

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

UNDERGRADUATE PROGRAM
Major of
FOOD TECHNOLOGY

(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 Name: Food Technology

Level: Undergraduate

Major: Food Technology.

Major Code: 7540101A

Ho Chi Minh City, 2025

UNDERGRADUATE PROGRAM

Education Name: Food Technology

Level: Undergraduate

Major: Food Technology

Major Code: 7540101A

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/QĐ-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/QĐ-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:

Graduates are expected to possess: (a) political and ethical integrity; (b) a strong sense of public service; (c) good health; (d) fundamental knowledge, foundational knowledge, and specialized knowledge in Food Technology (FT); (e) the ability to recognize, analyze, solve problems, and propose solutions; (f) competence in designing, building, and managing systems relevant to the FT field; (g) communication and teamwork skills; (h) a professional attitude aligned with the development needs of the industry and society, meeting the requirements of national development and defense.

Upon graduation, students can work in factories, companies, enterprises, organizations related to the FT field, and in training institutions specializing in Food Technology.

Objectives:

Số hiệu: BM9/QT-PĐT-XĐĐAMN Lần soát xét: 00 Ngày hiệu lực: 01/01/2023 Trang: 2/38

Graduates of the Food Technology program will be able to:

1. apply scientific and technological knowledge to succeed in the field of food technology or related sectors, and become responsible members of society.
2. develop self-learning skills, problem-solving abilities, creative thinking, and technical expertise in food technology.
3. build effective communication and teamwork skills.
4. proactively engage in research and pursue higher education to enhance professional development.

Program outcomes

Code	Expected Learning Outcomes	Competency Level
ELO1	Ability to define, calculate, evaluate, and solve technical problems in the field of Food Technology by applying principles of mathematics, science, and engineering.	5
ELO2	Ability to develop and conduct experiments, analyze, synthesize, and evaluate data to draw appropriate conclusions in the field of Food Technology.	5
ELO3	Awareness of ethics and professional responsibility; ability to propose rational solutions considering global, economic, environmental, and social contexts.	4
ELO4	Ability to update knowledge and technologies, using appropriate learning methods.	4
ELO5	Ability to work effectively in teams.	4
ELO6	Ability to communicate effectively through various forms and with different audiences.	5
ELO7	Ability to apply engineering design to create solutions that meet specific requirements in Food Technology.	5
ELO8	Ability to operate and manage technical systems in the field of Food Technology.	4

ELO: expected learning outcomes

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 Education, Military 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 → English for Thesis Writing.

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 Groups

Groups of Courses	Credits		
	Total	Compulsory	Elective
General Knowledge	60	56	4

General Politics + Laws	14	14	
Social Sciences and Humanities	4		4
English	8	8	
Mathematics and Natural Sciences	22	22	0
Introduction to Food Technology	3	3	
Technical Computer Sciences	3	3	
Supplementary knowledge	6	6	
Professional knowledge	98	92	6
Foundation of Major	23	23	0
Professional Major	48	42	6
Experiments, Practices and Internships	17	17	0
Graduation thesis	10	10	
Physical and National Defense Education	Non-accumulation		
<i>National Defence Education 1</i>	1		
<i>National Defence Education 2</i>	1		
<i>National Defence Education 3</i>	1		
<i>National Defence Education 4</i>	1		
<i>Physical Education 1</i>	1		
<i>Physical Education 2,3</i>	2		
Communicative English	Non-accumulation		
Communicative English 1	4		
Communicative English 2	4		
Enterprise Seminar	1		
Total	158	148	10

7. Content of Program

A – Compulsory Courses

7.1. General Knowledge

No.	Course's ID	Course name	Credits	Note
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.	PHYS130902E	Physics 1	3	
11.	PHYS131002E	Physics 2	3	
12.	GCHE130603E	Chemistry for Engineers	3	
13.	ITAP138785E	Information Technology Applications	3 (2+1)	
14.	INFT330150E	Introduction to Food Technology	3 (2+1)	
15.	OCHE220203E	Organic Chemistry	2	
16.	EOCH210403E	Experiment of Organic Chemistry	1	
17.	TEDG130120E	Technical drawing - Basic course	3	
18.	ELEE220144E	Electrical Engineering	2	
19.	THER222932E	Thermal Engineering	2	
20.	ACEN340535E	Academic English 1	4	
21.	ACEN340635E	Academic English 2	4	
22.	COEN140135E	Communicative English 1	4	Non-accumulation
23.	COEN140235E	Communicative English 2	4	
24.	GDQP110131	Giáo dục quốc phòng 1 (<i>National Defence Education 1</i>)	1	
25.	GDQP110231	Giáo dục quốc phòng 2 (<i>National Defence Education 2</i>)	1	
26.	GDQP110331	Giáo dục quốc phòng (<i>National Defence Education 3</i>)	1	
27.	GDQP110431	Giáo dục quốc phòng 4 (<i>National Defence Education 4</i>)	1	

28.	PHED110130	Giáo dục thể chất 1 (<i>Physical Education 1</i>)	1	
29.	Giáo dục thể chất 2,3 (<i>Physical Education 2,3</i>)		2	Select 2 courses
30.	FOOT112330	Bóng đá (<i>Football</i>)	1	Non-accumulation
31.	VOLL112330	Bóng chuyền (<i>Volleyball</i>)	1	
32.	BASK112330	Bóng rổ (<i>Basketball</i>)	1	
33.	BADM112330	Cầu lông (<i>Badminton</i>)	1	
34.	TENN112330	Quần vợt (<i>Tennis</i>)	1	
35.	KARA112330	Không thủ đạo (<i>Karate</i>)	1	
36.	CHES112330	Cờ vua (<i>Chess</i>)	1	
37.	CHIN112330	Cờ tướng (<i>Chinese Chess</i>)	1	
38.	YOGA112330	Yoga (<i>Yoga</i>)	1	
39.	PICK112330	Pickleball	1	
Total			56	

7.2. Professional knowledge

7.2.1. Foundation of major

No.	Course's ID	Course name	Credits	Prerequisite
1.	MHAP330450E	Mechanical, Hydraulic and Air-Compressed Process and Equipment	3	MATH132401E MATH132501E MATH132601E
2.	HETE330250E	Heat Transfer and Equipment	3	MHAP330450E
3.	MTEQ320350E	Mass Transfer and Equipment	2	HETE330250E
4.	BPEF323950E	Basic Principles and Equipment in Food Technology	2	
5.	ACHE220303E	Analytical Chemistry	2	
6.	FOCH330650E	Food Chemistry	3	
7.	FOMI330850E	Food Microbiology	3	
8.	FOBI330750E	Food Biochemistry	3	FOCH330650E FOMI330850E
9.	PHCF320550E	Physical Chemistry of Foods	2	GCHE130603E OCHE220203E FOCH330650E

Total	23	
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7.2.2.a Professional Major Courses (Theory courses)

No.	Course's ID	Course name	Credits	Prerequisite
1.	FOAD420950E	Food Additives	2	
2.	FOMA431050E	Food Quality Management	3	
3.	FNFS421150E	Nutrition	2	FOBI330750E
4.	FOHS424050E	Food Hygiene and Safety	2	FOMI330850E
5.	FPPD421350E	Food Process and Plant Design	2	TEDG130120E MHAP330450E HETE330250E MTEQ320350E
6.	FOSE421450E	Sensory evaluation of food	2	
7.	FONA421550E	Food Analysis	2	FOCH330650E ACHE220303E
8.	ENTW621038E	English for Thesis Writing	2	
9.	SOFT431750E	Statistics and Optimization in Food Technology	3	MATH132401E MATH132501E MATH132601E
10.	CEPR421850E	Production of Cereal-based food	2	
11.	PRBC421950E	Bakery and Confectionery Production	2	FOCH330650E FOBI330750E BPEF323950E
12.	VFPR422050E	Vegetable and Fruit Processing	2	FOCH330650E
13.	PDRD422150E	Dairy and Related Dairy Products Processing	2	FOCH330650E FOBI330750E FOMI330850E BPEF323950E
14.	PTCC422250E	Tea, Coffee and Chocolate Production	2	FOBI330750E FOMI330850E BPEF323950E
15.	MSPR422350E	Meat and Seafood Processing	2	FOBI330750E FOMI330850E BPEF323950E

