Duc Thang University

- Enterprises: FPT software, TMA Solutions, VNPT Binh Duong, SaiGon Tech, TMA Solutions Company, Nest Tech VN, P&S, Inovation Software, ISC Quang Trung, ..

- Cisco Academy, ACM, RMIT University, National University of Singapore-NUS, University of Texas.

In addition, the Program has students in the ASEAN region participating in the study (Lao students). Students can participate in international academic exchange activities by topic with students from countries in the region, besides the university has international exchange activities to create a multicultural environment.

16. Program educational objectives (POs)

Within the first few years after graduation, graduates will be able to:

- PEO 1: Become a technically-qualified engineer who can solve complex problems and adapt to the advancements in the field of Information Systems through the application of principles, tools, and practical skills.
- PEO 2: Demonstrate technical leadership in specialized, cross-functional teams; and in national and international projects through a professional, innovative, ethical, and socially-responsible manner.
- PEO 3: Actively contribute to the development of new knowledge and advanced technological solutions that lead to innovations in the field of Information Systems, thus benefitting the community.

17. Benchmarking

University of Information Technology Ho Chi Minh City, University of Technology Ho Chi Minh City, University of Natural Sciences, Ton Duc Thang University and foreign programs such as ACM, RMIT University, National University of Singapore-NUS, University of Texas

18. Program learning outcomes (PLOs)

The Program’s Learning Outcomes (PLOs)		The Program’s Performance Criteria (PPC)
KNOWLEDGE		
General Knowledge		
PLO 1	General knowledge: Apply knowledge related to Mathematics, Science, Politics, and Law in order to solve complex problems of the Information System industry.	1.1 Interpret issues using mathematical terms; select and implement appropriate calculation methods in order to solve these issues.
		1.2 Apply mathematical models in order to solve the complex problems of the Information System industry.
		1.3 Apply appropriate knowledge of Natural Sciences in order to solve the complex problems of the Information System industry.
		1.4 Apply appropriate knowledge of Politics and Law in order to solve the complex problems of the Information System industry.
Professional Knowledge		
PLO 2	Engineering knowledge: Analyze user’s requirements and the influence of economic, political, social, and environmental factors on information systems in order to create information systems that can satisfy these	2.1 Conduct preliminary surveys, including: analyzing user's objectives and the scope of the system; proposing different solutions; analyzing the costs and benefits of each solution; analyzing the influence of political, social, and environmental factors on the solutions;

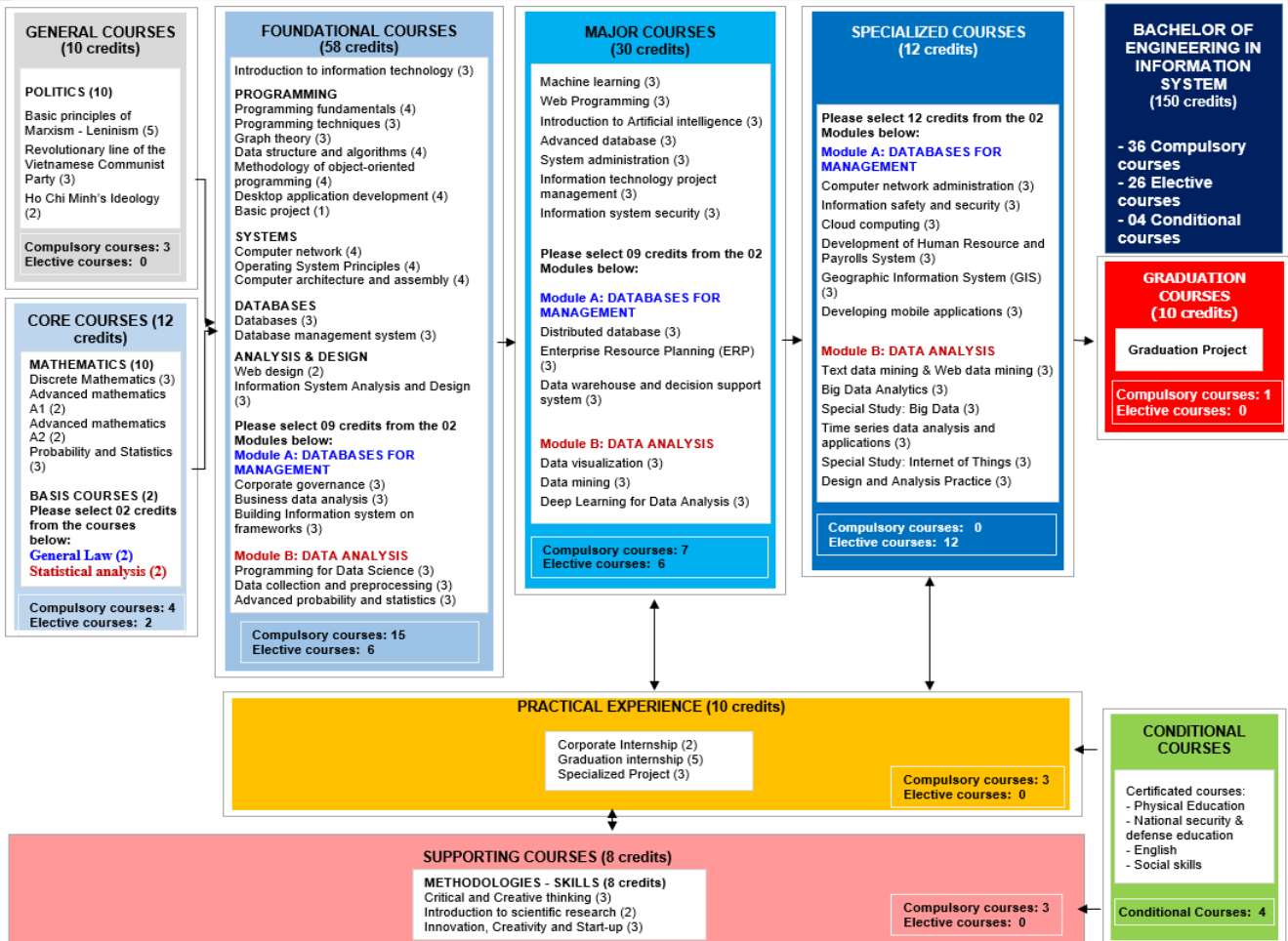
	requirements and adapt to these factors.	conducting preliminary planning; and making recommendations.
		2.2 Perform system analysis, including: defining user's requirements, evaluating existing systems, recommending new systems, defining system functions, and describing the performance of the systems being offered.
PLO 3	Development and Design of Solutions: Design the procedures and the components of information systems that can satisfy pre-determined requirements through the application of concepts, theories, models, modern techniques, and appropriate approaches.	3.1 Conduct system designing, including: describing in detail a system's features and operations using screen layouts, process flow diagrams, pseudo code, and other documentation.
		3.2 Conduct software development based on the application of programming knowledge, AI-based processing techniques, and process-based system development.
		3.3 Assess the products' (software, information systems, etc.) level of responsiveness to quality standards and user's requirements.
SKILLS		
General Skills		
PLO 4	Thinking skills: Apply critical thinking, creative thinking, and problem-solving skills effectively within the context of the Information Technology industry.	4.1 Demonstrate critical thinking in the process of analyzing and evaluating sources of written and spoken communication.
		4.2 Demonstrate reasoning skills in the process of analyzing and evaluating information and scientific arguments.
		4.3 Demonstrate problem-solving abilities, including: identifying the problems, knowing when and how to gather information, and evaluating and selecting information needed for problem-solving.
		4.4 Devise innovative and creative ideas during the problem-solving process.
PLO 5	Communication: Communicate effectively through spoken, written, and multimedia means with stakeholders in technical and social environments; satisfy English	5.1 Listen respectfully and comprehend appreciatively.
		5.2 Use context-appropriate language for both academic and social communication.

