MINISTRY OF EDUCATION & TRAINING
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY & EDUCATION

UNDERGRADUATE PROGRAM
Major of
BIOMEDICAL ENGINEERING

(Issued under Decision No. 3744 /QĐ-ĐHSPKT dated 06 / 10 /2025 by the President of Ho Chi Minh City University of Technology and Education)

Education Program: Biomedical Engineering
Level: Undergraduate
Major: Biomedical Electronics Engineering
Major Code: 7520212A

Ho Chi Minh City, 2025

THE MINISTRY OF EDUCATION & TRAINING
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY & EDUCATION

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Education Program: Biomedical Engineering

Level: Undergraduate

Major: Biomedical Electronics Engineering

Major Code: 7520212A

Type of Training: FULL-TIME

Graduation Diploma: ENGINEER

(Issued under Decision No. 3744 /QĐ-ĐHSPKT dated 06 / 10 /2025 by the President of Ho Chi Minh City University of Technology and Education)

1. **Training Duration:** 4 years
2. **Admission Requirements:** High School Graduate
3. **Grading Scale, Training Process, and Graduation Requirements**
    - Grading Scale: 10
    - Training Process: According to Decision No. 3116/QD-ĐHSPKT dated 22/08/2025 of Ho Chi Minh City University of Technology and Education on promulgating the university-level training regulations.
    - Graduation Requirements:
        - General Requirements: According to Decision No. 3116/QD-ĐHSPKT dated 22/08/2025 of Ho Chi Minh City University of Technology and Education on promulgating the university-level training regulations.
        - Specialized Requirements: According to the general regulations of Ho Chi Minh City University of Technology and Education.
4. **Training Goals and Learning Outcomes**

Goals:

The programme is designed to prepare graduates to assume engineering and technology positions in the biomedical electronics field. Graduates of Biomedical Engineering (BME) programme have an ability to demonstrate expertise and career advancement in the biomedical electronics field through the application of fundamental knowledge, skills, and engineering technology tools. In addition, they have the ability to contribute significantly to the achievement of their organization's goals as an effective member and an ability to take part in life-long learning by being engaged with biomedical institutions, educational organizations, hospitals and professional societies.

Objectives: Graduates will possess the following knowledge, skills, and competencies:

1. Apply, formulate and solve scientific, technical and technological problems in biomedical engineering field with social benefit.
2. Identify, develop, conduct experiments for analysis, and apply new knowledge with professional responsibility and ethics in biomedical engineering field.
3. Recognize and apply effectively when working in teams, and communicate effectively to people and even in English.
4. Operate, apply, analyze, evaluate, design and manage health and medical systems in term of considering economic, social and human factors.

Program outcomes

Code	Expected Learning Outcomes	Competency Level
ELO1	Ability to apply, formulate and solve principles, theorems, concepts of engineering, science and mathematics in the field of biomedical engineering	4
ELO2	Ability to develop, conduct, and operate appropriate experiments and devices on boards, machines, and data obtained to interpret and produce results	4
ELO3	Ability to recognize professional and ethical responsibilities associated with biomedical engineering issues that affect the social, environmental, economic, and global contexts	4
ELO4	Ability to recognize and apply knowledge in appropriate and long-term learning strategies	3
ELO5	Ability to effectively apply knowledge to teamwork and provide entrepreneurship and leadership to achieve objectives	4
ELO6	Ability to explain, demonstrate, and communicate technical issues to people in the BME field and even in English	4
ELO7	Ability to analyze and interpret data obtained from the experiments to apply appropriate circuits and systems	5
ELO8	Ability to effectively evaluate issues, systems and applications in biomedical field that can impact on social, economic, environmental and global contexts to have conclusions	5
ELO9	Ability to create biomedical engineering systems using new knowledge and skills	5

Competency Level Scale

Competency Level	Description

0.0 ≤ Competency Level ≤ 1.0: Basic	**Remember:** Students recall/recognize/retrieve knowledge through actions such as defining, repeating, listing, identifying, determining, etc.
1.0 ≤ Competency Level ≤ 2.0: Satisfactory	**Understand:** Students construct knowledge from materials and existing knowledge through actions such as explaining, classifying, illustrating, inferring, etc.
2.0 ≤ Competency Level ≤ 3.0: Apply	Students perform/apply knowledge to create products such as models, physical objects, simulated products, reports, etc.
3.0 ≤ Competency Level ≤ 4.0: Proficient	**Analyze:** Students analyze materials/knowledge into details/components and point out their relationships within the whole through actions such as analyzing, classifying, comparing, synthesizing, etc.
4.0 ≤ Competency Level ≤ 5.0: Evaluate	Students provide assessments and predictions about knowledge/information according to predefined standards, criteria, and measurement indicators through actions such as commenting, critiquing, proposing, etc.
5.0 ≤ Competency Level ≤ 6.0: Excellent	**Create:** Students construct/arrange/organize/design/generalize details/components in a different/new way to create new structures/models/products.

5. Total program credits: 158 credits

(not including physical, national defense education and Enterprise Seminar)

Foreign Language Knowledge:

- Students with an IELTS >= 4.5 or equivalent (as per Decisions No. 3239/QĐ-ĐHSPKT dated 03/09/2025) will be exempted from the English placement test. Their scores will be converted for English courses in the program and English proficiency requirement (Outcome).
- English Placement Test for Level Classification: Students without IELTS certificate must participate in an English placement test to determine their proficiency level.
    - If a student achieves Level 1, they will study Communicative English 1,2.
    - If a student achieves Level 2, they will study Academic English 1,2.
- Sequence of English courses: Communicative English 1,2 → Academic English 1, 2.

Note:

- Communicative English 1 and 2 are supplementary courses designed to enhance English communication skills for students not accumulating credits in the program.

- Academic English 1 and 2 are academic courses that accumulate credits in the program.