16.	POTE424150E	Postharvest Technology	2	FOBI330750E
17.	FETE424250E	Fermentation Technology	2	FOMI330850E
18.	FORE424450E	Food Research and Development	2	FOBI330750E FOMI330850E
19.	FOPA421250E	Food Packaging	2	
20.	PPEF422450E	Project of Processes and Equipment in Food Technology	2	MHAP330450E HETE330250E MTEQ320350E
Total			42	

7.2.2.b Professional Major Courses (Practice courses)

No.	Course's ID	Course name	Credits	Prerequisite
1.	EACH210503E	Experiment of Analytical Chemistry	1	ACHE220303E
2.	PFCB412750E	Practice of Food Biochemistry	1	FOBI330750E
3.	PFMI422850E	Practice of Food Microbiology	2	FOMI330850E
4.	PRFA422950E	Practice of Food Analysis	2	EACH210503E FONA421550E
5.	PFSE413050E	Practice of Sensory Evaluation of Food	1	FOSE421450E
6.	PPEF412650E	Experiment of Processes and Equipment in Food Technology	1	MHAP330450E HETE330250E MTEQ320350E
7.	PRFT415350E	Practice of Fermentation Technology	1	PFMI422850E FETE424250E
8.	PCPR414750E	Practice of Cereal Processing	1	CEPR421850E
9.	PBCP414850E	Practice of Bakery and Confectionery Production	1	PRBC421950E
10.	PVFB414950E	Practice of Vegetable, Fruit & Beverage Processing	1	FOCH330650E FOMI330850E VFPR422050E BEPR422450E
11.	PDRD415050E	Practice of dairy and related dairy products processing	1	FOBI330750E FOMI330850E PDRD422150E

12.	PRTC415150E	Practice of Tea, Coffee and Chocolate Production	1	PTCC422250E
13.	PMSP415250E	Practice of Meat and Seafood Processing	1	FOBI330750E FOMI330850E MSPR422350E
14.	FAPR423250E	Industry Internship	2	
15.	SEMI310026E	Enterprise Seminar	1	Non-accumulation
Total			17	

7.2.3. Graduation thesis

No.	Course's ID	Course name	Credits	Prerequisite
1.	GRTH403350E	Graduation thesis	10	
Total			10	

B – Optional Subjects

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

No.	Course's ID	Course name	Credits	Prerequisite
1.	GEFC220105E	General Economics	2	Select 2 courses
2.	INMA220305E	Introduction of Management	2	
3.	INLO220405E	Introduction to Logic	2	
4.	BPLA121808E	Business Plan	2	
5.	ENPS220591E	Engineering Psychology	2	
6.	SYTH220491E	System Thinking	2	
7.	PLSK120290E	Planning Skills	2	
Total			4	

7.3.2. Interdisciplinary Courses: 6 Credits (Choose 3 courses)

No.	Course's ID	Course name	Credits	Prerequisite
Interdisciplinary Food Technology Courses				
1.	FOBI424350E	Food Biotechnology	2	FOMI330850E FOBI330750E
2.	FPPT327150E	Low temperature preservation of food	2	HETE330250E MTEQ320350E FOCH330650E

				BPEF323950E
3.	BEPR422450E	Beverage Production Technology	2	FOCH330650E FOBI330750E FOMI330850E
4.	TEOF424550E	Processing Technology of Edible Oils and Fats	2	FOCH330650E
5.	DRTF424650E	Drying Technology in Food	2	MHAP330450E HETE330250E MTEQ320350E
Interdisciplinary Chemical Engineering Courses				
6.	IORP423603E	Organic Colorant Technology	2	
7.	FSTE423703E	Flavor Chemistry Technology	2	
8.	TECP423803E	Cosmetic Chemistry Technology	2	
Interdisciplinary Environmental Engineering Courses				
9.	OHSM322110E	Occupational Health and Safety Management	2	
10.	EIAS322510E	Environmental Impact Assessment	2	
11.	CPDS322010E	Cleaner Production and Sustainable Design	2	

C – MOOCs (Massive Open Online Courses):

To facilitate enhanced access to advanced training programs, students can independently choose proposed online courses from the following table to be considered equivalent to courses in the curriculum:

No.	Course code	Course name	Credits	Course eligible for MOOC equivalency (registration link provided)
1.	BIEN325450	Biochemistry Engineering	2	FOBI330750E- Food Biochemistry (https://ocw.mit.edu/courses/chemical-engineering/10-442-biochemical-engineering-spring-2005/index.htm)
2.	PHCH325550	Physical chemistry	2	PHCF320550E- Physical Chemistry of Foods (https://ocw.mit.edu/courses/chemistry/5-61-physical-chemistry-fall-2013/)

3.	INEC325650	Introduction to Experimental Chemistry	2	ACHE220303E- Analytical Chemistry (https://ocw.mit.edu/courses/chemistry/5-35-introduction-to-experimental-chemistry-fall-2012/)
4.	INHT335750	Introduction to Heat transfer	3	HETE330250E- Heat Transfer and Equipment (https://ocw.mit.edu/courses/mechanical-engineering/2-051-introduction-to-heat-transfer-fall-2015/)
5.	SYMI325850	System Microbiology	2	FOMI330850E- Food Microbiology (https://ocw.mit.edu/courses/biological-engineering/20-106j-systems-microbiology-fall-2006/)

8. Training plan

1st Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term
1.	GELA 236939E	General Law	3		1
2.	INFT330150E	Introduction to Food Technology	3 (2+1)		1
3.	MATH132401E	Calculus 1	3		2
4.	PHYS130902E	Physics 1	3		2
5.	GCHE130603E	General Chemistry for Engineers	3		2
6.	ITAP138785E	Information Technology Applications	3 (2+1)		2
7.	PHED110130	Giáo dục thể chất 1 (<i>Physical Education 1</i>)	1		1
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.	LLCT130105E	Philosophy of Marxism and Leninism	3		1

2.	MATH132501E	Calculus 2	3		1
3.	OCHE220203E	Organic Chemistry	2		1
4.	TEDG130120E	Technical drawing - Basic course	3		2
5.	THER222932E	Thermal Engineering	2		1
6.	ACHE220303E	Analytical Chemistry	2		1
7.	FOCH330650E	Food Chemistry	3		2
8.	FOMI330850E	Food Microbiology	3		2
9.		Social Sciences and Humanities 1 (optional)	2		1
10.		Giáo dục thể chất 2 (tự chọn 1) <i>Physical Education 2 (Option 1)</i>	1	Non-accumulation	2
11.		Giáo dục Quốc phòng <i>National Defence Education</i>	4	Non-accumulation	
Total			23		

3rd Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term
1.	LLCT120205E	Political Economics of Marxism and Leninism	2		1
2.	LLCT120405E	Scientific socialism	2		2
3.	MATH132601E	Calculus 3	3	MATH132401E MATH132501E	1
4.	PHYS131002E	Physics 2	3	PHYS130902E MATH132401E MATH132501E	1
5.	ELEE220144E	Electrical Engineering	2		1
6.	PHCF320550E	Physical Chemistry of Foods	2	GCHE130603E OCHE220203E FOCH330650E	2
7.	FOBI330750E	Food Biochemistry	3	FOCH330650E FOMI330850E	2

8.	FONA421550E	Food Analysis	2	FOCH330650E ACHE220303E	1
9.	BPEF323950E	Basic Principles and Equipment in Food Technology	2		2
10.	EOCH210403E	<i>Experiment of Organic Chemistry</i>	1	OCHE220203E	1
11.	PFMI422850E	<i>Practice of Food Microbiology</i>	2	FOMI330850E	2
12.	EACH210503E	<i>Experiment of Analytical Chemistry</i>	1	ACHE220303E	1
13.		Social Sciences and Humanities 2 (optional))	2		2
14.	Giáo dục thể chất 3 (tự chọn 2) <i>Physical Education 3 (Option 2)</i>		1	Non- accumulation	2
Total			27		