	proficiency standards required by the Ministry of Education and Training.	5.3 Understand the importance of communication factors such as: feelings, emotions, and values.
		5.4 Behave appropriately towards stakeholders within diverse environments; and respect cultural differences.
		5.5 Use English at B1-level proficiency.
PLO 6	Teamwork: Collaborate effectively with the team – both as a team member and a team leader – in order to create a collaborative and inclusive environment, and to develop and implement plans towards achieving team goals.	6.1 Demonstrate planning and time management skills during teamwork.
		6.2 Build and develop relationships within the team (including establishing connections, resolving conflicts) and handle external relations throughout the group's working process.
		6.3 Evaluate individual and team performance, and implement continuous improvements.
Professional Skills		
PLO 7	Investigation and research: Operate information technology systems safely and effectively based on the systematic collection, analysis, evaluation, and interpretation of information, and based on understandings of best practices and international standards.	7.1 Implement works related to setting up, installing, and operating computer systems and networks.
		7.2 Perform system maintenance.
		7.3 Perform system upgrade and system migration.
PLO 8	Usage of resources, modern tools and technology: Utilize resources, tools, and modern technology effectively in order to support the activities related to information systems.	8.1 Use tools for designing and developing information systems proficiently.
		8.2 Apply current technologies in order to support the activities related to information systems.
ATTITUDE		
PLO 9	Ethics and Social responsibilities: Demonstrate professional ethics, respect and comply with the law, and demonstrate a sense of social responsibility as expected for an information system engineer.	9.1 Present and comply with the rules of professional ethics.
		9.2 Fulfill the responsibilities of an information system engineer, especially in contributing to the socio-economic development of the country
	Life-long learning: Recognize development needs, and demonstrate a	10.1 Identify one's own limitations in terms of the knowledge and competencies required of an

PLO 10	willingness for lifelong learning and a spirit of innovation within the context of the Industrial Revolution 4.0.	information systems engineer; and identify contemporary trends within the industry.
		10.2 Identify opportunities to learn and improve one's knowledge and competencies
		10.3 Demonstrate a willingness to participate in lifelong learning and training activities in order to update one's knowledge.
19. Graduation requirements		
Accumulate 150 credits, have a foreign language certificate according to the University's regulations and have a certificate of physical education, security and defense.		
20. Transfer to and from other programs, opportunities for further education, opportunities to acquire additional professional licenses and certificates		
<ul style="list-style-type: none"> - Graduates can continue to study at home and abroad after completing the program. - The BEIS program has a high degree of compatibility with benchmarked programs, so graduates can do postgraduate study at any program in the same field in Vietnam and abroad. 		
TEACHING AND LEARNING		
21. Educational philosophy		
Learning by design		
22. Teaching and learning paradigm		
Lectures Group discussions Student's presentations Case studies Course projects Practical exercises Field trips, internships Graduation theses Learning through scientific research Start-up activities		
23. Student assessment		
Entrance assessment		
See 10. Admission criteria		
Evaluation of the learning process		
<p>In the Course Specifications, there are information about the assessment plan (for regular and periodical assessment activities), the assessment roadmap (time to carry out the assessment activities), and the assessment matrix (how many times, and by which methods students' achievement of the CLOs will be assessed) in order to ensure that students' achievement of each CLOs are assessed using the correct methods. The assessment plans and assessment methods are introduced to the students on the first day of the course in order to help students plan their learning activities.</p> <p>The assessment rubrics are developed and applied by each lecturer in order to assess the students in all regular assessment activities. The university also has a test bank for lecturers in order to ensure fairness and objectivity during midterm and final exams.</p>		
Exit assessment		

At the beginning of the last semester of the cohort, students will be informed about the plan for carrying out their graduation project. Students work on their graduation projects to solve real-world problems developed from previous specialized projects or graduation internships.

