

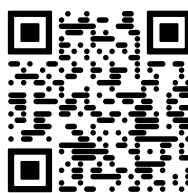


Vietnam National University HCMC
International University



School of CHEMICAL & ENVIRONMENTAL ENGINEERING

UNDERGRADUATE STUDENTS' HANDBOOK



Academic year 2023 - 2024



“ On behalf of the faculties and students, I would like to, once again, congratulate you on your admission to the Chemical Engineering and Environmental Engineering majors. For the next 4-6 years, CEE will become your second family. All of the faculties will happily train and guide you to your next success in career and life. Good luck to you all and I'm looking forward to see you all at the graduation ceremony.”

Associate Professor Huynh Kim Lam
Dean of the School of
Chemical and Environmental Engineering (CEE)



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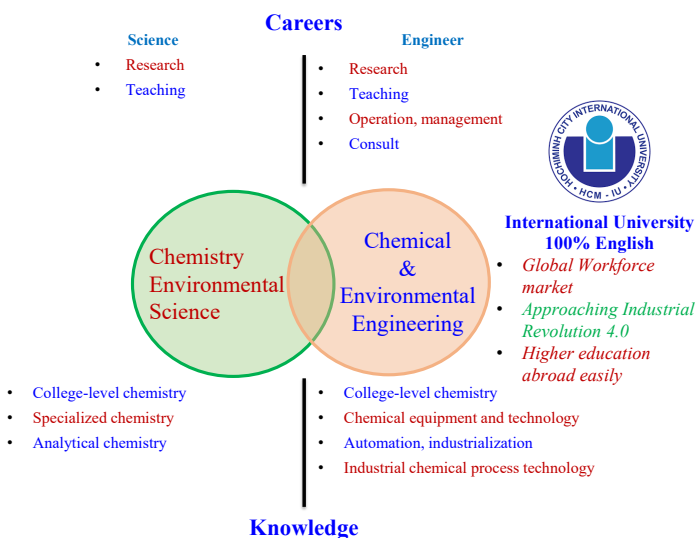
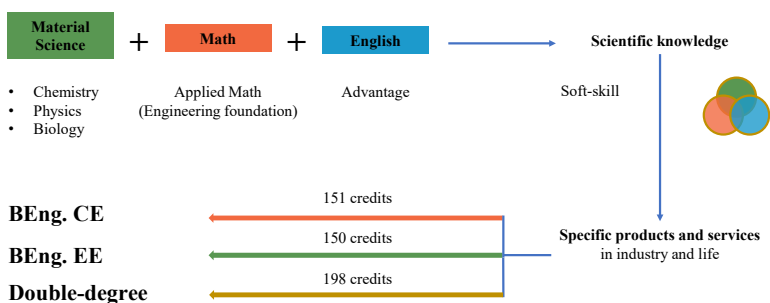
Phone number: (84-28) 3724 4270 ext 3959, 3950

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INTRODUCTION

School of Chemical and Environmental Engineering

The School of Chemical and Environmental Engineering was established on Sept. 14th, 2022 from the integration two departments, Department of Environmental Engineering & Department of Chemical Engineering. With the “job-ready” philosophy, the education program for chemical engineers and environmental engineers at International University is designed to meet the needs of the global labor market and for qualified engineers having practical, good English and proficient skills in the field of chemistry and environment.



FACULTIES AND STAFFS OF SCHOOL OF CHEMICAL & ENVIRONMENTAL ENGINEERING

Faculties	Research Interests					Research Domains	
	Energy	Environment	Pharmaceuticals & Cosmetics	Materials	Process Engineer- ing	Experimen- tation	Modeling & Simulation
Assoc. Prof. Huynh Kim Lam, Ph.D. (Dean)	X	X	X	X			X
Nguyen Thi Thuy, Ph.D. (Vice Dean)		X		X		X	
Assoc. Prof. Tran Tien Khoi, Ph.D.		X				X	
Phung Thanh Khoa, Ph.D.	X	X		X	X	X	
Nguyen Thi Hoang Hai, Ph.D.		X				X	
Vu Bao Khanh, Ph.D.	X	X				X	X
Doan Hoai Linh, Ph.D.	X	X	X	X	X	X	
Ngo Thi Thuan, Ph.D.		X		X		X	
Nguyen Thao Trang, Ph.D.		X	X			X	X
Tranh Thanh Tu, Ph.D.		X	X			X	
Researcher: Ngo Nguyen Tien Dat, M.Sc.							
Laboratory Technicians: Tran Le Dang Khoa, M.Sc.; Dang Ngoc Quan, B.Eng.							
Secretaries: Nguyen Thuy Hang, M.Eng.; Nguyen Thi Kim Tuyen B.A.							