4th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term
1.	LLCT120314E	Ho Chi Minh's ideology	2		1
2.	LLCT220514E	History of Vietnamese communist party	2		2
3.	MHAP330450E	Mechanical, Hydraulic and Air-Compressed Process and Equipment	3	MATH132401E MATH132501E MATH132601E	1
4.	FNFS421150E	Nutrition	2	FOBI330750E	2
5.	PRBC421950E	Bakery and Confectionery Production	2	FOCH330650E FOBI330750E BPEF323950E	2
6.	PDRD422150E	Dairy and Related Dairy Products Processing	2	FOCH330650E FOBI330750E FOMI330850E BPEF323950E	1
7.	POTE424150E	Postharvest Technology	2	FOBI330750E	1
8.	FOSE421450E	Sensory evaluation of food	2		2

9.	PRFA422950E	<i>Practice of Food Analysis</i>	2	EACH210503E FONA421550E	2
10.	PFCB412750E	<i>Practice of Food Biochemistry</i>	1	FOBI330750E	1
11.	FOBI424350E FPPT327150E BEPR422450E TEOF424550E DRTF424650E IORP423603E FSTE423703E TECP423803E OHSM322110E EIAS322510E CPDS322010E	Interdisciplinary 1 (option 1) Food Biotechnology Low temperature preservation of food Beverage Production Technology Processing Technology of Edible Oils and Fats Drying Technology in Food Organic Colorant Technology Flavor Chemistry Technology Cosmetic Chemistry Technology Occupational Health and Safety Management Environmental Impact Assessment Cleaner Production and Sustainable Design	2		2
Total			22		

5th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term
1.	HETE330250	Heat Transfer and Equipment	3	MHAP330450E	2
2.	ENTW621038E	English for Thesis Writing	2		2
3.	CEPR421850E	Production of Cereal-based food	2		1
4.	VFPR422050E	Vegetable and Fruit Processing	2	FOCH330650E	2

5.	PTCC422250E	Tea, Coffee and Chocolate Production	2	FOBI330750E FOMI330850E BPEF323950E	1
6.	FETE424250E	Fermentation Technology	2	FOMI330850E	1
7.	PFSE413050E	<i>Practice of Sensory Evaluation of Food</i>	1	FOSE421450E	2
8.	PBCP414850E	<i>Practice of Bakery and Confectionery Production</i>	1	PRBC421950E	1
9.	PDRD415050E	<i>Practice of dairy and related dairy products processing</i>	1	FOBI330750E FOMI330850E PDRD422150E	1
10.	FOBI424350E FPPT327150E BEPR422450E TEOF424550E DRTF424650E IORP423603E FSTE423703E TECP423803E OHSM322110E EIAS322510E CPDS322010E	Interdisciplinary (option 2) Food Biotechnology Low temperature preservation of food Beverage Production Technology Processing Technology of Edible Oils and Fats Drying Technology in Food Organic Colorant Technology Flavor Chemistry Technology Cosmetic Chemistry Technology Occupational Health and Safety Management Environmental Impact Assessment Cleaner Production and Sustainable Design	2		1
Total			18		

6th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term
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1.	MTEQ320350E	Mass Transfer and Equipment	2	HETE330250E	2
2.	MSPR422350E	Meat and Seafood Processing	2	FOBI330750E FOMI330850E BPEF323950E	2
3.	FORE424450E	Food Research and Development	2	FOBI330750E FOMI330850E	1
4.	FOPA421250E	Food packaging	2		1
5.	FOAD420950E	Food Additives	2		1
6.	FOHS424050E	Food Hygiene and Safety	2	FOMI330850E	1
7.	FPPD421350E	Food process and Plant Design	2	TEDG130120E MHAP330450E HETE330250E MTEQ320350E	2
8.	PCPR414750E	<i>Practice of Cereal Processing</i>	1	CEPR421850E	2
9.	PVFB414950E	<i>Practice of Vegetable, Fruit & Beverage Processing</i>	1	FOCH330650E FOMI330850E VFPR422050E BEPR422450E	2
10.	PRTC415150E	<i>Practice of Tea, Coffee and Chocolate Production</i>	1	PTCC422250E	1
11.	PRFT415350E	<i>Practice of Fermentation Technology</i>	1	PFMI422850E FETE424250E	1
Total			18		

7th Semester:

No.	Course's ID	Course name	Credits	Prerequisite	Term
1.	FOMA431050E	Food Quality Management	3		2
2.	SOFT431750E	Statistics and Optimization in Food Technology	3	MATH132401 MATH132501 MATH132601	2
3.	PPEF422450E	Project of Processes and Equipment in Food Technology	2	MHAP330450 HETE330250 MTEQ320350	2

4.	PMSP415250E	<i>Practice of Meat and Seafood Processing</i>	1	FOBI330750 FOMI330850 MSPR422350	2
5.	PPEF412650E	<i>Experiment of Processes and Equipment in Food Technology</i>	1	MHAP330450 HETE330250 MTEQ320350	1
6.	FAPR423250E	<i>Industry Internship</i>	2		1
7.	FOBI424350E FPPT327150E BEPR422450E TEOF424550E DRTF424650E IORP423603E FSTE423703E TECP423803E OHSM322110E EIAS322510E CPDS322010E	Interdisciplinary 3 (option 3) Food Biotechnology Low temperature preservation of food Beverage Production Technology Processing Technology of Edible Oils and Fats Drying Technology in Food Organic Colorant Technology Flavor Chemistry Technology Cosmetic Chemistry Technology Occupational Health and Safety Management Environmental Impact Assessment Cleaner Production and Sustainable Design	2		1
8.	SEMI310026E	Enterprise Seminar	1	Non-accumulation	2
Total			14		

8th Semester:

No	Course's ID	Course name	Credits	Prerequisite	Term
1.	GRTH403350E	Graduation Thesis	10		1 & 2
Total			10		

9. Course Descriptions

9.1 FOUNDATION SCIENCE COURSES

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:

Số hiệu: BM9/QT-PĐT-XĐĐAMN Lần soát xét: 00 Ngày hiệu lực: 01/01/2023 Trang: 19/38

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

Philosophy of Marxism and Leninism

Credit: 3

Course Description: This course introduces fundamentals of Marxism and Leninism, particularly concentrating on basic concepts of worldview and philosophical methodology, economic theory of capitalism's production methods, and socialism in current and future.

Textbook:

1. MOET. *Fundamental Principles of Marxism-Leninism*, National Political Publishing, 2012.

Ho Chi Minh's Ideology

Credit: 2

Course Description: This course presents establishment and development of Ho Chi Minh's ideology. Students are provided with important contents of the Ho Chi Minh's ideology related to the Marxism and Leninism, Vietnam and the world's revolutionary policies, and citizen's ethics and responsibility.

Textbook:

1. MOET. *Ho Chi Minh's Ideology*, National Political Publishing, 2012.

History of Vietnamese Communist Party

Credits: 2

Course Description: This course provides students with systematic knowledge of Vietnamese Communist Party's policies, especially in innovation stage.

Textbook:

1. MOET. *Vietnamese Communist Party Policy of Revolution*, National Political Publishing, 2013.

Political economics of Marxism and Leninism

Credits: 2

Course Description: This course includes 6 chapters. Chapter 1 introduces the subject, research methods, and functions of Marxist–Leninist political economy, aligned with the course objectives. Key topics covered include: commodities, markets, and the roles of economic agents in the market economy; the production of surplus value; the socialist-oriented market economy and economic interest relations in Vietnam; and Vietnam's industrialization, modernization, and international economic integration.

Textbook:

1. MOET. *Marxist–Leninist Political Economy*, National Political Publishing, 2013.

Scientific Socialism

Credits:

2*Course Description:* This course consists of 7 chapters. Chapter 1 presents foundational introductory concepts of scientific socialism, including its formation and development. Chapters 2 through 7 cover the core principles and content of scientific socialism, aligned with the course objectives.

Textbook:

1. MOET. *Scientific Socialism*, National Political Publishing, 2013.

General Law

Credits: 3

Course Description: This course provide students with general theories of the state and law including nature of the state and law, organizing apparatus of the state, Vietnam law system and criminal and civil laws. This knowledge helps student to correctly understand and apply the laws in practice.