24. Program structure and content

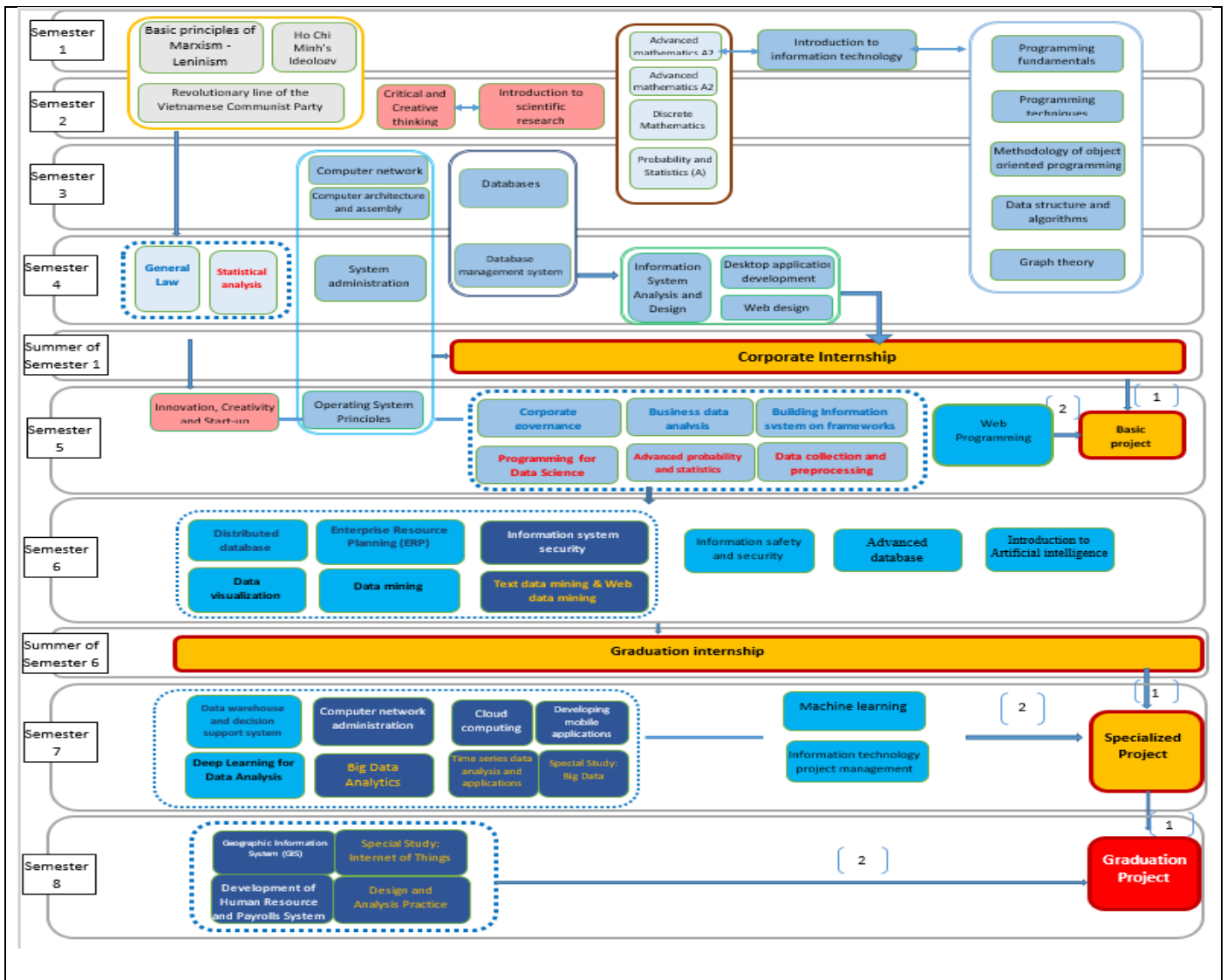


25. Development of program learning outcomes in the components

	this course is taught (based on the standard schedule)	PLO1				PLO2		PLO3			PLO4				PLO5					PLO6			PLO7			PLO8		PLO9		PLO10					
		1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	3.3	4.1	4.2	4.3	4.4	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	7.1	7.2	7.3	8.1	8.2	9.1	9.2	10	10	10			
Basic principles of Marxism - Leninism	Year 1				I						I	I			I	I												I	I	I	I				
Ho Chi Minh's Ideology	Year 1				I						I	I			I	I	I	I		I	I	I						I	I	I	I				
Advanced mathematics (A1)	Year 1	I		I		I	I													I	I	I						I	I	I	I				
Introduction to information technology	Year 1	I	I	I		I	I				I	I								I	I									I	I				
Programming fundamentals	Year 1	I	I			I	I				I	I	I														I	I	I	I	I				
Critical and Creative thinking	Year 1			I	I						I	I	I	I	I	I												I	I	I	I	I			
Introduction to scientific research	Year 1	I	I	I		I	I				I	I	I	I													I	I	I	I	I	I			
Revolutionary line of the Vietnamese Communist Party	Year 1				I						I	I			I	I	I	I		I	I	I						I	I	I	I	I			
Advanced mathematics (A2)	Year 1	I	I								I	I																		I	I	I			
Discrete Mathematics	Year 1	I	I	I		I					I	I								I	I									I	I	I			
Programming techniques	Year 1	I	I	I		I					I	I	I														I	I			I	I	I		
Database	Year 2	P	P			I	I				P	P	P	P	P	P	P	P									P	P			P	P	P		
Computer network	Year 2	P	P			P		P	P											P	P	P	P	P	P			P	P						
Computer architecture and assembly	Year 2		P	P							P	P	P							P	P		P					P	P			P	P	P	
Data structure and algorithms	Year 2	P	P	P		P		P	P		P	P	P														P	P	P						
Probability and Statistics	Year 2	P	P	P							P	P	P	P														P	P	P	P	P	P		
Methodology of object-oriented programming	Year 2	P	P			P	P					P	P	P	P	P	P	P									P	P	P	P	P	P			
Database management system	Year 2					P	P				P	P			P	P	P	P	P								P				P	P	P		
Graph theory	Year 2	P	P	P		P	P				P	P								P	P						P	P			P	P	P		
Information System Analysis and Design	Year 2					P	P	P	P	P										P	P	P					P	P	P	P					
System administration	Year 2							P	P	P										P	P	P	P	P	P			P	P	P	P				
Web design	Year 2					P	P	P	P	P										P	P							I	I		P				
Desktop application development	Year 2					P	P	P	P	P										P	P	P						P	P	P	P	P	P	P	
Elective Foundational course #1: Please choose 1 of the 2 following courses:	1. General Law	Year 2			P						P	P			P	P	P	P		P	P	P							P	P	P	P			
	2. Statistical analysis	Year 2	P	P	P						P	P	P	P		P	P	P	P	P								P	P	P	P				
Corporate Internship	Year 2					P	P				P	P	P	P						P	P	P						P	P	P	P	P	P	P	
Web Programming	Year 3	M	M	M		M	M	M	M	M	M	M	M	M						M	M	M						P	P	M	M				
Operating System Principles	Year 3	M		M							M	M	M	M	M	M	M	M	M	M	M	M									M	M	M		
Innovation, Creativity and Start-up	Year 3	M		M	M	P					M	M	M							M	M	M									M	M	M		
Basic project	Year 3							P	P	P	M	M	M	M						M	M	M	P	P			P	P			M	M	M		
Elective Foundational course #2: Please choose 1 of the 2 following courses:	1. Corporate governance	Year 3			M	P	P				M	M	M	M	M	M				M	M	M								M	M	M			
	2. Programming for Data Science	Year 3	M	M	M						M	M	M	M	M	M				M	M	M						P	P	M	M				
Elective Foundational course #3: Please choose 1 of the 2 following courses:	1. Business data analysis	Year 3	M	M	M						M	M	M	M														M	M	M	M				
	2. Advanced probability and statistics	Year 3	M	M	M						M	M	M	M														M	M	M	M				