6. Allocation of Knowledge Group

Groups of Courses	Credits		
	Total	**Compulsory**	**Elective**
General Knowledge	**59**	**55**	**4**
General Politics + Laws	14	14	
Social Sciences and Humanities	4		4
English	8	8	
Mathematics and Natural Sciences	27	27	
Technical Computer Sciences	3	3	
Introduction to Biomedical Engineering	3	3	
Professional knowledge	**99**	**99**	
Foundation of Major	71	71	
Professional Major			
Interdisciplinary			
Practices	16	16	
Internship	2	2	
Graduation Thesis	10	10	
Physical and National Defense Education	Non-accumulation		
National Defence Education 1	1		
National Defence Education 2	1		
National Defence Education 3	1		
National Defence Education 4	1		
Physical Education 1	1		
Physical Education 2,3	2		
Comunicative English	Non-accumulation		
Communicative English 1	4		
Communicative English 2	4		
Enterprise Seminar	1		

Total	**158**	**154**	**4**

7. Content of Program

A – Compulsory Courses

7.1. General Knowledge

No.	Course's ID	Course name	Credits	Prerequisite
1.	LLCT130105E	Philosophy of Marxism and Leninism	3	
2.	LLCT120205E	Political economics of Marxism and Leninism	2	
3.	LLCT120405E	Scientific socialism	2	
4.	LLCT220514E	History of Vietnamese communist party	2	
5.	LLCT120314E	Ho Chi Minh's ideology	2	
6.	GELA 236939E	General Law	3	
7.	MATH132401E	Calculus 1	3	
8.	MATH132501E	Calculus 2	3	
9.	MATH132601E	Calculus 3	3	
10.	MATH132901E	Mathematical Statistics for Engineers	3	
11.	PHYS130902E	Physics 1	3	
12.	PHYS131002E	Physics 2	3	
13.	PHYS111202E	Physics - Laboratory 1	1	
14.	PHYS111302E	Physics - Laboratory 2	1	
15.	AMEE341944E	Applied Mathematics for EEE	4	
16.	GCHE130603E	General Chemistry for Engineers	3	
17.	CPRL130064E	C Programming Language	3	
18.	INBE130165E	Introduction to Biomedical Engineering	3 (2+1)	
19.	ACEN340535E	Academic English 1	4	
20.	ACEN340635E	Academic English 2	4	
21.	COEN140135E	Communicative English 1	0 (4)	
22.	COEN140235E	Communicative English 2	0 (4)	
23.	GDQP110131	Giáo dục quốc phòng 1 (*National Defence Education 1)*	1	Non-accumulation

24.	GDQP110231	Giáo dục quốc phòng 2 (*National Defence Education 2)*	1	Non-accumulation
25.	GDQP110331	Giáo dục quốc phòng (*National Defence Education 3)*	1	Non-
26.	GDQP110431	Giáo dục quốc phòng 4 (*National Defence Education 4)*	1	Non-accumulation
27.	PHED110130	Giáo dục thể chất 1 (*Physical Education 1)*	1	Non-accumulation
28.	**Giáo dục thể chất 2,3 (***Physical Education 2,3)*		**2**	**Choose 2**
29.	FOOT112330	Bóng đá (*Football)*	1	Non-accumulation
30.	VOLL112330	Bóng chuyền (*Volleyball)*	1	Non-accumulation
31.	BASK112330	Bóng rổ (*Basketball)*	1	Non-accumulation
32.	BADM112330	Cầu lông (*Badminton)*	1	Non-accumulation
33.	TENN112330	Quần vợt (*Tennis)*	1	Non-accumulation
34.	KARA112330	Không thủ đạo (*Karate)*	1	Non-accumulation
35.	CHES112330	Cờ vua (*Chess)*	1	Non-accumulation
36.	PICK112330	Pickleball	1	Non-accumulation
37.	Social Sciences and Humanities (option)		4	
Total			**59**	

7.2. Professional knowledge

7.2.1. Foundation of major

No.	Course's ID	Course name	Credits	Prerequisite
1.	ELCI140144E	Electric Circuits	4	
2.	ELEC230262E	Electronics Circuits 1	3	
3.	ELEC330362E	Electronics Circuits 2	3	

4.	DIGI330163E	Digital Systems	3	
5.	MICR330363E	Microprocessor	3	
6.	BIME332265E	Computer Aided Design	3	
7.	HUAN330265E	Human Physiology and Anatomy	3	
8.	ELFI230344E	Electromagnetic Field	3	
9.	SISY330164E	Signals and Systems	3	
10.	Foundation of major (option)		3	
Total			**31**	

7.2.2.a Professional Major Courses (Theory and Practice courses)

– Biomedical and Electronics Advanced Courses

No.	Course's ID	Course name	Credits	Prerequisite
1.	MEDE330465E	Biomedical Electronic Circuit Design	3	
2.	IMSY332065E	Healthcare Information system	3	
3.	DEMD330565E	Biomedical Instrumentation	3	
4.	BISI340665E	Biosignal Processing	4	
Total			**13**	

– Biomedical and Electronics Specialisation

No.	Course's ID	Course name	Credits	Prerequisite
1.	TESO330765E	Biomedical Sensor Technology	3	
2.	BITE332865E	Biomedical Imaging Technology	3	
3.	HSBE330865E	Health and Safety in Biomedical Engineering	3	
4.	BIIM330965E	Biomedical Image Processing	3	
5.	MESY335565E	Embedded Systems in Biomedical Engineering	3	
6.	ELPR311065E	Digital Electronics Project	1	DIGI330163E
7.	MIPR311165E	Microprocessor Project	1	MICR330363E
8.	CAPR411265E	Capstone Project	1	
9.	ITSY434763E	Intelligent Systems	3	
10.	Professional Major (option)		6	
Total			**27**	

7.2.2.b Major Practices

No.	Course's ID	Course name	Credits	Prerequisite
1.	SEMI310026E	Enterprise Seminar	0 (1)	Non-accumulation
2.	ELPR320762E	Electronics in Practice	2	
3.	PRDI310263E	Digital Systems Lab	2	
4.	PRMI320463E	Microprocessor in Practice	2	
5.	MEPR321565E	Biomedical Instrumentation Lab	2	
6.	MEPR316165E	Embedded Systems in Biomedical Engineering Lab	2	MESY335565E
7.	BIPR311665E	Biosignal Processing Lab	1	
8.	TSEP321765E	Biomedical Electronic Circuit Lab	2	
9.	BIMP311865E	Biomedical Image Processing Lab	1	
10.	TSEP311965E	Biomedical Sensors Technology Lab	1	
11.	BSPR411965E	Healthcare Information Systems Lab	1	
Total			**16**	

7.2.3. Internship and Capstone project

No.	Course's ID	Course name	Credits	Prerequisite
1.	GRPR423065E	Internship	2	
2.	GRAD401665E	Graduation Thesis	10	
Total			**12**	

B – Optional Subjects

Knowledge of Social Sciences and Humanities: 4 Credits *(Choose 2 courses)*

No.	Course's ID	Course name	Credits	Prerequisite
1.	GEFC220105E	General Economics	2	
2.	IQMA220205E	Introduction to Quality Management	2	
3.	INMA220305E	Introduction of Management	2	
4.	INLO220405E	Introduction to Logics	2	
5.	IVNC320905E	Introduction to Vietnamese Culture	2	
6.	INSO321005E	Introduction to Sociology	2	
7.	ENPS220591E	Engineering Psychology	2	
8.	SYTH220491E	Systems Thinking	2	