Textbook:

1. Le Minh Toan. *General Law*, National Political Publishing, 2010.

Calculus 1

Credits: 3

Course Description: This course helps students review the general and advanced mathematical knowledge: Cardinality of a set: rational numbers, real numbers, complex numbers. Limit: function, limit of a function, continuous function. Differential calculus: derivative, differential, Taylor-Maclaurin expansion, the survey on function, curve in polar coordinates. Calculus of single variable: volume fraction uncertainty, definite integrals, generalized integrals. Chain: Chain number, string functions, power series, Taylor-Maclaurin sequence, Fourier series, Fourier expansion, trigonometric series.

Textbook:

1. K. Smith, M. Strauss and M. Toda –*Calculus* - 6th National Edition–Kendall Hunt.

Calculus 2

Credit: 3

Course Description: This course provides the learnerwith contents: Matrix-determinant: the matrix, the form of matrix, inverse matrix, determinants, matrix classes. System of Linear Equations: linear systems, Cramer rule, Gauss method, homogeneous system. Space Vector: Space Vector, subspace, linear independence, linear dependence, basis, dimension, Euclidean space. Diagonal matrix-quadratic form: eigenvalues, eigenvectors, private space, diagonal matrix, quadratic form, canonical form, the surface level 2. Differential calculus of function of several variables: function of several variables, derivative, differential, extreme of function of several variables, calculus applications in geometry in space.

Textbook:

1. K. Smith, M. Strauss and M. Toda –*Calculus* - 6th National Edition–Kendall Hunt.

Calculus 3

Credit: 3

Course Description: This course provides the learner with contents: multiple integral: double integral, application for calculated area of flat domain, calculate the surface area, object volume, triple integrals, and applications for the object volume. Line integral: lineintegral type one and applications, line integral type one and applications, Green formula, condition of line integral does not depend on integrating line. Surface integral: Integral surface type one, type two, the Ostrogratski formula, vector field, flux and divergence, vector format of Ostrogratski formula, Stokes formula, circulation and vortex vector, vector format of Stokes formula.

Textbook:

1. K. Smith, M. Strauss and M. Toda –*Calculus* - 6th National Edition–Kendall Hunt.

Principles of Physics 1

Credit: 3

Course Description: This course provides the learner with contents: the mechanics: point dynamics, the law of conservation, solid motion. Thermodynamics: kinetic molecular theory, principles of Thermodynamics I, principles of Thermodynamics II. Electricity and magnetism: electric field, magnetic, variability of electrical magnetic field.

Text book: R.A. Serway và J.W. Jewett. Physics for Scientists and Engineers with Modern Physics, 8th Edition

Principles of Physics 2

Credit: 3

Course Description: This course provides students with the basic knowledge of physics including electricity, magnetism, light and optics, which is compulsory to access specialized courses in science, engineering and technology branches.

Students will be equipped with the knowledge of phenomena in the natural world, and can apply these knowledge in scientific research, and in technical and technological developments.

The content of the module consists of chapters 23 to 38 of the book “Physics for Scientists and Engineers with Modern Physics”, 9th Edition of R.A. Serway and J.W. Jewett.

The goal of this module is to help students become familiar with the scientific method, the fundamental laws of physics, improve their scientific knowledge of physics in general, reasoning skills, as well as strategies to prepare for learning in specialized science classes in programs for engineers. To achieve this goal, the module will provide both understandings of the concepts and skills of solving standard problems (homework) at the end of each chapter.

Besides, this module will help students understand how to build a mathematical model based on experimental results, how to record, display, analyze data and develop a model based on the data which can be used to predict the results of other experiments. At the same time, students will know the limits of the model and can use them in the prediction.

– *Text book:*

1. R.A. Serway & J.W. Jewett; Physics for Scientists and Engineers with Modern Physics, 9th Edition; ISBN for bundle 9781285143811.
2. Physics 2 lectures summary, University of Technology and Education, HCMC.

General Chemistry for Engineers

Credits: 3

Course Description: This course provides general chemistry necessary for engineering and science. This course covers fundamentals of electronic structures of atoms, relationship of electron and atomic properties, geometric configuration of the molecule, the polarity of the molecules, link of the physical molecules, a preliminary study on the physical and chemical properties of inorganic substances and their structures.

Text book: Lawrence S. Brown, Chemistry for Engineering Students, Brooks/Cole, Cengage Learning, 2nd edition, 2011, 608 papers.

FOOD TECHNOLOGY COURSES

Introduction to Food Technology

Credits: 3

Course Description: This course is offered by HCMC University of Technology and Education, Faculty of Chemical and Food Technology, and the Department of Food

Technology. This course introduces the programme of Food Technology and provides a general knowledge of food technology.

Textbooks:

- 1) Codex Alimentarius International Food Standards
(<http://www.fao.org/fao-who-codexalimentarius/about-codex/en/>)
- 2) FDA U.S. Food & Drug Administration
(<https://www.fda.gov/Food/default.htm>)
- 3) Food Technology-IFT
(<http://www.ift.org/knowledge-center/learn-about-food-science/what-is-food-science.aspx>)

Organic Chemistry

Credits: 2

Course Description: This course provides fundamental knowledge of organic chemistry with emphasis on nomenclature, isomerism, structure, stereochemistry, reactions, and synthesis of organic compounds. The chemistry of Hydrocarbons, Alcohols, Aldehydes, Ketones, Carboxylic acids, and their derivatives are explored in detail. The course strategy focuses on the relationships between molecular structure, chemical reactivity, and physical properties.

This module provides the basic knowledge of organic chemistry as a foundation for deeper learning of the fundamental courses and specific courses in Food Technology, including Food Biochemistry, Food Microbiology, Food Chemistry, Food Processing and Preservation, Food Storage, and Food Nutrition.

This is the foundation for students to acquire basic knowledge of the natural sciences so that they can continue with higher education or further study in different areas of science and technology.

Textbooks:

- 1) Klein, D. *Organic Chemistry*. 2nd ed., John Wiley & Sons Inc., 2012.
- 2) Klein, D. *Student Study Guide & Solutions Manual. Organic Chemistry*. John Wiley & Sons Inc., 2012.

Food Chemistry

Credits: 2

Course Description: Students majoring in Food Technology will be introduced to the basic scientific principles in structures, properties, and functions of food constituents, including water, protein, enzyme, carbohydrate, lipid, vitamin, mineral, aroma compounds, and food additives, from which they will gain a comprehensive evaluation of foods. As a result, they will be able to apply their knowledge in the production and preservation of foods. First, students will be offered an introduction to the properties and roles of water in food. Then, the learners will get to know the structures and physical and chemical properties of carbohydrate, lipid, protein, and enzyme. Next, students will be provided with the information regarding many kinds of vitamins and minerals and the chemical and physical properties of their presence in food. Finally, some basic principles of aroma compounds and food additives will be introduced to learners.

Textbook:

- 1) Belitz H. D., and Grosch W. *Food Chemistry*. Vol 1, 2, 3, Berlin-New York, 1999.
- 2) Hoàng Kim Anh. *Hóa Học Thực Phẩm*, NXB Khoa Học & Kỹ Thuật, 2005.

Food Microbiology

Credits: 2

Course Description: This course introduces the general knowledge of microbiology. The topics covered by this course include the structure and function of cell organelles, the factors affecting the growth and survival of microorganisms in food, the types of microorganisms in raw material, food process and equipment, final product, and the advantages and disadvantages of microorganisms in foods.

Textbook:

- 1) Adams, M. R., and M. O. Moss. *Food Microbiology*. 2nd ed., Royal Society of Chemistry, 2005.
- 2) Nguyễn Lâm Dũng (chủ biên). 2011. Vi sinh vật học. Phần 1. Thế giới vi sinh vật. Nhà xuất bản khoa học kỹ thuật.
- 3) Nguyễn Lâm Dũng (chủ biên). 2011. Vi sinh vật học. Phần 2. Sinh lý học-Sinh hóa học-Di truyền học-Miễn dịch học và Sinh thái học vi sinh vật. Nhà xuất bản khoa học kỹ thuật.

Food Biochemistry

Credits: 2

Course Description: This module provides requisite knowledge on the biosynthesis and catabolism of food components such as carbohydrates, fatty acids, and amino acids in living cells to help students understand their beneficial effects on human health. Principles of bioenergetics and mitochondria energy metabolism are also covered. In addition, the properties of enzymes and enzyme kinetics are introduced to provide a basic framework for further study on these biological reaction catalysts. Some chemical reactions involving these molecules in relation to processing and storage are also discussed.