Elective Foundational course #4: Please choose 1 of the 2 following courses:	1. Building Information system on frameworks	Year 3					M	M	M	M	M	M	M	M						M	M	M	P	P	P			M	M			M	M	M	
	2. Data collection and preprocessing	Year 3					P	P			M	M	M	M						M	M	M	P	P	P			M	M			M	M	M	
Advanced database	Year 3					M	M	M		P	M	M	M							M	M	M								M	M	M			
Introduction to Artificial intelligence	Year 3					M	M	M	M	M	M	M	M															M	M			M	M	M	
An Information safety and security	Year 3	M	M	M	M			P	P						M	M	M	M				P	P	P				M	M						

Elective Specialized course #1: Please choose 1 of the 2 following courses:	1. Distributed database	Year 3	M	M	M		P	P				M	M	M	M					M	M	M						
	2. Data visualization	Year 3					P	P	P	P	P									M	M	M						
Elective Specialized course #2: Please choose 1 of the 2 following courses:	1. Enterprise Resource Planning (ERP)	Year 3							P	P	P				M	M	M	M	M			P	P	M	M			
	2. Data mining	Year 3	M	M	M		M	M											M	M	M			M	M	M		
Non-major elective course #1: Please choose 1 of the 2 following courses:	1. Computer network administration	Year 3	M	M	M				M	M	M								M	M	M	M	M	M	M			
	2. Text data mining & Web data mining	Year 3					M	M	M	M	M	M	M	M								M	M	M	M	M		
Graduation internship		Year 4									M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			
Machine learning		Year 4	M	M	M		M	M			M	M	M		M	M	M	M				M	M		M	M	M	
Information technology project management		Year 4				M	M	M				M	M	M	M	M	M	M					M	M		M	M	M
Specialized Project		Year 4	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M				M	M			M	M	M	
Elective Specialized course #3: Please choose 1 of the 2 following courses:	1. Data warehouse and decision support system	Year 4					M	M	M	M	M								M	M	M	M	M	M	M	M		
	2. Deep Learning for Data Analysis	Year 4	M	M			M	M			M	M	M	M	M	M	M	M					M	M		M	M	M
Non-major elective course #2: Please choose 1 of the 2 following courses:	1. Computer network administration	Year 4	M	M	M				M	M	M								M	M	M	M	M	M	M	M		
	2. Big Data Analytics	Year 4	M	M	M		M	M			M	M	M	M					M	M	M			M	M	M	M	
Non-major elective course #3:	1. Cloud computing	Year 4					M	M	M	M	M			M	M	M	M	M	M	M	M	M	M	M	M	M		
Please choose 1 of the 4 following courses:	2. Developing mobile applications	Year 4					M	M	M	M	M	M	M	M	M	M						M	M			M	M	M
	3. Special Study: Big Data	Year 4	M	M	M		M	M			M	M	M	M					M	M	M	M	M	M	M	M	M	
	4. Time series data analysis and applications	Year 4	M	M			M	M			M	M	M	M	M			M	M	M				M	M	M	M	
Non-major elective course #4: Please choose 1 of the 4 following courses:	1. Geographic Information System (GIS)	Year 4	M	M	M		M	M	M	M	M	M	M						M				M	M		M	M	M
	2. Development of Human Resource and Payrolls System	Year 4	M	M	M		M	M	M	M	M			M	M	M				M	M	M			M	M	M	M
	3. Special Study: Internet of Things	Year 4							M	M	M	M	M	M	M			M	M	M	M	M	M	M	M	M	M	
	4. Design and Analysis Practice	Year 4					M	M	M	M	M	M	M	M	M	M	M						M	M	M	M		
Graduation Project		Year 4	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	

26. Curriculum learning roadmap



27. Mechanism to establish and monitor achievement of program outcomes

Students' achievement of the PLOs upon graduation was assessed using a qualitative method, namely the self-assessment form in 2019, 2020 and 2021. Since 2018, a quantitative method has also been implemented, which is calculating students' achievement of the PLOs based on their academic results of each year.