IMPORTANT INFORMATION

Course registration

Notification for Intensive English course:

Please note that IU uses English as the primary language, except political courses. To test the English skills of students, IU organizes an English placement test modified according to the form of TOEFL iBT (for IU Training program) or IELTS (for Joint Program).

Based on the result of the test, students are classified into the following courses:

English Course	TOEFL iBT	IELTS
Intensive English Level 0	≤ 34	≤ 4.0
Intensive English Level 1	35-45	4.5
Intensive English Level 2	46-60	5.0
Academic English 1	≥ 61	≥ 5.5

Registration criteria (except for the summer semester and last semester):

- Register at least 12 credits/semester (average 18 credits)
- For those who have cumulative GPA ≥ 65 : can register maximum of 24 credits/semester

How to?

- Step 1: Login Edusoft on the website of IU: www.hcmiu.edu.vn
- Step 2: On the tool bar, click 'Course registration'. You will see a list of courses. Students can register courses with reference to time and lecturers.
- Step 3: Next, a table below the course list will display all the courses are registered and the total credits. While registering, if you want to change the course or time or lecturers, you can click 'delete' on a line
- Step 4: After finishing the registration, click 'OK'.

Adding and Dropping Courses

After the first week, based on their timetables, ability and learning conditions, students can file for adding and dropping courses.

Graduation: all requirements below

- Successfully complete the academic curriculum with GPA ≥ 50
- Meet the minimum English requirement of 5.5 IELTS (or its equivalence)
- Military education certificates
- Other requirements in accordant with the IU regulations

Academic Honesty & Plagiarism

Instances of academic dishonesty will not be tolerated. Cheating on any assessment methods (i.e. assignments, quizzes, exams, etc.) or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For most of the classes, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

Scholarship

Each semester, top 10% of students with highest GPA will receive scholarship from IU. 4% of students will receive full scholarship (12,000,000 VND/semester) and 6% of students will receive half scholarship (6,000,000 VND/semester).

The minimum requirements are:

- Register at least 14 credits/semester (excluding summer semesters)
- Complete the Academic English level 1 (AE1)
- No course is failed in that semester
- Semester GPA ≥ 70

Administration Procedures

- Requesting letter of referral / student certificates: Contact CEE's secretary (contact information provided below).
- Course registration and registration adjustment: Contact Office of Academic Affairs (contact information provided below).
- Changing major, temporary leave, permanent leave, or double-degree registration: Contact Office of Academic Affairs (contact information provided below).
- Study improvement: Contact academic advisor.
- Grade I (Incomplete grading) request: Contact Office of Academic Affairs (contact information provided below).
- Dual-degree program: Contact CEE's secretary or Nguyen Thi Thuy, Ph.D. (contact information provided below).

IMPORTANT INFORMATION

Academic semesters

- Semester 1 (Fall) starts in September
- Semester 2 (Spring) starts in February
- Semester 3 (Summer) starts in June

Semesters 1 and 2 lasts for 18 weeks with 15 weeks for lectures.

Semester 3 is optional (for students who want to graduate sooner, to catch up the delay or reduce workloads in the coming years), and lasts for 8 weeks with 5 weeks for lectures.

Each semester has 1 week for mid-term exams and 2 weeks for final exams.

Internship

Students are required to do an internship in industry. Students will have access to internship with diverse companies and institutes.

Objective:

- To develop skills in the application of theory to practical works situations;
- To develop skills and techniques directly applicable to their careers;
- To provide students the opportunity to get involve with industry before graduated.

Registration: Students are allowed to register for summer internship before the academic year when they plan to do the thesis.

Duration: 8 weeks of full time working

Thesis

Requirements:

- Successfully accumulate at least 90% of credit numbers of the academic curriculum and finish the pre-thesis;
- Do not under any academic admonishment

Duration: minimum 12 weeks

Evaluation: Thesis is evaluated by Advisor, Reviewer and the Defense Committee

IMPORTANT INFORMATION

Course assessment

Approval: the subject registration form must be approved by the academic advisors.