Textbooks:

- 1) Berg, Jeremy M., et al. *Biochemistry*. 7th ed., W. H. Freeman and Company, New York, 2012.
- 2) Nelson, David L., and Michael M. Cox. *Lehninger Principles of Biochemistry*. 6th ed., W. H. Freeman and Company, New York, 2013.
- 3) Simpson, Benjamin K. *Food Biochemistry and Food Processing*. 2nd ed., John Wiley & Sons, Inc., 2012.

Principles of Food Processing and Food Processing Equipment

Credits: 2

Course Description: This course aims to help students be familiar with activities of food process, from conceiving food process principles, designing food sample and its elements. Students are expected to have a fundamental knowledge about food plant capacity, food products, source of materials, process with mass and energy balance, estimation of equipment, water supply, waste treatment, plan of plant operation and economic engineering. In order to achieve this goal, this course will focus on the combination of understanding of principles and required skills for designing a food process and plant through a project that students have to carry out in groups.

Textbooks:

- 1) Jasim Ahmed and Mohammad Shafi ur Rahman, *Handbook of Food Process Design*, Wiley – Blackwell, 2012, 1470 pages

- 2) G. D. Saravacos and A. E. Kostaropoulos, *Handbook of Food Processing Equipment*, Kluwer Academic/Plenum Publishers, 2002
- 3) Lê Văn Việt Mẫn, Lại Quốc Đạt, Nguyễn Thị Hiền, Tôn Nữ Minh Nguyệt và Trần Thị Thu Trà, *Công Nghệ Chế Biến Thực Phẩm*. TP. Hồ Chí Minh: Nhà xuất bản Đại học Quốc Gia, 2011

Heat Transfer and Equipment

Credits: 2

Course Description: The aim of this course is to help students understand, study, and apply knowledge of heat transfer processes and heat transfer equipment such as:

- the theory of heat transfer; heat transfer equipment; heat transfer models;
- heating and cooling processes; cooling and condensing processes; evaporation and sublimation processes;
- the concentrating and crystallizing process;
- pasteurization process;
- the cooling and freezing process

Textbooks:

- 1) Ibarz, Albert, and Gustavo V. Barbosa-Canovas. *Unit Operation in Food Engineering*. CRC Press, 2003.
- 2) Nguyen Tan Dzung. *Heat transfer*. 1st ed.
- 3) Nguyen Tan Dzung. *Heat Transfer and Equipment, Part 1, 2 & 3*. NXB ĐHQG TpHCM, 2013.
- 4) Nguyen Tan Dzung. *The Method to Determine the Rate of Freezing Water Inside Freezing Product*. Lap Lambert Academic Publishing, 2015.
- 5) Singh, R. Paul, and Dennis R. Heldman. *Introduction to Food Engineering*. 3rd ed., London, Academic Press, 2011.
- 6) Trystram, Gilles, Jean-Jacques Bimbenet, and Albert Duquenoy. *Génie des Procédés Alimentaires, des Bases aux Applications*. Paris, Dunod, 2002.

Physical Chemistry of Food

Credits: 2

Course Description: This course provides Food Technology students with basic knowledge of transport phenomena, water activity, dispersed systems, and rheology properties of liquid and solid foods. This is the basis for students to comprehend and work effectively with systems and processes exploited in the field of food technology.

Textbook:

- 1) Coupland, John. *An Introduction to the Physical Chemistry of Food*. Springer, 2014.
- 2) Walstra, Pieter. *Physical Chemistry of Foods*. CRC Press, 2002.

Analytical Chemistry of Food

Credits: 2

Course Description: This course helps students review general concepts and basic knowledge about the types of concentrations, units, and statistics. In addition, this course will provide basic theory and quantitative methods to determine the concentration of elements and chemical compounds.

This is the foundation for students to acquire relevant knowledge related to physical chemistry, food chemistry, food analysis, as well as the foundation for the implementation of subject projects, graduation project, and scientific research.

Textbooks:

- 1) Kenkel, John. *Analytical Chemistry for Technicians*. 4th ed., London, CPR Press, 2013.
- 2) Skoog, Douglas A., Donald M. West, and F. James Holler. *Analytical Chemistry*. Saunders College Publishing, 1994.

Mass Transfer and Equipment

Credits: 2

Course Description: The aim of this course is to help students understand, study, and apply knowledge of mass transfer processes and mass transfer equipment such as:

- the theory of mass transfer; mass transfer equipment; mass transfer models;
- absorption processes; adsorption processes;
- extracting and dissolving processes
- distillation processes;
- food drying processes.

Textbooks:

- 1) Heldman, Dennis R, and Daryl B. Lund. *Handbook of Food Engineering*. 3rd ed., CRC Press, 2019.
- 2) Ibarz, Albert, and Gustavo V. Barbosa-Canovas. *Unit Operation in Food Engineering*. CRC Press, 2003.
- 3) Nguyen Tan Dzung. *Mass transfer*. 1st ed., Publication University of Nation Ho Chi Minh City VietNam.
- 4) Nguyen Tan Dzung. *Mass Transfer and Equipment, Part 1, 2 & 3*. Publication University of Nation Ho Chi Minh City VietNam, 2013.
- 5) Singh, R. Paul, and Dennis R. Heldman. *Introduction to Food Engineering*. 3rd ed., London, Academic Press, 2011.
- 6) Trystram, Gilles, Jean-Jacques Bimbenet, and Albert Duquenoy. *Génie des Procédés Alimentaires, des Bases aux Applications*. Paris, Dunod, 2002.

Food Analysis

Credits: 2

Course Description: This course is designed to provide students with a clear understanding of the principles behind various methods and instruments that are commonly used in food industry and academic research labs to quantitatively analyse and characterize the main components of food such as moisture, ash, lipids, proteins, carbohydrates, vitamin, as well as physical properties of food, like colour and viscosity.

Textbooks:

- 1) Nielsen, S. Suzanne, ed. *Food Analysis*. 4th ed., New York: Springer, 2010.
- 2) Tran Bich Lam. *Food Analysis Laboratory Experiments*. Ho Chi Minh City National University Publishing, 2013.

Sensory Evaluation of Food

Credits: 2

Course Description: This course equips learners with basic concepts and knowledge about sensory evaluation of food, as well as the interaction mechanisms of odour and taste

compounds to sensory cells on the senses (taste and smell). At the same time, it helps learners get acquainted with the sensory evaluation methods such as discrimination testing, description testing, and effective testing. Furthermore, it helps learners understand some of the data processing methods commonly used in quality assessment and product development research.

Textbooks:

- 1) Lawless H. T., and Heymann H. *Sensory Evaluation: Principles and Practices*. Springer Press, 2010.
- 2) Mason, R. *Sensory Evaluation Manual*. The University of Queensland, 2002.
- 3) Morten, Meilgaard. *Sensory Evaluation Techniques*. CRC Press, 1999.
- 4) Nguyen Hoang Dung. *Sensory Evaluation of Food: Principles and Practices*. HCMC National University, 2007.
- 5) O'Mahony, Michael. *Sensory Evaluation of Food: Statistical Methods and Procedures*. Marcel Dekker, Inc, 1986.

Food Process and Plant Design

Credits: 2

Course Description: This course aims to help students get familiar with activities in the project of food plant design, from conceiving a plan to designing a food plant and its elements (capacity, products, source of materials, process with mass and energy balance, estimation of equipment, water supply, waste treatment, plant operation plan, and economic engineering). In order to achieve this goal, the focus will be on the combination of understanding of principles and required skills for designing a food processing plant through a project that students have to carry out in groups. This will also enhance the students' creativeness and teamwork skills. By the end of this course, they will be able to apply the knowledge and skills for food processing and plant design, as well as for the implementation and operation of a food plant.