FACILITIES AND STUDENT SUPPORT SERVICES**28. Learning environment**

University campuses

#	Campuses	Constructed area (m ²)
1	Campus 1: Thu Dau Mot University – No. 6, Tran Van On, Thu Dau Mot City, Binh Duong.	67.400
2	Campus 2 (Under construction): My Phuoc Industrial Park, Ben Cat, Binh Duong	576.194

List of computer laboratories used by the program

#	Name of computer lab	Quantity
1	<i>Shared for the whole university</i>	
	IT practice room	12
2	<i>Used exclusively for Programs/ Programs</i>	
	Specialized practice room for Information System	01
	Computer Network Administration Lab	01
	Big Data Analytics Lab	01
	Information Systems Lab	01

29. Support for students and their learning

Support Services			
#	Fields	University level	Faculty level
1	Academic	1. Enrollment center: enrollment consultation, enrollment, admission, student card issuance. 2. Office Undergraduate Training: to support students' learning process: course registration, timetables, curriculum management, graduation consideration, transcript issuance and other academic tasks. Edusoft portal: https://dkmh.tdmu.edu.vn/ 2. Office of Student Affairs: behavioral score management and scholarship consideration for students, Youth Union and Student Union	1. Supporting students and lecturers through the program secretary and academic advisors. 2. Welcoming new students, organizing seminars, assigning lecturers to teach courses, guiding scientific research

		<p>activity management at university and faculty level, management of university-level clubs.</p> <p>3. Office of Science: manage scientific research activities of lecturers and students, organize university-level seminars.</p> <p>4. Center for Foreign Language: Training languages such as English, French, Korean, Chinese and organizing exams for students to fulfill foreign language graduation requirement, EPT, basic and advanced information technology applications.</p> <p>5. Learning Resource Center: managing libraries (books, textbooks, reference materials), reading rooms and international databases through the E-library website: http://elib.tdmu.edu.vn/.</p>	<p>and experiential learning activities, management of course specifications and programs specification,...</p>
2	Financial and scholarship	<p>1. Office of Student Affairs: Policy on tuition fee exemption and reduction for students, academic scholarships, support for loan procedures.</p> <p>2. Center for Enterprise Cooperation and Start-up: a bridge between students and businesses, introducing businesses to students for internships, part-time jobs, and scholarships from businesses and organizations.</p>	<p>Introducing scholarships of businesses and organizations to students through the academic advisor channel, website and facebook fanpage.</p>
3	Career, employment and start-up	<p>1. Center for Enterprise Cooperation and Start-up: connecting students and enterprises, introducing enterprises to students for internships and part-time jobs. Organizing an annual job fair.</p> <p>2. Youth Union, Student Union: Organize academic competitions, start-ups, activities to apply for funding from businesses.</p> <p>3. Center for Social Skills Development: training soft skills (Communication, presentation, teamwork, event organization, ...) for students to meet social requirements.</p>	
4	Facility/Housing	<p>1. Student Affairs Department: management of registration of permanent and temporary residence.</p>	

		<p>2. Youth Union, Student Union: support to find accommodation for new students.</p> <p>3. Office of Facility Management: Management of classrooms, laboratories, restrooms, parking lots,...</p>	
5	Mentoring and counseling	<p>1. Office of Student Affairs: consultation on scholarship issues, behavior points, cultural, sports and academic activities.</p> <p>2. Health Station: medical, health and primary care advice for students and lecturers.</p> <p>3. Office of Undergraduate Training: academic procedure advice, management support and advice on classrooms, timetables for lecturers and students.</p> <p>3. Youth Union, Student Union: consulting on volunteering activities, art, sports, academic competitions.</p>	<p>The program secretary and academic advisors answer students' questions through direct meeting channels, zalo group; especially advising on student learning to ensure students' peace of mind.</p>
6	Recreation and sports	<p>Office of Student Affairs and Youth Union, Student Union: organization of cultural activities and student sport competitions every year.</p>	
7	Medical care and wellness	<p>1. Health Station: health care management for lecturers and students.</p> <p>2. Office of Student Affairs: Support students with health insurance information.</p>	
8	Library services	<p>Learning Resource Center: management of library, reading room, electronic database, book publishing. Free services: On-site reading, home loan, computer use, Q&A service. Paid services: Photo, print, scan, disc copy, lamination,...</p>	
9	International student support	<p>Center for International Training: Management of international training cooperation with universities in other countries, coordinating with the Office of Science to organize international seminars, exchanging students and lecturers with other universities; international student management and support.</p>	

10	Internal Quality Assurance	<p>1. Center for Quality Assurance: management of the quality assurance system at the university, stakeholder surveys,...</p> <p>2. Testing Center: management of examination, exam schedule, exam organization process, test bank.</p>	
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30. Student clubs and extracurricular activities available to students

Student of 5 Merits Club
 Skills Club
 Start-up Student Club
 Vietnam Laos Friendship Club
 The Founders club
 Informatics Olympic Club & ACM - ICPC
 Electrical and Electronics Club
 Curiosity Club
 Foreign Language Club
 Academic Club of Faculty of Economics (FAC)
 Future Leaders Club (FLC)
 Martial Arts Club
 Scientific Research Club
 Green environment club
 Climate Change Club
 Future Lawyers Club
 New Public Management Club
 And many more...

APPROVAL AND LAST REVISION

31. Approval date for this program specification

08/2018

32. Last update date of this program specification

20/02/2022

Appendix: Course description

No.	Course title	Course content
1.	Basic principles of Marxism - Leninism	In addition to an opening chapter, the course is intended to briefly introduce Marxism-Leninism and some general issues of the course. Based on the course objectives, the course content is structured into 3 parts, with 9 chapters: The first part has 3 chapters covering the basic contents of the worldview and methodology of Marxism- Lenin; the second part has 3 chapters presenting three central contents of the economic theory of Marxism-Leninism on the capitalist mode of production; the third part has 3 chapters, of which 2 chapters mentions the basic contents of the Marxist-Leninist theory of socialism and 1 chapter outlines the realistic socialism and its prospective.