9.	LESK120190E	Learning Skills	2	
10.	PLSK120290E	Planning Skills	2	
11.	WOPS120390E	Workplace Skills	2	
12.	REME320690E	Research Methods	2	
Total			**4**	

Foundation of major: 3 Credits *(Choose 1 course)*

No.	Course's ID	Course name	Credits	Prerequisite
1.	ITFA336064E	Internet of Things Foundations and Applications	3	
2.	AIBM336365E	Artificial intelligence for Biomedical Applications	3	
3.	APCA331363E	Android programming in control applications	3	
4.	MEDM336365E	Medical Equipment Management	3	
Total			**3**	

Professional Major: 6 Credits *(Choose 2 courses)*

No.	Course's ID	Course name	Credits	Prerequisite
1.	APME332365E	Data Acquisition and Control Using Computer	3	
2.	WITE332465E	Wireless Technologies	3	
3.	SPSU332565E	Special Topic in Biomedical Engineering	3	
4.	ECME332665E	Engineering Challenges in Medicine	3	
5.	MALE331063E	Machine Learning	3	
6.	BIMA332765E	Biomaterials	3	
Total			**6**	

Interdisciplinary: 6 Credits *(Choose 2 courses)*

Students may choose 6 interdisciplinary credits to replace optional courses within their professional major.

No.	Course's ID	Course name	Credits	Prerequisite
1.	INSK331663E	Industrial skills	3	
2.	PLCS330846E	Programmable Logic Controller	3	

3.	INRO321129E	Industrial Robot	3	
4.	SCDA430946E	SCADA Systems	3	
5.	ROBO330446E	Robotics	3	
6.	HCIN431979E	Human computer interaction	3	
7.	APEN331329E	Applied Programming in Engineering	3	
Total			**6**	

8. Training plan

1st Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	GELA236939E	General Law	3		1
2.	CPRL130064E	C Programming Language	3		2
3.	MATH132401E	Calculus 1	3		2
4.	INBE130165E	Introduction to Biomedical Engineering	3(2+1)		1
5.	PHYS130902E	Physics 1	3		2
6.	PHED110513	Giáo dục thể chất 1 (*Physical Education1)*	0 (1)		2
7.	GCHE130603E	General Chemistry for Engineers	3		2
8.	ACEN340535E	Academic English 1	4		1
9.	ACEN340635E	Academic English 2	4		1
Total			**26**		

2nd Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	MATH132501E	Calculus 2	3		1
2.	LLCT130105E	Philosophy of Marxism and Leninism	3		2
3.	ELFI230344E	Electromagnetic Field	3		2
4.	MATH132901E	Mathematical Statistics for Engineers	3		1
5.	AMEE341944E	Applied Mathematics for EEE	4		2
6.	ELEC230262E	Electronic Circuits 1	3		1

7.	ELCI140144E	Electrical Circuits	4		2
8.		Giáo dục thể chất 2 **(***Physical Education 2)*	0 (1)		1
9.	Giáo dục quốc phòng (*National Defence Education)*		0 (4)		
Total			**23**		

3rd Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	LLCT120205E	Political Economics of Marxism and Leninism	2		1
2.	LLCT120405E	Scientific socialism	2		2
3.	PHYS131002E	Physics 2	3		1
4.	MATH132601E	Calculus 3	3		2
5.	HUAN330265E	Human Physiology and Anatomy	3		2
6.	DIGI330163E	Digital System	3		1
7.	ELEC330362E	Electronic Circuits 2	3		2
8.	ELPR320762E	Electronics in Practice	2		1
9.	PHYS111202E	Physics - Laboratory 1	1		1
10.		Giáo dục thể chất 3 **(***Physical Education 3)*	0 (1)		2
Total			**22**		

4th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	LLCT120314E	Ho Chi Minh's ideology	2		1
2.	LLCT220514E	History of Vietnamese communist party	2		2
3.	BISI340665E	Biosignal Processing	4		1
4.	SISY330164E	Signals and Systems	3		2
5.	MICR330363E	Microprocessor	3	DIGI330163E	2

6.	MEDE330465E	Biomedical Electronic Circuit Design	3		1
7.	PRDI320263E	Digital Systems Lab	2		1
8.	TESO330765E	Biomedical Sensor Technology	3		2
9.	PHYS111302E	Physics - Laboratory 2	1		1
10.	Foundation of major (option)		3		2
Total			**26**		

5th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	BIIM330965E	Bio-Medical Image Processing	3		1
2.	BIPR311665E	Biosignal Signal Processing Lab	1		1
3.	DEMD330565E	Biomedical Instrumentation	3		2
4.	PRMI320463E	Microprocessor in Practice	2		2
5.	TSEP321765E	Biomedical Electronic Circuit Lab	2		1
6.	ELPR311065E	Digital Electronics Project	1	DIGI330163E	1,2
7.	MESY335565E	Embedded Systems in Biomedical Engineering	3		1
8.	TSEP311965E	Biomedical Sensors Technology Lab	1		2
9.	Social Sciences and Humanities (1) (option)		2	(Students can choose to take this course in any semester)	2
10.	Social Sciences and Humanities (2) (option)		2	(Students can choose to take this course in any semester)	2
Total			**20**		

6th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	MIPR311165E	Microprocessor Project	1	ELPR311065E	1,2
2.	HSBE330865E	Health and Safety in Biomedical Engineering	3		1
3.	BIMP311865E	Biomedical Image Processing Lab	1		1
4.	MEPR321565E	Biomedical Instrumentation Lab	2		1
5.	BIME332265E	Computer Aided Design	3		1
6.	MEPR326165E	Embedded Systems in Biomedical Engineering Lab	2	MESY335565E	2
7.	IMSY332065E	Healthcare information system	3		2
8.	Interdisciplinary 1 (option 1)		3		2
9.	Interdisciplinary 2 (option 2)		3		2
Total			**21**		

7th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2
1.	SEMI310026E	Enterprise Seminar	1	Non-accumulation	2
2.	BIIT335665E	Biomedical Imaging Technology	3		2
3.	CAPR411265E	Capstone Project	1		1,2
4.	BSPR411965E	Healthcare Information Systems Lab	1		1
5.	GRPR423065E	Internship	2		1
6.	ITSY434763E	Intelligent Systems	3		1
Total			**10**		

8th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term 1/2

1.	GRAD401665E	Graduation Thesis	10		1,2
Total			**10**		

9. Course Descriptions

Academic English 1 **Credits: 4**

Prerequisite course(s): Communicative English 1
Corequisite course(s): Academic English 2
Previous course(s): N/A
Course Description:

This is the first course of the Academic English series designed for students majoring in the areas other than English to achieve the intermediate level of English language proficiency (equivalent to B2.1 level of CEFR) in Speaking and Listening skills. The series aims to enhance students' English competence to deal with complex matters of everyday life in other countries, to exchange specific information and personal ideas with young people and adults who speak English, and to achieve a wider understanding of thoughts from people of other cultures. This course particularly provides students with the opportunities to understand the main ideas of complex oral English on quite abstract topics, including basic technical discussions in their fields of specialization. Students are asked to orally interact with a degree of fluency that makes regular interactions with native English speakers quite possible with some strain. They are also prepared to orally produce clear, detailed texts on a limited range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of a few options. In addition, this course promotes students' development of presentation skills, teamwork ability, and learner autonomy by engaging them in various interactive activities.