Textbooks:

- 1) Ahmed, Jasim, and Mohammad Shafi ur Rahman. *Handbook of Food Process Design*. Wiley-Blackwell, 2012.
- 2) López-Gómez, Antonio, and Gustavo V. Barbosa-Cánovas. *Food Plant Design*. CRC Press, 2005.
- 3) Maroulis, Zacharias B., and George D. Saravacos. *Food Process Design*. CRC Press, 2003.
- 4) Saravacos, G. D., and A. E. Kostaropoulos. *Handbook of Food Processing Equipment*. Kluwer Academic/Plenum Publishers, 2002.

Meat and Seafood Processing

Credits: 2

Course Description: This course provides learners with basic knowledge regarding the ingredients and nature of ingredients used in food, methods of preservation, processes, and changes in meat and fish processing. It offers the knowledge and skills needed for learners to understand food and meat processing technologies. Moreover, this course also provides an understanding of the conducting, preserving and processing food products in the processing plant, and evaluating the quality of products. It will help learners understand the role and the

importance of nutrition in meat, fish and processing technology, as well as food quality control.

The course provides students with a methodological approach when learning in-depth about food processing technology. At the same time, it improves the knowledge of meat processing and seafood processing technology, creating conditions for students to integrate into the international economy in the domain of import and export of meat, shrimp and fish products. Furthermore, it will help with food technology development and planning in food processing plants.

Textbooks:

- 1) Cross, H. R., and A. J. Overby. *Meat Science, Milk Science and Technology*. Amsterdam, Elsevier Science Publishers, 1988.
- 2) Food and Agriculture Organization of the United Nations. *Guidelines for Slaughtering, Meat Cutting and Further Processing*. Rome, FAO, 1991.
- 3) Lawrie, R. A. *Lawrie's Meat Science*. Woodhead Publishing Limited, 1998.
- 4) Pearson, A. M. *Processed Meats*. Chapman & Hall, 1996.

Tea, Coffee, and Cocoa Production

Credits: 2

Course Description: The course provides knowledge and skills regarding:

- production and consumption of tea, coffee, and cocoa in Vietnam and the world;
- biochemical changes after post-harvest, storage and pre-processing; quality control of raw materials;
- processing of tea, coffee, and cocoa, and the biochemical changes during the processing of tea, coffee, and cocoa;
- product quality standards and assurance.

Textbooks:

- 1) Beckett, Stephen T. *The Science of Chocolate*. 2nd ed., Royal Society of Chemistry, 2008.
- 2) Chakraverty, A., Arun S. Mujumdar, and Hosahalli S. Ramaswamy, editors. *Handbook of Postharvest Technology: Cereals, Fruits, Vegetables, Tea, and Spices*. CRC Press, 2003.
- 3) Chi-Tang Ho, Jen-Kun Lin, and Fereidoon Shahidi, editors. *Tea and Tea Products: Chemistry and Health-Promoting Properties (Nutraceutical Science and Technology)*. CRC Press, 2008.
- 4) Flament, Ivon. *Coffee Flavor Chemistry*. Wiley, 2001.
- 5) Wintgens, Jean Nicolas, editor. *Coffee: Growing, Processing, Sustainable Production: A Guidebook for Growers, Processors, Traders, and Researchers*. 2nd updated ed., 2009.

Bakery and Confectionery Production

Credits: 2

Course Description: This module provides students with an understanding of the baking and confectionery ingredients, as well as their basic functions in bakery and confectionery production. The manufacturing techniques, changes to ingredients in each manufacturing stage, equipment and process control of some bakery and confectionery production processes are also covered.

Textbooks:

- 1) Edwards, W. P. *The Science of Sugar Confectionery*. UK, RSC Paperbacks, 2000.

- 2) Hui, Y. H., et al. *Bakery Products Science and Technology*. Blackwell Publishing, 2006.
- 3) Lees, R., and E. B. Jackson. *Sugar Confectionery and Chocolate Manufacture*. Blackie Academic & Professional, 2000.
- 4) Manley, Duncan. *Technology of Biscuits, Crackers and Cookies*. Cambridge, Woodhead Publishing Limited, 2000.

Food Nutrition

Credits: 2

Course Description: This course examines the food nutrients and the metabolism of foods in the human body, as well as the factors influencing nutritional status and requirements over the life cycle. The cultural and socio-economic factors which underline food selection and methods of food preparation and their impacts on health are also addressed. The course also discusses the effects of nutrient deficiency and malnutrition, and overweight and obesity on individuals and the community.

Textbooks:

- 1) Lawrence, Mark, and Tony Worsley, editors. *Public Health Nutrition: From Principles to Practice*. Sydney, Allen & Unwin, 2007
- 2) Smolin, Lori A., and Mary B. Grosvenor. *Nutrition: Science and Applications*. 2nd ed., Hoboken, Wiley, 2010.

Food Safety

Credits: 2

Course Description: This course provides students with certain concepts of food hygiene and safety, and food safety hazards in the process of food receipt, processing, and preservation. In addition, this module introduces measures to prevent and ensure food safety.

Textbooks:

- 1) Deshpande, S. S. *Handbook of Food Toxicology*. Marcel Dekker, 2002.
- 2) Helferich, W., and C. K. Winter. *Food Toxicology*. CRC Press, 2001.
- 3) McLauchlin, J., and C. Little, editors. *HOBBS' Food Poisoning and Food Hygiene*. CRC Press, 2007.
- 4) Schmidt, R. H., and G. E. Rodrick. *Food Safety Handbook*. John Wiley & Sons, 2003.
- 5) Selamat, J., and S. Z. Iqbal. *Food Safety-Basic Concepts. Recent Issues, and Future Challenges*. Springer, 2016.
- 6) Shaw, C. *Food Safety. The Science of Keeping Food Safe*. John Wiley & Sons, 2013.

Cereals Processing

Credits: 2

Course Description: This module equips learners with basic knowledge about raw materials and technologies of processing food products such as rice, noodles, and starch. This course will help learners understand the fundamentals of technological processes, product changes during processing, and operation principles of machines used in the processing of food products. Consequently, learners will be able to research and develop food products to diversify the current food products.

Textbooks:

- 1) Bui Duc Hoi. *Preservation of Food*. Hanoi, Science and Technology Publishing.
- 2) Dendy, David A. V., and Bogdan J. Dobraszczyk. *Cereals and Cereal Products Chemistry and Technology*. Springer US, 2001.

- 3) Hoang Van Duoc. *Drying Technology*. Hanoi, Science and Technology Publishing, 1999.
- 4) Tran Minh Tam. *Preservation and Processing of Post-Harvest Agricultural Products*. Hanoi, Agricultural Publishing, 2000.

Vegetable, Fruit Processing, and Beverage Production

Credits: 2

Course Description: This course equips students with knowledge about:

- the biochemistry and physiology of post-harvested fruit and vegetable,
- the principles of thermal and non-thermal techniques associated with fruit and vegetable processing,
- the basic steps involved in fruit and vegetable processing,
- the processing techniques, methods on the product quality inspection and operating the processing chains to produce fruit-based beverage products.

Textbooks:

- 1) Ashurst, Philip R. *Chemistry and Technology of Soft Drinks and Fruit Juices*. Continuum International Publishing Group, 1998.
- 2) Evranuz, E. Özgül, and Hui Yiu H. *Handbook of Vegetable Preservation and Processing*. 2nd ed., CRC Press, 2016.
- 3) Jongen, Wim. *Fruit and Vegetable Processing: Improving Quality*. Woodhead Press, 2002.
- 4) Sinha, Nirmal, et al. *Handbook of Fruits and Fruit Processing*. 2nd ed., Wiley-Blackwell, 2012.

Dairy and Related Dairy Production

Credits: 2

Course Description: This course provides the tools for students to learn how to transform milk into high-quality dairy products. Students will acquire a thorough understanding of milk composition, milk chemistry, milk microbiology, milk processing, unit operations, and alternative technologies for whey processing. Students will be able to recognize the procedures needed to produce high-quality dairy products and alternative technologies for whey processing, production, and isolation of health-promoting bioactive compounds from milk and dairy products.

Textbooks:

- 1) Selia dos Reis Coimbra, Jane, and Jose A. Teixeira, editors. *Engineering Aspects of Milk and Dairy Products*. CRC Press, 2009.
- 2) Walstra, Pieter, Jan T. M. Wouters, and Tom J. Geurts. *Dairy Science and Technology*. 2nd ed., Taylor and Francis Group, 2006.