2.	Ho Chi Minh's Ideology	In addition to the opening chapter, the course content includes 7 chapters: chapter 1 presents the basis, process of formation and development of Ho Chi Minh' thought; Chapters 2 to 7 present the contents of Ho Chi Minh's thought on the basic issues of the Vietnamese revolution.
3.	Advanced mathematics (A1)	The course equips students with the most basic knowledge of functional analysis (differential calculus, integral of functions of one variable; series theory; differential calculus of functions of many variables). At the same time, the course also provides some applications of theoretical knowledge, creating conditions for students to study and conduct research in other courses.
4.	Introduction to information technology	The course is designed to help first-year students get used to their new environment and successfully embark on their way to becoming an IT engineer at Thu Dau Mot University. The course content includes: General introduction to basic knowledge of information technology, the Internet; IT careers; professional ethics in Information technology; Introduction to information systems and software engineering; Steps to create a product.
5.	Programming fundamentals	This course helps students understand programming-related issues and be able to apply them into solving and installing corresponding real-world problems on a specific programming environment.
6.	Critical and Creative thinking	This course provides students with the tools that help them discern between good and bad arguments (fallacies), and language affects their judgment; Each lesson will guide students on how to find, standardize, and evaluate each type of argument in order to help students develop the necessary skills and thinking attitudes in their studying and work activities. In this course, students will learn how to think critically; learn how to correctly analyze and evaluate the truth or falsity of the arguments made by others, as well as know how to develop one's own arguments with certainty, which cannot be refuted.
7.	Programming techniques	The course equips students with the introductory knowledge in C programming, including: two-dimensional array data types, pointer types, character strings, structure types, recursive functions, and operations work with files.
8.	Introduction to scientific research	The course equips students with basic knowledge about science and scientific research; General issues of methodology and scientific research methods as well as how to develop research proposals, conduct research, write research reports, publish research results.

9.	Revolutionary line of the Vietnamese Communist Party	The leadership of the Communist Party of Vietnam is the decisive factor in the victory of the Vietnamese revolution. Therefore, the course provides many profound theoretical and practical values and is an important foundation for studying in-depth problems of social sciences. This course will provide knowledge about the system of basic lines of the Communist Party of Vietnam, help students develop their trust and consciously endorse and support the Party's guidelines and policies. The content includes 8 topics: Chapter 1: The birth of the Communist Party of Vietnam and the Party's first political platform; Chapter 2: The struggle for power (1930-1945); Chapter 3: The line of resistance against the French colonialists and the American imperialists (1945-1975); Chapter 4: Road to industrialization; Chapter 5: The road to developing a socialist-oriented market economy; Chapter 6: The way to develop the political system; Chapter 7: Ways to develop cultural values and solve social problems; Chapter 8: Foreign policies.
10.	Advanced mathematics (A2)	This course covers topics such as matrices, determinants, systems of linear equations, vector spaces, and linear mapping.
11.	Discrete Mathematics	The course equips mathematical knowledge for students majoring in Information Technology: Combinatorial structures; relationships; basic knowledge of Logic math; Bool algebra to apply in analysis; design and minimization of digital electronic circuits.
12.	Database	This course equips students with basic knowledge of databases; database management system; the knowledge of the associative entity models; relational data model concepts. In addition, the course also equips students with knowledge related to set algebra; operations of relational algebra; how to answer a query in relational algebra language; command structures of the SQL language and write commands that answer queries in SQL; types of integrity constraints in the relational database model.
13.	Computer architecture and assembly	The course provides students with basic knowledge of architecture and operating principles of hardware components of computer systems; Basic knowledge of programming language assembly.
14.	Data structure and algorithms	Topics include: Applying basic and in-depth knowledge of data structures and algorithms to solve problems; Analyzing and solving problems by applying data structures; Skills in developing and designing algorithms to solve problems; Recognizing the need for data structures and algorithms.
15.	Computer network	This course equips students with general knowledge about computer networks such as: History and development of computer networks; classification and network architectures; The basic components of a computer network: Network services, network devices, network protocols; Introduction to OSI model, TCP/IP protocol suite, basic network commands; How to assemble and configure a peer-to-peer LAN, subnet, and VLAN system; Sharing resources on LAN, assigning access rights on shared resources, installing network printers, map drives, access remote computers through Remote Desktop Connection.

16.	Probability and Statistics (A)	This course provides students with basic knowledge of probability and statistics; Helps students apply the knowledge of the course to solve problems in the textbook, thereby relating to applied problems in practice and solving those applied problems.
17.	Methodology of object-oriented programming	This course helps students understand object-oriented programming knowledge; how to manage objects in the program as well as analyze and develop objects in the system effectively.
18.	Database management system	This course equips students with the principles of Database management system (DBMS); How to use the SQL programming language; Definitions and applications of internal procedures, error traps, how to use pointers in data processing; Demonstrates the principles of data storage and management; Describes access controls in the DBMS; Principles of transaction management, competitive access management, data recovery.
19.	Web design	The course introduces students to the basics of the Internet, how to create a simple Website, provides basic knowledge in designing static websites with HTML, CSS, and JavaScript technologies in order to create a premise for the creation of a website; Dynamic Web development and programming. At the same time, this course also introduces students to the principles of designing and managing a static Website with a simple structure using a full range of basic tools available to support Web design; providing Basic web design methods using Dreamweaver; how to manage and publish websites on the Internet.
20.	Information System Analysis and Design	This course equips students with basic knowledge about information systems, the components of an information system, including techniques for collecting information, analyzing the operation of information systems; related concepts; Provides students with knowledge and skills in defining the structure and components necessary to develop and implement an information system; evaluate, classify types of information, apply techniques and models and designs of many aspects that describes the operation of the system.
21.	System administration	This course equips students with general knowledge about Windows Server, installing and administering network systems on Windows Server such as: Installing a Windows Server server, backing up and restoring the server, and upgrading the server to a Windows Server domain controller; join workstations to the domain, manage user and group accounts, configure system and group policies, and manage shared resources on the network; installing and administering services on Windows Server: DHCP service, DNS service, Web service, FTP service, File service, Print service, Mail service.
22.	Graph theory	Provides a complete and selective knowledge foundation on the basics of graph theory; equips students with knowledge to solve practical problems: finding optimal paths, urban planning , optimization problems on computer networks, coloring problems, problems on Euler, Hamilton graphs, etc.
23.	Desktop application development	This course is for students who already have a background in programming techniques and have knowledge of object-oriented programming. This course helps students master programming methods