Textbooks:

Kisslinger, E., & Baker, L. (2024). *Skillful 3 Listening and Speaking* (3rd ed.). Macmillan Education.

Academic English 2 **Credits: 4**

Prerequisite course(s): Communicative English 2
Corequisite course(s): Academic English 1
Previous course(s): N/A
Course Description:

This is the second course of the Academic English series designed for students majoring in the areas other than English to achieve the intermediate level of English language proficiency (equivalent to B2.1 level of CEFR) in Reading and Writing skills. The series aims to enhance students' English competence to deal with complex matters of everyday life in other countries, to exchange specific information and personal ideas with young people and adults who speak English, and to achieve a wider understanding of thoughts from people of other cultures. This course particularly provides students with the opportunities to understand the main ideas of complex English texts on quite abstract topics, including basic technical discussions in their fields of specialization. Students are asked to interact in written English with a degree of fluency that makes regular interactions with native English speakers quite possible with some strain. They are also prepared to produce clear, detailed written texts on a

limited range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of a few options. In addition, this course promotes students' development of presentation skills, teamwork ability, and learner autonomy by engaging them in various interactive activities.

Textbooks:

Rogers, L., & Zemach, D. E. (2024). *Skillful 3 Reading and Writing* (3rd ed.). Macmillan Education.

Applied Mathematics for EEE **Credits: 4**

Prerequisites: None

Course Description:

The course on Applied Mathematics for EEE provides learners knowledge related to matrices, complex numbers and functions, ordinary differential equations and laplace transforms, fourier series and optimization. They can use knowledge to analyze circuit, signal processing and automation system.

Electric Circuits **Credits: 4**

Prerequisites: None

Course Description:

This course aims to supply learners with knowledge to solve problems related to electric circuit analysis. Learners will learn laws, principles and Maths such as Ohm's, Faraday's and Kirchoff's laws to solve problems related to electrical and electronics circuits. Moreover, learners will learn how to analyse circuits with mutual inductance, Op-Amp, three phase systems, two-ports networks, linear and nonlinear circuits in time domain and frequency domain using Laplace transform, Fourier transform and bode plot with their applications in the real world.

Intelligent Systems **Credits: 3**

Prerequisites: None

Course Description:

This course provides learners with knowledge about intelligent control systems, such as control systems using neural networks, fuzzy logic, and more. It also offers knowledge on measurement techniques in data acquisition and control systems, particularly focusing on sensorless or soft sensor measurement methods.

Android programming in control applications **Credits: 3**

Prerequisites: None

Course Description:

The course equips students with fundamental knowledge of the Android operating system and control applications. In detail, Android development tools and essential components of a control application are introduced. The user interface, the operator on an Android application are described. Moreover, the course introduces methods for event handling, completing, and packaging in an application. Modern technologies such as SMS, Bluetooth, Wifi, NFC, voice recognition, accelerometer are also introduced in this course ... Fundamental knowledge on microcontrollers and electronic devices are integrated to develop a comprehensive application.

Electronic Circuits 1 **Credits: 3**

Prerequisites: Electric Circuits

Course Description:

This course provides knowledge about semiconductor materials and electronic components such as diodes, transistors, four-layer devices, and optoelectronic components. It covers the analysis and design of basic electronic circuits, including diode applications (rectifier circuits, clippers, clampers, logic gates, voltage multipliers, and voltage regulators using Zener diodes) and single-stage transistor amplifier circuits.

Electronic Circuits 2 **Credits: 3**

Prerequisites: Electric Circuits

Course Description:

This course provides knowledge on the analysis and design of applied electronic circuits such as multistage amplifiers, operational amplifier (Op-amp) circuits, feedback circuits, power amplifiers, oscillators, power supply circuits, and filter circuits.

Biomaterials **Credits: 3**

Prerequisites: None

Course Description:

This course aims to provide learners the basic knowledge of material science and its application properties in biomedical field. The course includes the knowledge such as structure, mechanical properties, and biocompatibility. Students can learn the methods of analysis, testing and evaluation of material standards. Finally, there are practical applications in the biomedical field, the prospects and challenges of biomedical materials in medicine.

Capstone Project **Credits: 1**

Prerequisites: None

Course Description:

After completing this subject, students will be able to form ideas for implementing graduation thesis. In addition, this subject aims to help students implement these ideas to work out the graduation thesis, to work in a team with members and defense it in a thesis committee. Students must submit reports with chapters, in which there are calculation, design, choice of components and then send to lecturers.

C programming language **Credits: 3**

Prerequisites: None

Course Description:

The course covers the fundamental concepts of programming language: definition, classification, and purpose of different languages. The course specifically focuses on C programming language, demonstrates data structures and control structures in the C language. The course help students to get knowledge and ability of designing and writing C language applications.

Electromagnetic Field **Credits: 3**

Prerequisites: None

Course Description:

This course provides learners fundamental knowledge related to electromagnetic field, laws and equations for describing electromagnetic field. In addition, the course also equips with the

knowledge of the static electromagnetic field, steady electromagnetic field, time-varying electromagnetic field, electromagnetic waves, electromagnetic radiation; calculate the characteristic parameters of electric field, magnetic field and electromagnetic waves.

Engineering Challenges in Medicine **Credits: 3**

Prerequisites: None

Course Description:

This course is designed for students to study advanced techniques in biomedical engineering. Lecturers with medical and engineering majors and experiences in multidisciplinary research, will teach the subject. The course includes topics about the central nervous system, muscles and bones, lungs and heart. In the course, important biosignals, measurement methods, necessary equipment along with sicientific research topics will be discussed.

Electronics in Practice **Credits: 2**

Prerequisites: None

Course Description:

The course on Electronics in Practice guides learners to practice on basic electronic circuits such as rectifier, clipper, DC supply power, small signal amplifier, power amplifier, switching circuit using transistor, sine and square waveform oscillator circuits, control circuit using SCR, TRIAC, DIAC, photoresistor, OPTO and practical electronic circuits.