Fermentation Technology

Credits: 2

Course Description: This course introduces general knowledge of fermentation technology and how to prepare a fermentation process in both the laboratory and on the industrial scale. It introduces the microbial growth kinetics in the fermentation process and the typical types of fermentation, as well as how to apply the fermentation in food technology.

Textbooks:

- 1) Stanbury, P. F., A. Whitaker, and S. J. Hall. *Principles of Fermentation Technology*. 2nd ed., Butterworth Heinemann, 1995.

- 2) Trịnh Khánh Sơn. *Bài Giảng Môn Học Công Nghệ Lên Men*. ĐH Sư Phạm Kỹ Thuật TP.HCM, 2017.

Food Packaging

Credits: 2

Course Description: This course provides students with knowledge about:

- historical aspects of the development of packaging technology, functions, future directions, and standards required for food packaging materials;
- the production of raw materials used in food packaging, the conversion industry for packaging solutions, and the packaging needs of the food industry;
- the material properties and processing technologies applied to produce the packaging appropriate for the food market;
- the influences of packaging on the quality and shelf life of food products.

Textbooks:

- 1) Cerqueira, M. A. P. R., et al., editors. *Edible Food Packaging: Materials and Processing Technologies*. CRC Press, 2016.
- 2) Brody, A. L., E. P. Strupinsky, and L. R. Kline. *Active Packaging for Food Applications*. CRC Press, 2001.
- 3) Robertson, G. L. *Food Packaging: Principles and Practice*. CRC Press, Taylor & Francis Group, 2006.

Food Research and Development

Credits: 2

Course Description: This course requires students to synthesize and apply all knowledge related to food technology. Students need to understand the composition, nature of materials, technological processes, equipment, packaging, and variations in food preservation and processing.

This course provides students with basic knowledge about new products, research methods, food quality, food products research, and development methods. At the same time, it provides learners with the knowledge and skills to manage, develop and research the processing plants. Moreover, this subject helps learners have an approach and methodology when learning in-depth about research and development of new products and methods of organizing and developing products.

Textbooks:

- 1) Brody, Aaron L., and John B. Lord. *Developing New Food Products for Changing Marketplace*. Technomic Publishing Company Inc., 2000.
- 2) Earle, M., R. Earle, and A. Anderson. *Food Product Development*. Woodhead Publishing Limited, 2001.
- 3) Hà Thanh Toàn. *New Product Development Lecture, Agriculture and Applied Biology*. Can Tho University, 2002.
- 4) Harper, W. J., R. Harris, and J. Litchfield. *Food Product Development* (FST 650 Syllabus). Ohio State University, 2002.
- 5) McDonald, J. *Course Note: Food Product Development*. University of Queensland, 2003.

Food Quality Management

Credits: 2

Course Description: This module provides basic knowledge about food quality and methods to manage food quality and the role and importance of food quality management activities at

factories. It provides an understanding of the good manufacturing principles and practices in the food industry (GMPs), HACCP, and the ISO 9000 quality management system standards.

Textbooks:

- 1) Alli, Inteaz. *Food Quality Assurance: Principles and Practices*. CRC Press, 2004.
- 2) National Advisory Committee on Microbiological Criteria for Foods. *Hazard Analysis and Critical Control Point Principles and Application Guidelines*. Adopted:1997..

Postharvest technology

Credits: 2

Course Description: This course provides learners with the following knowledge: The principles, importance, and practical applications of postharvest technology; methods for handling, protecting, and preserving postharvest products at both small and large scales; and specific studies on the treatment and preservation of long-term storage products and highly perishable commodities.

Textbooks:

1. Chakraverty, A., Arun S. Mujumdar, and Hosahalli S. Ramaswamy, editors. *Handbook of Postharvest Technology: Cereals, Fruits, Vegetables, Tea, and Spices*. CRC Press, 2003.
2. Debbie Rees, Graham Farrell and John Orchard Crop, *Post-Harvest: Science and Technology*, Volume 3: Perishables, Blackwell Science Ltd, 2012

Processing Technology of Edible Oils and Fats

Credits: 2

Course Description: This course equips learners with fundamental knowledge about the composition, physicochemical properties, and quality indicators of fats in general. Students will gain a thorough understanding of the technological processes for crude oil extraction, refining, and processing of various oil- and fat-based products. The course also provides essential insights into the biological functions, nutritional value, and health impacts of oils and fats, enabling students to apply this knowledge to improve product quality and develop products aligned with nutritional demands.

Textbooks: Frank D. Gunstone. *Oils and Fats in the Food Industry*. Wiley-Blackwell. 2008

Practice of Organic Chemistry

Credits: 1

Course Description: This course is an intensive introduction to the techniques of experimental organic chemistry, and it gives students an opportunity to learn and master the basic chemistry lab techniques for carrying out experiments. These organic chemistry lab techniques include transfer and extraction techniques, purification of solids by recrystallization, purification of liquids by distillation and purification of organic compounds by chromatography.

Textbooks:

- 1) Pavia, Donald L. *A Microscale Approach to Organic Laboratory Techniques*. 5th ed., Brooks/Cole, Cengage Learning, 2013.
- 2) Zubrick, James W. *The Organic Chem Lab Survival Manual*. 8th ed., John Wiley & Sons, Inc, 2011.

Practice of Analytical Chemistry

Credits: 1

Course Description: This course provides students with the opportunity to do experiments in the laboratory and improve practical skills such as to prepare solutions, titration, and

statistics. In addition, this course will review the basic theory and quantitative methods to determine the concentration of elements and chemical compounds.

This is the foundation for students to acquire relevant knowledge related to physical chemistry, food chemistry, food analysis, as well as the foundation for the implementation of subject projects, graduation project, and scientific research.

Textbook:

- 1) Ho Thi Yeu Ly. *Experiment on Analytical Chemistry*. HCM National University, 2017.

Practice of Food Microbiology

Credits: 2

Course Description: This course introduces general skills in the practice of food microbiology and introduces how to identify the shape, size, organization and basic characteristics of micro-organism. Furthermore, it provides an understanding of how to measure the quality of micro-organism in raw material and food products

Textbooks:

- 1) Harley, J. P., and Prescott, L. M. *Laboratory Exercises in Microbiology*. 5th ed., McGraw-Hill, 2002.
- 2) Kiiyukia, Ciira. *Laboratory Manual of Food Microbiology*. Unido Project, 2003.
- 3) Trịnh Khánh Sơn. *Các Kỹ Thuật Cơ Bản Trong Thực Nghiệm Vi Sinh Vật Học*. TP. HCM, Nhà Xuất Bản Đại Học Quốc Gia, 2017.

Practice of Biochemistry

Credits: 1

Course Description: This course will equip students with the basic knowledge of biological catalysis, metabolic pathways, and biosynthesis in living cells in general, and food materials in particular. The students will consider the biochemical interactions between food ingredients and the effect of these changes on food processing and preservation.

The students will gain knowledge of the processes of metabolism and modification of food and food ingredients, and understanding of the mechanisms of metabolism and the application and proper control of the processes involved.

Textbooks:

- 1) Hoang Kim Anh. *Food Chemistry*. Science & Technology Publishing House, 2005.
- 2) Pham Thi Tran Chau. *Biochemistry*. Vietnam Education Publisher, 2011.
- 3) Tran Bich Lam, et al. *Food Biochemistry Experiment*. Ho Chi Minh National University Publisher, 2005.

Practice of Practice of Sensory Evaluation of Food

Credits: 1

Course Description: This course will help learners:

- review the basics of sensory evaluation of food;
- know how to organize and operate a sensory evaluation program such as experimental design and statistics, and the perceptual process in particular.

Textbooks:

- 1) Lawless, H. T., and H. Heymann. *Sensory Evaluation: Principles and Practices*. Springer Press, 2010.
- 2) Mason, R. *Sensory Evaluation Manual*. The University of Queensland, 2002.

- 3) Meilgaard, Morten. *Sensory Evaluation Techniques*. CRC Press, 1999.
- 4) Nguyen, Hoang Dung. *Sensory Evaluation of Food: Principles and Practices*. 2007, HCMC National University, 2007.
- 5) O'Mahony, Michael. *Sensory Evaluation of Food: Statistical Methods and Procedures*. Marcel Dekker Inc., 1986.
- 6) Stonne, H. and J. Sidel. *Sensory Evaluation Practices*. 3rd ed., Elsevier, 2004.