		<p>and skills to develop applications on Windows, which is the foundation for students to better study specialized courses and be able to complete their graduation project.</p> <ul style="list-style-type: none"> - The course also provides foundational knowledge and advanced skills for developing Microsoft .NET-based Windows applications, using Visual C# .NET languages. - This course then provides the necessary knowledge for developing advanced applications to meet user requirements, C# programming knowledge for Windows applications and basic Microsoft library functions .NET. - The course helps students become familiar with modern integrated development environments of MS Visual Studio .NET
24.	General Law	<p>This course aims to equip students with basic knowledge of the state and the law. The content of the course covers the most basic and common issues about the state and law, and is related to the state and laws of the Socialist Republic of Vietnam. In addition, the course also deals with specialized legal contents including: Constitutional Law, Administrative Law, Civil Law, Labor Law, Criminal Law, and other laws based on the request of the Ministry of Education and Training, and the Law on anti-corruption.</p>
25.	Statistical analysis	<p>The course provides knowledge about basic elementary methods to process, describe, analyze, judge, and statistical data, along with the probability theory of those methods. After completing the course, students can apply the knowledge they have learned to the analysis of statistical data.</p>
26.	Corporate Internship	<p>The course aims to perfect students' ability to analyze requirements, create blueprints and manage source code in project teams; improve students' teamwork skills and their sense of seriously responsible in researching.</p>
27.	Innovation, Creativity and Start -up	<p>This course equips students with the knowledge and skills so that after completing the course, they can know how to create business ideas, fully prepare before operating a new business in any industry that the law allows. Students will also know how to run a newly created business effectively, evaluate the suitability of the startup plan in the face of changes in the volatile global competitive environment, and then adjust the plan.</p>
28.	Web Programming	<p>The course provides students with the knowledge to develop and create web applications on the basis of ASP.NET technology; how to develop basic Web applications such as creating interfaces, manipulating server controls, connecting and retrieving data from databases such as Microsoft Access or Microsoft SQL Server Express.</p>
29.	Operating System Principles	<p>This course equips students with the basic knowledge of operating systems; Operation, management control and interaction of components in the operating system.</p>
30.	Basic project	<p>In this course, students apply the results obtained in the Corporate internship in order to continue to develop and perfect advanced features. At the same time, the course also helps students develop source code management skills in project teams.</p>

31.	Corporate governance	Business Administration is a basic course in Management. The course provides an overview of business management, specifically the basic concepts of management, marketing management, production management, human resource management and finance. On this basis, students gain an overview of business activities. From here, students will study intensively in each course in the following academic years.
32.	Programming for Data Science	After completing this course, students are able to: Fluently use Python programming language; Understand the work of organizing data collection and analysis; Apply Python programming language in Data Analysis
33.	Business data analysis	The course aims to provide students with the necessary data analysis techniques for conducting their scientific research and graduation project, as well as for applying into practice. Students will be instructed on how to make forecasts to support managers in decision making.
34.	Advanced probability and statistics	The course provides students with in-depth knowledge of Statistics and probability, including: General probability, Random quantities and random vectors, Law of probability distribution, Sample theory, Theory of estimation and testing, Sample Regression Correlation
35.	Building Information system on frameworks	The course provides knowledge on how to develop information systems on the Framework; equips students with knowledge about developing information blocks containing core information to be used on a certain ecosystem. The course also provides a set of definitions roles and responsibilities that can be explicitly applied in a particular context. The course also brings together a number of perspectives.
36.	Data collection and preprocessing	The course introduces students to techniques for collecting and transforming raw data in order to obtain a good quality primary data source that meets the requirements of analytical tasks at higher levels. For example, finding the appropriate value to fill in the missing data cells, normalizing the value domain of the data field, etc. In addition, the course also provides students with knowledge related to data processing, data preprocessing techniques to prepare good data sources for higher-level analytical tasks.
37.	Introduction to Artificial intelligence	The course provides students with knowledge of some important techniques and methods of artificial intelligence such as: search techniques; automatic inference and knowledge representation methods; machine learning methods for cognitive Data modeling and analysis; natural language processing. In addition to theoretical concepts, the course also deals with the application of artificial intelligence techniques to solve real-world problems.
38.	Information safety and security	The course provides students with basic knowledge of information safety and security, which will help students understand security gaps in mechanisms, policies, and information systems. From there, students will be able to establish security for information systems.
39.	Advanced database	This course equips students with core knowledge of the principles and methods to design and normalize on relational database models such as: Functional dependency, Multivalued dependency, Standard forms, Normalization methods.