Internship **Credits: 2**

Prerequisites: None

Course Description:

The course trains students to have the qualities of a biomedical engineering engineer. Students are introduced to practise at domestic and foreign companies, health care units, hospitals, and medical centers in order to consolidate studied knowledge and practise good manners under the instruction of the company or hospital for internship.

Industrial Skills **Credits: 3**

Prerequisites: None

Course Description:

This subject provides students with knowledge of situations that often occur in the industrial environment and how to approach and solve problems. Therefore, students should form skills to quickly integrate in the industrial environment after graduation. In particular, the course will teach students about the way and career of an engineer, analysis in failure and success, as well as ways to handle data and working experiences.

Internet of Things Foundations and Applications **Credits: 3**

Prerequisites: None

Course Description:

The main aim of this course is to introduce the fundamental concepts of the Internet of Things and its applications and architecture models; the technologies and mechanisms for sensing, actuation, processing and cyber-physical data communication; Discussing semantic technologies, service oriented solutions and networking technologies that enable the integration of IoTs data and services into the cyber world.

Machine learning **Credits: 3**

Prerequisites: None

Course Description:

This course on Machine Learning is intended to provide learners with the fundamental knowledge of machine learning algorithms and practical applications in the Python language. The algorithms include supervised learning, unsupervised learning, and recommendation systems. In addition, techniques for model evaluation and model selection are also presented. Sklearn library and Python language are introduced to implement these machine-learning algorithms.

Biomedical Electronic Circuit Design **Credits: 3**

Prerequisites: None

Course Description:

The course on biomedical electronic circuit design provides learners with knowledge related to the design of electronic circuits based on the knowledge of electronic circuits used in biomedical engineering systems. In particular, biomedical signal amplification circuits using Op-Amp circuits, biomedical signal filtering circuits (low-pass, high-pass, band-pass, blocking-pass filter circuits), measuring circuits connected to biomedical sensors such as electrocardiogram, electroencephalogram, electromyogram.

Microprocessor **Credits: 3**

Prerequisites: None

Course Description:

This course equips learners with the functional knowledge of microprocessors and their history. In detail, the course covers the infrastructure and operating principles of an 8-bit microcontroller. Peripheral devices such as timer/counter, analog-to-digital conversion, interrupts, pulse width modulation, UART data transmission are also introduced. Assembly language and C language are used to implement microcontrollers-based applications. The co-design between hardware and software is introduced.

Microprocessor Project **Credits: 1**

Prerequisites: Digital Electronics Project

Course Description:

Students will investigate previuos research works using knowelege of electronics, digital, and microprocessors to calculate, design and impletment of biomedical circuits and systems. In addition, students must prepare reports which show contents of calculation and component selection, design, and results from simulation to real model. Students must also show presenting skills and contribution in group.

Programmable Logic Controller **Credits: 3**

Prerequisites: None

Course Description:

The course on Programmable Logic Controller provides learners knowledge related to sensors, actuators, hardware architecture and programmable logic controller (PLC) operation. In addition, the course also introduces programming languages along with PLC instruction and

control diagram design methods. Finally, students are equipped with practical skills and knowledge to design hardware and programming industrial control systems.

Digital Electronics Project **Credits: 1**

Prerequisites: None

Course Description:

Students will be required to read previous projects and use knowledge of electronics and digital systems to calculate, design, test and construct or simulate real circuits or systems. In addition, students must complete a report which show contents of calculation and selection of components, design, and results obtained from simulation and real model. Students also perform presentation skills and send reports to lecturers for assessing.

Robotics **Credits: 3**

Prerequisites: None

Course Description:

This course provides students knowledge of serial robotic systems including description of position and orientation of objects in 3D space, and transformation methods for multiple frames, computation of forward and inverse kinematics. In addition, basic computational methods of velocities and static forces for the robots will be provided to student for supporting advanced tasks of simulation and real-time control. This course also introduces some dedicated softwares for design, simulation, and evaluation of the robotic systems.

Microprocessor in Practice **Credits: 2**

Prerequisites: Microprocessor

Course Description:

This subject equips learners with practical programming exercises using microcontrollers. The activities focus on controlling single-led, 7-segment LEDs via the direct method or the scanning method. Other devices such as LCD, GLCD, or led matrix are also is described. The exercises get inputs from buttons, matrix keyboard, digital sensors, analog sensors to control operator. Communication with other sensors via I2C devices, real-time clock, serial EEPROM memory, ADC/DAC are advantages exercises in this course. Moreover, counter-based applications such as external-pulse counting and timer applications are mentioned in detail. Stepper motor and DC motors are introduced with pulse width modulation (PWM).

SCADA Systems **Credits: 3**

Prerequisites: None

Course Description:

The course on SCADA Systems provides learners knowledge related to the structure, classification and application of the Supervisory Control And Data Acquisition System (SCADA). Operation principle of data acquisition block, industrial communication network, data storage, control, monitoring and alerting functions of SCADA system. In addition, students are introduced to specific software for design SCADA systems

Signals and Systems **Credits: 3**

Prerequisites: None

Course Description:

This course provides fundamental knowledge and application about the continuous time signals and systems and applications. Topics include communication, continuous -time LTI signals and systems, difference equations, The Laplace Transform and convolution to Continuous-Time System Analysis, Continuous Time Fourier Series(CTFS), Continuous Time Fourier Transform (CTFT), modulation and demodulation system classification and filter system.

Special Topic in Biomedical Engineering **Credits: 3**

Prerequisites: None

Course Description:

This course aims to provide learners with basic knowledge about machines and experiments, software applied in biomedical engineering, as well as understanding medical devices in general. Therefore, students will study skills for build and design of effective and practical experiment models. In addition, special topics will provide skills to find reliable international articles, as well as how to write quality scientific articles.

Data Acquisition and Control Using Computer **Credits: 3**

Prerequisites: None

Course Description:

This course teaches students about the types, structure, and applications of data acquisition and control systems. It introduces learners to the practical principles of signal and data processing blocks and programming techniques to collect data in reality. Moreover, students will learn about Open Platform Communications (OPC) and Supervisory Control and Data Acquisition (SCADA) systems, including their components and functions within the system.

Artificial intelligence for Biomedical Applications **Credits: 3**

Prerequisites: None

Course Description:

This course aims to provide learners with knowledge on training deep learning models to solve complex problems. The curriculum is divided into three main parts. The first part covers basic Python commands and object-oriented programming in Python. The second part focuses on the fundamental components of a deep learning model and how to train such a model. The third part introduces labeling tools and dataset analysis for classification and object detection tasks.