Practice of Food Analysis

Credits: 1

Course Description: This course will equip students with methods to determine the basic components of food products such as protein, glucide and lipid, and with a number of techniques for processing different food samples before conducting the analysis. Furthermore, it will help students accumulate knowledge and practical skills needed for analytical methods.

Textbook:

- 1) Nielsen, S. Suzanne. *Food Analysis*. 3rd ed., Kluwer Academic/Plenum Publishers, 2003.

Practice of Meat and Seafood Processing

Credits: 1

Course Description: This course equips learners with the basics of meat and fish processing and enables them to conduct experiments at the food laboratory. This course will help learners understand the role and importance of meat, seafood, biochemical changes, and food processing methods, as well as how to create specific products.

The students will understand the methodology used in food processing technology and gain an overview of the economic market and strategies. This course will also provide learners with the ability to process and produce meat, shrimp and fish products when building and planning food technology in plants.

Textbooks:

- 1) Kerry, Joseph P., John F. Kerry, and David Ledward, editors. *Meat Processing: Improving Quality*. Woodhead Publishing, 2002.
- 2) Nguyen, Tien Luc. *The Curriculum of Meat and Seafood Processing*. Vietnam National University, Ho Chi Minh City Publishing House, 2016.

Practice of Bakery and Confectionery Production

Credits: 1

Course Description: The aim of this course is to have a more in-depth understanding of the relationship between ingredients, recipes and recipe build-up, and some variations in bakery and confectionery products. The focus of this course is mainly on practical work. However, importance is also laid on the theoretical element in order to get a sound background and to be confident and in control of the process. Each session will start with brief and precise theoretical lessons containing the essential details before the practical part starts. This will help to see, predict and figure out what can or cannot be done. Finally, the comparison will be made between theory and the practical results of the practice trials.

Textbooks:

- 1) Edwards, W. P. *The Science of Sugar Confectionery*. RSC Paperbacks, 2000.
- 2) Hui, Y. H., et al. *Bakery Products Science and Technology*. Blackwell Publishing, 2006.

- 3) Lees, R., and E. B. Jackson. *Sugar Confectionery and Chocolate Manufacture*. Blackie Academic & Professional, 2000.
- 4) Manley, Duncan. *Technology of Biscuits, Crackers and Cookies*. Woodhead Publishing Limited, 2000.
- 5) Wheat Marketing Center Inc. *Wheat and Flour Testing Methods – A Guide to Understanding Wheat and Flour Quality*. Portland, Oregon, USA, 2004.

Practice of Cereals Processing

Credits: 1

Course Description: This course includes cereal Practice sessions such as starch processing, modified starch processing, pasta processing, rice noodles processing, etc. This course will help learners understand the principles of the technological process, the impact of processing on cereal products, and the operation of machines used in the cereal process.

Textbooks:

- 1) Kent, N. L. *Technology of Cereals: An Introduction for Students of Food Science and Agriculture*. 4th ed., Elsevier Science Ltd, 1994.
- 2) Owens, G. *Cereals Processing Technology*. Woodhead Publishing Limited and CRC Press LLC, 2001.

Practice of Tea, Coffee, and Cocoa Production

Credits: 1

Course Description: This course is based on tea, coffee, and cocoa processing technology theory. It provides students with an opportunity to test their knowledge of this subject. Students will have an opportunity to do practical work using the equipment for making tea, coffee, and cocoa products. Subject contents include:

- testing the quality criteria of raw tea, coffee, and cocoa,
- the technical brief which gives an overview of the types of tea, coffee, and cocoa processing that are possible at a small scale of operation, such as green tea, bottled green tea, instant coffee, canned coffee, cocoa powder, etc.,
- research and development of new tea, coffee, and cocoa products.

Textbooks:

- 1) Beckett, S. T. *Industrial Chocolate Manufacture and Use*. 4th ed., Blackwell Publishing, 2009.
- 2) Beckett, S. T. *The Science of Chocolate*. 2nd ed., RSC Publishing, 2008.
- 3) Chi, Tang Ho, Jen Kun Lin, and Fereidoon Shahidi. *Tea and Tea Products: Chemistry and Health-Promoting Properties*. CRC Press, 2009.
- 4) Clarke, R. J., and O. J. Vitzthum. *Coffee – Recent Developments*. Blackwell Science, 2001.
- 5) Dang Thi Ngoc Dung, and Ho Thi Thu Trang. *Practical Tea, Coffee, and Cocoa Products Processing Technology*. Ho Chi Minh City University of Technology & Education 2013.

Practice of Dairy and Related Dairy Production

Credits: 1

Course Description: This course is based on dairy and related dairy products theory. It provides the students with an opportunity to test their knowledge of this subject. Students have the opportunity to engage in practical work using the equipment to make dairy products. Subject contents include:

- testing the quality criteria of raw milk and dairy products;
- the technical brief which gives an overview of the types of dairy processing that are possible at a small scale of operation, such as pasteurised milk; flan, butter, yoghurt; cheese-making; ice cream production and dairy confectionery, dried milk powder, etc.;
- research and development of processing new dairy products.

Textbooks:

- 1) Dang Thi Ngoc Dung, and Ho Thi Thu Trang. *Practical Dairy Products Processing Technology*. Ho Chi Minh City University of Technology & Education, 2013.
- 2) Selia dos Reis Coimbra, Jane, and Jose A. Teixeira, editors. *Engineering Aspects of Milk and Dairy Products*. CRC Press, 2009.
- 3) Walstra, Pieter, Jan T. M. Wouters, and Tom J. Geurts. *Dairy Science and Technology*. 2nd ed., Taylor and Francis Group, 2006.

Practice of Fermentation Technology

Credits: 1

Course Description: This course introduces general skills in the field of fermentation technology. It demonstrates how to prepare a fermentation process and provides the means and knowledge to identify and analyse the microbial growth kinetics in a fermentation process.

Textbooks:

- 1) Kiiyukia, Ciira. *Laboratory Manual of Food Microbiology*. Unido Project, 2003.
- 2) Stanbury, P. F., A. Whitaker, and S. J. Hall. *Principles of Fermentation Technology*. 2nd ed., Butterworth Heinemann, 1995.
- 3) Trịnh Khánh Sơn. *Bài Giảng Môn Học Thí Nghiệm Công Nghệ Lên Men*. ĐH Sư Phạm Kỹ Thuật TP.HCM, 2017.

Industry Internship

Credits: 2

Course Description: This course helps students to strengthen and improve knowledge gained during their time at university. The aim is to apply specialized knowledge to solve real problems while practicing the skills of an engineer, building styles and working methods of electronic engineers in professional activities. Furthermore, the goal is to train the students' ability in the domain of analysis, synthesis, proposals and problem-solving using soft skills.

Graduation Thesis (Food Technology)

Credits: 10

Course Description: In this course, students must complete a scientific or technical project under the supervision of a mentor. Students must use all their knowledge and skills in order to solve the problems presented by the project. The project must be written as a thesis and must be presented to an official evaluation committee.

Textbooks:

- 1) All textbooks in Food Technology Programme
- Scientific papers regarding food technology and related fields.

10. Campus Infrastructure

10.1. Lecture rooms, classrooms, and teaching support facilities

- Lecture halls: 177 rooms

- Specialized classrooms for Foreign Languages: 01
- Computer labs: 17

10.2. Laboratories, practice workshops, and equipment for experiments and hands-on training

- Food Technology Workshop 1
- Food Technology Workshop 2
- Food Technology Workshop 3
- Biochemistry Laboratory
- Microbiology Laboratory
- Advanced Technology Laboratory
- Sensory Evaluation Laboratory

10.3. Library

- Total area: 2,200 m², including Reading room area: 580 m²
- Number of seats: 250
- Number of computers for search and access: 40
- E-library access:
- <http://thuvien.hcmute.edu.vn>
- <http://lib.hcmute.edu.vn>

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 - 45 hours of laboratory work or practical exercises
- 1 credit = 30 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 Interdisciplinary Knowledge: Students select 3 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