40.	Data visualization	The course introduces basic information about visualization design, and what makes a good information visualization; how to apply a variety of basic information visualization techniques, as well as complex techniques; how the eye and brain work together to provide images and how it affects the design of visual information. Students will also learn about the history of information visualization rules, how to avoid common information visualization problems in design; learn how to measure the effectiveness of information visualization.
41.	Distributed database	This course provides basic knowledge and techniques in analyzing, designing and developing a distributed database system. After completing this course students will be able to: Present the concepts of distributed database systems; Install techniques for distributing data on computers; Develop queries for distributed databases
42.	Enterprise Resource Planning (ERP)	The course explains what ERP is, the software courses in an enterprise, as well as issues related to costs when deploying the system; issues related to production processes, management, infrastructure deployment and information security in enterprises.
43.	Data mining	This course provides students with the basics of data mining; fields of application; techniques and research directions related to data mining. The course equips students with the new and most commonly used computational techniques to classify, extract, and evaluate information in the decision support process for economic, educational, medical organizations, etc. In addition, the course also guides students on how to use open source tools and data repositories to assist in the process of installing and testing data mining systems.
44.	Information system security	<ul style="list-style-type: none"> - Knowledge: The course provides knowledge of risks with an information system, documents on implementing information system security programs; Information on attacks and technical solutions to ensure the safety of computer networks and ensure the transmission of computer network information. - Skills: Students will understand documents, models, and be able to propose solutions. - Attitude: Students must pay attention to lectures in class, actively study the materials at home, and participate in discussions, exercises, and experiments as required.
45.	Text data mining & Web data mining	The course provides students with the basics of text and web data mining. In addition, it also introduces students to some commonly used techniques in mining these types of data.
46.	Graduation internship	In this course, students will participate in a project team at the enterprise with a defined role within the group. The course helps students practice professional skills such as: analysis, assessment of problem requirements, application features; Designing, installing, testing, implementing, and maintaining solutions to problems and application features. At the same time, the course will help develop students' ability to work and communicate in project groups.
47.	Information technology project management	Provides insights on how to manage and execute an Information Technology project; Introduces the core knowledge of project management in general and IT project management in particular;

		Refers to the skill requirements of the project manager compared to the technical management requirements.
48.	Machine learning	The course equips students with knowledge of Machine Learning including: conceptual learning, decision trees, neural networks, hypothesis evaluation, Bayesian learning, case-based learning, genetic algorithms, support vector machines .Students will develop skills such as: teamwork skills, problem-solving thinking skills, analytical thinking and critical thinking.
49.	Specialized Project	This project helps students practice programming skills to develop applications on Windows, which is the foundation for students to better learn specialized courses and be able to complete their graduation project, while becoming familiar with developing, creating a complete software. Students will apply the knowledge from previous courses to develop a software in order to solve a practical problem
50.	Data warehouse and decision support system	Provides concepts related to data warehouses, basic architecture of data warehouses; methods of data collection, data processing, data loading into the warehouse; developing data warehouses; data mining and statistics in many dimensions.
51.	Deep Learning for Data Analysis	The course provides basic knowledge about: Artificial Neural Networks Backpropagation Process, and some Deep Learning models in Data Analysis
52.	Computer network administration	Computer course provides knowledge about LAN, WAN; encapsulation mechanisms at layers in the OSI model, and protocols and services in the TCP/IP model. Basic configuration and VLAN configuration on cisco switch devices. Basic configuration, routing, access control on cisco router devices. Configure the connections on the WAN.
53.	Big Data Analytics	The course provides students with basic knowledge of big data analysis, representation of data analysis results; techniques for data analysis such as machine learning and natural language processing; applications
54.	Cloud computing	This is an introduction to Foundational Courses of the program, providing students with basic knowledge about the concepts, structure and composition, how to exploit and deploy services on the cloud computing platform. Contents include: Overview of Cloud Computing; Advantages and disadvantages of Cloud Computing; The importance of Cloud Computing for businesses; Comparison between Traditional Data Center and Cloud Computing data center; Planning for a Cloud Computing environment; Storing and processing data in Cloud Computing; Models of Cloud Computing; Using PaaS, PaaS and IaaS services in Cloud Computing; Safety and Security Issues in Cloud Computing; Virtualization Technology;
55.	Developing mobile applications	The course aims to provide students with basic knowledge of application programming on mobile devices with the Android operating system platform; helps students understand the process, knowledge, and acquire necessary skills to develop Android applications. .

56.	Special Study: Big Data	Contents of the course include: Big data storage, systems that enable big data processing; Topics related to processing big data, including information retrieval; graph processing data management, data mining on big data; Application of introduced topics for specific areas.
57.	Time series data analysis and applications	The course provides students with the following contents: Introduction to the knowledge of time series data; Linear models: regression, least squares models; Nonlinear models: hidden Markov models; Artificial Neural Networks-Applications for short-term prediction problems; Mid-term; Long-term for the fields of environment, economy, epidemics
58.	Development of Human Resource and Payrolls System	This course equips students with basic knowledge about professional skills in human resource management and salary calculation methods in enterprises and systematization methods. The course also equips students with knowledge and skills that enable them to perform the work of a system analyst, perform consulting services, design and develop information systems for human resources and salaries of small and medium-sized enterprises.
59.	Geographic Information System - GIS	This course equips students with basic knowledge of maps, spatial data types such as vector structure, raster structure; Mathematical operations for spatial analysis in GIS; how to digitize spatial objects, organize spatial data storage, and exploit geographic information systems.
60.	Special Study: Internet of Things	The course provides the basic concepts of Internet of Things, the opportunities and challenges in developing practical applications. Students will participate in hands-on Arduino boards to develop Internet Of Things applications that meet real-world needs.
61.	Design and Analysis Practice	The course provides knowledge of quantitative analysis and forecasting techniques. Upon completion of the course, students will be able to: Understand the work of collecting information and designing a survey; Read and understand data; Understand the statistical foundations of regression analysis and projections reports; Conduct regression modeling based on business data, economic data, etc.; Evaluate and comment on reports based on empirical analysis.
62.	Graduation Project	The course aims to create opportunities for students to gain professional experience through the application of specialized knowledge, skills and attitudes to solve related problems in real working conditions. Students will complete or propose a procedure for solving a problem in the role of an active researcher, and then complete a scientific report. The course helps students perfect their research, thinking, and creativity skills in order to create products.