Biomedical Imaging Technology **Credits: 3**

Prerequisites: None

Course Description:

The course on Biomedical imaging technology provides learners with fundamental information and an overview of the structure, operating principles, and operating principles of standard medical imaging equipment. This basic information and overviews offer students a foundation for more in-depth study in the field of design, installation, operation, and maintenance of standard diagnostic imaging equipment in the medical system.

Computer Aided Design **Credits: 3**

Prerequisites: None

Course Description:

This course introduces the learners to the use of CAD software for product design simulation and modeling. The course provides the learners with the knowledge and the ability to use CAD software proficiently. After completing this course, students will be able to design and model structural components of machinery and devices and assemble the components to create functional devices on a computer. Students can then proceed with constructing these device models by creating engineering drawings and blueprints using CAD software.

Biomedical Image Processing Lab **Credits: 1**

Prerequisites: Biomedical Image Processing

Course Description:

Based on the knowledge learned in Biomedical Image Processing, the student can simulate biomedical image processing processes on Matlab or Python software and aim to perform on real image processing systems.

Health and Safety in Biomedical Engineering **Credits: 3**

Prerequisites: None

Course Description:

This course introduces learners to safety concerns in the biomedical and engineering industries. It equips students with the precaution to identify and resolve safety problems while protecting themselves, others, and medical equipment from sources of hazards during machinery operation and maintenance. These hazards can also include radiation, toxic chemicals, and dangerous biochemicals. Moreover, the course further helps learners understand the safety standards related to biomedical devices.

Biosignal Processing Lab **Credits: 1**

Prerequisites: Biomedical Signal Processing

Course Description:

This course allows students to practice with different biomedical signal and data acquisition methods, methods of signal preprocessing, and statistical analysis of the data. Students will work with various biomedical signals, including ECG, EEG, fNIRS, etc. Moreover, the course also teaches students to use MATLAB software to perform signal processing tasks.

Biomedical Image Processing **Credits: 3**

Prerequisites: None

Course Description:

The course on Biomedical Image Processing provides students with basic knowledge of computational and programming methods in biomedical image processing. The course covers the types of biomedical images such as CT, MRI, PET, and ultrasound images. The course examines common methods for enhancing and extracting useful information in medical images. In addition, some diagnostic contexts of diseases from X-ray images are used as examples for the methods mentioned.

Biosignal Processing **Credits: 4**

Prerequisites: None

Course Description:

This course provides students with the basics of human biostatistics and hypothesis testing. Furthermore, learners are provided with knowledge related to the collection and processing of electrocardiogram (ECG), electroencephalogram (EEG) and fNIRS signals. In addition, the course also provides learners with knowledge related to building noise filtering applications, processing of received biological signals, theoretical basis and algorithms implemented on Matlab software.

Healthcare Information Systems Lab **Credits: 1**

Prerequisites: Healthcare Information Systems

Course Description:

This course provides students with the knowledge and skills to use software and hardware to practice computer-based health information systems (HIS). Students are taught to design electronic medical record systems; collect, store and manage all kinds of medical information.

Biomedical Instrumentation **Credits: 3**

Prerequisites: None

Course Description:

This course provides learners with basic knowledge about the principles of medical device design, medical device safety, classification of bioelectrodes, types of biosignals, biomedical signal amplification circuits and sensors commonly used in medical equipment. Knowing how to use methods to measure blood flow, volume, respiratory system, and sound. The course also equips basic knowledge about medical devices such as: Blood pressure monitor, Ultrasound machine, EGG, EEG, MRI, Electromyography, X-ray, Blood glucose measurement.

Digital Systems **Credits: 3**

Prerequisites: None

Course Description:

This course provides students with the knowledge of digital systems, the fundamental theories of Boolean algebra, the structures and operations of essential elements in digital circuits, the structure of digital ICs, computational methods, and the design of sequential and combinational logic circuits. In addition, the course also provides students with operating principles and methods of calculating and designing digital oscillator and timing circuits, memory structure and the principle of analog-to-digital converters, methods of using memory, and analog-to-digital converters in the digital system.

Human Physiology and Anatomy **Credits: 3**

Prerequisites: None

Course Description:

The field of physiology involves the scientific study of functions and mechanisms in living systems. As a sub-discipline of biology, physiology focuses on how organisms, organ systems, individual organs, cells, and biological molecules carry out chemical and physical functions in a living system. Based on different classes of organisms, the field can be divided into medical physiology, animal physiology, plant physiology, cellular physiology, and comparative physiology. The Human and Animal Physiology course will focus on providing students with knowledge about the structure and function of certain organs in the human body.

Learners will be equipped with knowledge about the anatomy of several organs and how these organs operate.

Healthcare Information System **Credits: 3**

Prerequisites: None

Course Description:

Knowledge of healthcare information systems used in healthcare system applications, the development trends of systems serving the development of healthcare, the process of building and operating a medical information system.

Introduction to Biomedical Engineering **Credits: 3**

Prerequisites: None

Course Description:

This course introduces first-year undergraduates to the field of biomedical engineering. It equips learners with a broad range of technical knowledge in biomedical technology and introduces them to the roles of biomedical engineers, their ethical and professional responsibilities. The course also prepares learners with essential soft skills such as collaboration, communication, and presentation skills. It also equips students with the right tools and study methods to advance their working capabilities and future performance. Furthermore, students will learn and participate in activities to structure and manage a research project. These activities can help them manage their team, their work, and schedule to complete any project efficiently on time. Throughout this course, students will be exposed to various types of problems and scenarios to learn how to put knowledge into practice.

Embedded Systems in Biomedical Engineering Lab **Credits: 2**

Prerequisites: Embedded Systems in Biomedical Engineering

Course Description:

This course teaches students to program embedded and real-time operating systems. In addition, students are taught how to integrate hardware with software. Students will learn how to collect and analyze data from biomedical sensors and build an embedded biomedical system in practice.

Biomedical Instrumentation Lab **Credits: 2**

Prerequisites: None

Course Description:

This course provides learners with knowledge about the structures and working principles of medical devices. It guides them on the operation of medical devices for patient examination, monitoring, and prognosis in healthcare. Some devices include newborn incubators, electrotherapy devices, ultrasound for therapy and diagnostic applications, sphygmomanometer, electrocardiogram, patient monitor, endoscope, etc. Students will learn how to measure parameters directly on the human body and analyze measurement or simulation results with proven real-world results.

Embedded Systems in Biomedical Engineering **Credits: 3**

Prerequisites: None

Course Description:

The Embedded Systems in Biomedical Engineering course provides students with the knowledge needed to build embedded systems used in medical devices for diagnosis, prognosis, patient management, and telemedicine. In addition, students will learn how to combine hardware and software in an embedded system for application in medical device manufacturing. Furthermore, students are taught designing, programming, simulating, testing, and evaluating a biomedical embedded systems.

Digital Systems Lab **Credits: 2**

Prerequisites: Digital systems

Course Description:

This course guides students to practice assembling digital electronic circuits such as logic gates, Flip-Flop, counters, registers, combinational and sequential circuit design, memory, analog-digital conversion, and application circuits in reality.

Biomedical Sensor Technology **Credits: 3**

Prerequisites: None

Course Description:

This course introduces students to the knowledge of biomedical sensor technology, from theory and working principles to these sensors' applications. In addition, this course also deals with measurement techniques, sensor signal processing, and sensing systems in medical equipment.

Biomedical Sensors Technology Lab **Credits: 1**

Prerequisites: Biomedical Sensor Technology

Course Description:

The course introduces the students to the practice and experimental studies of a wide range of biomedical sensors. Each experiment is self-contained, and the student will present the findings in written form through a lab report which will have a set of experiment-specific questions to answer. This written report also forms the basis for the assessment. All students work in groups and carry out multiple experiments, which vary based on the sensors used.

Biomedical Electronic Circuit Lab **Credits: 2**

Prerequisites: Biomedical Electronic Circuit Design

Course Description:

This course guides learners to practice electronic circuits used in biomedicine, including biomedical signal amplifier circuits using Op-amp algorithm amplifier circuits, biomedical signal filter circuits low-pass, high-pass, wide-band filter circuits, etc., measurement circuits that communicate with biomedical sensors such as electrocardiogram and electromyography signals.

Wireless Technologies **Credits: 3**

Prerequisites: None

Course Description:

This course provides students with an understanding of common wireless technologies, including Wifi, Bluetooth, Zigbee, NFC, RFID and can expand to introduce other wireless technologies that have applications in the field of medical devices. Students also learn the basics of radio communications such as frequency bands, modulation techniques, and multiple

access techniques. In each wireless technology, security issues and the application of that technology are also introduced. Students also have the opportunity to learn about the integration of wireless technologies into medical device design and applications in biomedical electronics.

Human computer interaction **Credits: 3**

Prerequisites: None

Course Description:

This course focuses on user-centered design, interface development techniques, and usability evaluation, with the goal of helping students develop user-focused design skills. Through this, students will grasp the principles and methods for creating effective interfaces using any technology. Numerous examples from the web and web technologies are used to illustrate HCI concepts. Key topics include: Why is user interface design important and why is it challenging?; The importance of color theory, hierarchy, and balance; How to think like a designer; How to apply user-centered design; Graphic and interaction design for user interfaces; Web design; How web design translates to mobile design and vice versa; How to design applications for iOS and Android.

Medical Equipment Management **Credits: 3**

Prerequisites: None

Course Description:

This course aims to provide learners with foundational knowledge and standards for medical equipment management. Specifically, learners will understand how to classify medical equipment for appropriate management and monitoring in medical companies, healthcare centers, and hospitals. This knowledge contributes to the effective application and regulation of medical equipment in a correct and reasonable manner.

Applied Programming in Engineering **Credits: 3**

Prerequisites: None

Course Description:

This course provides students with knowledge of serial robotic systems. It begins by equipping students with foundational concepts on how to represent the position and orientation of objects in space, as well as homogeneous transformations for multiple coordinate systems. These concepts are then applied to solve forward and inverse kinematics problems for specific robots. In addition, to support higher-level computation and control, the course introduces methods for calculating velocities and static forces in robotic systems. Specialized software tools are also introduced to help students design, simulate, and evaluate the accuracy of the concepts they have learned or may encounter in the field of robotics.

Industrial Robot **Credits: 3**

Prerequisites: None

Course Description:

This course equips learners with fundamental knowledge of industrial robotics within the context of the Fourth Industrial Revolution (Industry 4.0). It provides knowledge and techniques related to robotic systems, as well as kinematics and dynamics calculations using the transformation matrix method and the Denavit-Hartenberg method in robot control. The

course also introduces key directions for the application of robotics in industry and services. As an advanced course in mechatronic systems, it helps learners understand both the positive and negative impacts of robotics on society and human life.

Enterprise Seminar **Credits: 1**

Prerequisites: None

Course Description:

This subject provides students knowledge of situations that often occur in the industrial environment and how to approach and solve problems that can occur in practice. Therefore, students can study knoledge and skills to quickly integrate in the industrial environment after graduation. In addition, the course will teach students about the way and engineer career, how to analyse failure and success, process data and experiences during working.

General Chemistry for Engineers **Credits: 3**

Prerequisites: None

Course Description:

This course is designed to provide students with the basic knowledge of chemistry, the ability to read scientific and technical literature to gain the necessary understandings about the physical world around and to perceive the presence of chemistry in engineering majors. This course helps students understand the nature of atoms and molecules, thereby explaining the properties of matter. In addition, this course also helps students develop the ability to solve fundamental quantitative problems related to thermodynamics, reaction kinetics, stoichiometry, solution properties and electrochemical processes.

General law **Credits: 3**

Prerequisites: None

Course Description:

This course is designed to provide students with the basic knowledge about the general theory of State and Law including origin, form, function, the system of State; nature, functions, source, the form of law. The course also consists of basic knowledge of the Vietnamese legal system and some basic regulations of some laws like Criminal law, Civil law, Labour law, marriage and family law.

Mathematical Statistics for Engineers **Credits: 3**

Prerequisites: None

Course Description:

This course is designed to cover topics from mathematical statistics that are of interest to students from engineering and/or the sciences. Topics should include descriptive statistics, elementary probability, random variables and distributions, mean variance, parameter estimation, hypothesis testing and time permitting- correlation, regression and analysis of variance.

Calculus 1 **Credits: 3**

Prerequisites: None

Course Description:

This course is designed to provide students with the basics of limit, continuity, differentiation and integration of one variable functions.

Calculus 2 **Credits: 3**

Prerequisites: None

Course Description:

This course is designed to provide students with the basic knowledge of the integration of functions of a variable, of infinite series, of power series, and of vectors in the plane and in space.

Calculus 3 **Credits: 3**

Prerequisites: None

Course Description:

This course equips students with the basic knowledge about vector-value functions, functions of several variables, partial derivatives, double and triple integrals, line and surface integrals, and vector calculus. Students also learn how to apply this knowledge to solve problems in physical science and other practical use cases.

Physics 1 **Credits: 3**

Prerequisites: None

Course Description:

This course provides students with foundational knowledge in physics, focusing on mechanics and thermodynamics, as a basis for further studies in science, engineering, and technology. Students will learn to interpret physical phenomena—from molecular to planetary scale—and apply this knowledge in research and technological development. The course emphasizes understanding fundamental laws, scientific methods, and logical reasoning. Students will develop skills in problem-solving, mathematical modeling, data analysis, and scientific presentation, helping them prepare for advanced subjects in their engineering degree.

Physics 2 **Credits: 3**

Prerequisites: None

Course Description:

This course provides fundamental knowledge of electricity, magnetism, light, and optics, essential for further study in science, engineering, and technology. Students will learn to understand and apply physical laws to natural phenomena and technological development. The course emphasizes scientific methods, logical reasoning, and problem-solving skills through conceptual learning and standard exercises. It also trains students to build and analyze mathematical models from experimental data, understand their limitations, and use them to predict outcomes.

Physics - Laboratory 1 **Credits: 1**

Prerequisites: None

Course Description:

This course includes 9 experiments in kinematics, particle and rigid body dynamics, and thermodynamics. It supports students in technology-related fields by deepening their understanding of natural physical phenomena and reinforcing theoretical physics. The course also builds essential engineering skills such as observation, experimentation, measurement, calculation, and data analysis.

Physics - Laboratory 2 **Credits: 1**

Prerequisites: None

Course Description:

This course includes 9 experiments in electromagnetism and optics. It enhances students' understanding of physical phenomena and reinforces prior physics knowledge. Aimed at engineering and technology majors, the course develops essential skills such as observation, experimentation, measurement, calculation, and data analysis.

Philosophy of Marxism and Leninism **Credits: 3**

Prerequisites: None

Course Description:

The course consists of three chapters and provides students with the following knowledge: Chapter 1 introduces general concepts of philosophy, Marxist-Leninist philosophy, and its role in social life. Chapter 2 presents the fundamental principles of dialectical materialism, including the relationship between matter and consciousness, the materialist dialectic, and the theory of knowledge in dialectical materialism. Chapter 3 covers the basics of historical materialism, including socio-economic formations, classes and nations, the state and social revolution, social consciousness, and the philosophy of human beings.

Political economics of Marxism and Leninism **Credits: 2**

Prerequisites: None

Course Description:

The course consists of six chapters and provides students with the following knowledge: Chapter 1 introduces the subject, research methods, and functions of Marxist-Leninist political economy. Chapters 2 through 6 present the core content of Marxist-Leninist political economy according to the course objectives. Specific topics include: commodities, markets, and the roles of economic agents in a market economy; surplus value production in a market economy; competition and monopoly in the market economy; the socialist-oriented market economy and economic interest relations in Vietnam; industrialization, modernization, and Vietnam's international economic integration.

Scientific socialism **Credits: 2**

Prerequisites: None

Course Description:

The course consists of 7 chapters and provides students with the following knowledge: Chapter 1 introduces fundamental introductory issues of Scientific Socialism, including its formation and development. Chapters 2 through 7 present the core content of Scientific Socialism in accordance with the course objectives.

History of Vietnamese communist party **Credits: 2**

Prerequisites: None

Course Description:

The course consists of 3 chapters, providing students with an understanding of the subject, purpose, tasks, and research methods for studying the History of the Communist Party of Vietnam. It offers core, systematic knowledge about the founding of the Party (1920–1930); the Party's leadership in the struggle for national liberation (1930–1945); its leadership in the

two resistance wars against French colonialists and American imperialists, achieving national independence and reunification (1945–1975); and the Party's leadership in the transition to socialism and the renewal process (1975–2018). Through this, the course highlights achievements, points out limitations, and summarizes lessons from the Party's revolutionary leadership. It aims to help students strengthen their awareness and confidence in the Party, and apply the learned knowledge to practical work, contributing to the construction and defense of the Socialist Republic of Vietnam.

Ho Chi Minh's ideology **Credits: 2**

Prerequisites: None

Course Description:

The course consists of 6 chapters, providing students with knowledge of the following: the concepts, subject, research methods, and significance of studying Ho Chi Minh's Thought; the foundations, formation, and development process of Ho Chi Minh's Thought; and Ho Chi Minh's Thought on: national independence and socialism; the Communist Party of Vietnam and the state of the people, by the people, and for the people; great national unity and international solidarity; culture and human development; and ethics.

Graduation Thesis **Credits: 10**

Prerequisites: None

Course Description:

Students will explore prior research using knowledge of electronics, digital systems and microprocessors to calculate, program, and operate a complete systems. Furthermore, students must complete report sections of topics to present understanding, analysis, and evaluation. Students also show presentation skills and teamwork for assessment.

10. Facilities for Learning

10.1. Workshops, Laboratories, and Experimental Equipment Systems

- Electronics Laboratory
- Digital Technology Laboratory
- Microprocessor Laboratory
- Biomedical Practice Laboratory

10.2. Library and Websites

- The library of Ho Chi Minh City University of Technology and Education and online resources.

11. Program Implementation Guidelines

The training program is implemented in accordance with the current regulations for full-time university-level credit-based training, as stipulated by the Ministry of Education and Training and Ho Chi Minh City University of Technology and Education.

The specified hours are calculated as follows:

- 1 credit = 15 hours of theoretical lectures or in-class discussions
- 1 credit = 30 hours of laboratory work or practical exercises
- 1 credit = 45 hours of self-study
- 1 credit = 45 - 90 hours of on-site internship

- 1 credit = 45 - 60 hours for project work or graduation thesis

The total hours for a course must be a multiple of 15.

Political Theory Knowledge: Implemented according to the regulations of the Ministry of Education and Training.

Foreign Language Knowledge: The foreign language output standard is determined by the university's Science and Training Council at the beginning of each admission cohort. Throughout their studies, the university will monitor the students' foreign language proficiency development each academic year to decide the number of credits for courses that students are allowed to register for in a semester. Students can self-study or register for the foreign language proficiency development program according to the university's plan.

Physical Education Knowledge: Implemented according to the regulations of the Ministry of Education and Training. For Physical Education 2 and 3, students can select from the course catalog when registering for modules.

National Defense Education Knowledge: Implemented according to the regulations of the Ministry of Education and Training. Students accumulate credits and are granted a certificate after completing the requirements of the module.

Elective Social Sciences and Humanities Knowledge: Students select 2 courses, equivalent to 4 credits, from the course catalog when registering for modules.

Elective Foundational Major Knowledge: Students select 1 course, equivalent to 3 credits, from the course catalog when registering for modules.

Elective Specialized Major Knowledge: Students select 2 courses, equivalent to 6 credits, from the course catalog when registering for modules.

The remaining knowledge blocks are arranged into 8 semesters as presented in section 8.

VICE PRESIDENT	**DEAN OF FACULTY OF INTERNATIONAL EDUCATION**
Dr. Quach Thanh Hai	**Assoc. Prof. Dr. Truong Dinh Nhon**