For exceptional cases, students must file for the consideration by the Head of Department

Course grading structure:

- Midterm exam: 20% - 40%
- Final exam: 30% - 50%
- Others (quizzes, homework, presentation, etc.): 20% - 40%

The final grade of a laboratory course includes:

- Laboratory assignment: 70% - 80%
- Laboratory final exam: 20% - 30%

Grade criteria:

Classification	100-point grading
Passed	
Excellent	$90 \leq \text{GPA} \leq 100$
Very good	$80 \leq \text{GPA} < 90$
Good	$70 \leq \text{GPA} < 80$
Fair	$60 \leq \text{GPA} < 70$
Average	$50 \leq \text{GPA} < 60$
Failed	
Weak	$40 \leq \text{GPA} < 50$
Very weak	$\text{GPA} < 40$

IMPORTANT INFORMATION

Course assessment

Requirements to attend Tests and Final examinations

In the event that absence occurs more than 20% out of required class attendance, the student will be prohibited from final examination attendance, and the score of zero will be recorded.

On the examination date, the student who is late from 15 minutes onwards will not be allowed to enter the test/examination room and the score of zero will be recorded.

Incomplete grade (I grade):

A student will receive an incomplete grade from academic instructors under all following conditions:

- Attended classes, taking mid-term tests, working on subjects in lab sections, and practicing
- Paid the tuition for that semester
- Got leave of absence for mid-term tests, and the final examination (due to illness, accidents...)

The below procedures must be completed to receive I grade:

- Student fills in document to be properly submitted to the instructor of the course. With the course instructor's and the Dean's approval, the Office of Academic Affairs will decide whether the student is eligible for an I grade or not.
- The appropriate document of enough reasons with evidence to the Office of Academic Affairs within three days of the examination date.
- For special cases, students file the appropriate document to the Head of Department who will suggest to the Board of Rectors for their approval.

In order to remove incomplete grade, students need to file a proper form to retake the course examination.

If students do not get enough grades for their performance evaluation by the end of the next academic year, the I is changed to F (zero point) for grade point computation.

CONTACT INFORMATION

Room/Lab	Faculty/Staff	Extension	Email
LA1.712 (Lab)	Assoc. Prof. Huynh Kim Lam, Ph.D. (CEE)	3871	hklam@hcmiu.edu.vn
O1.704 (Office)	Doan Hoai Linh, Ph.D. (CEE) Phung Thanh Khoa, Ph.D. (CEE) Vu Bao Khanh, Ph.D. (CEE) Ngo Nguyen Tien Dat, M.Sc. (CEE)	3202	dhlinh@hcmiu.edu.vn ptkhoa@hcmiu.edu.vn vbkhanh@hcmiu.edu.vn nntdat@hcmiu.edu.vn
A2.513 (Office)	Nguyen Thi Thuy, Ph.D. (CEE) Tran Thanh Tu, Ph.D. (CEE) Ngo Thi Thuan, Ph.D. (CEE) Nguyen Thi Hoang Hai, Ph.D. (CEE) Tran Le Dang Khoa M.Sc. (CEE)	3319	ntthuy@hcmiu.edu.vn tttu@hcmiu.edu.vn ntthuan@hcmiu.edu.vn nthhai@hcmiu.edu.vn tldkhoa@hcmiu.edu.vn
O1.705 (Office)	Nguyen Thao Trang, Ph.D. (CEE)	3335	nttrang@hcmiu.edu.vn
LA2.502 (Lab)	Tran Le Dang Khoa M.Sc. (CEE) Dang Ngoc Quan, B.Eng (CEE)		tldkhoa@hcmiu.edu.vn dnquan@hcmiu.edu.vn
A2.403 (Office)	Nguyen Thi Kim Tuyen, B.A (CEE) Nguyen Thuy Hang, M.Eng (CEE)	3959 3950	ntktuyen@hcmiu.edu.vn hangntt@hcmiu.edu.vn
Central Lab (Lab)	Nguyen Thanh Hai (BT) Ho Hoang Duy Uyen (BT)	3202 3206	
LA1.501 (Lab)	Nguyen Ngoc Anh Thu (BT)		
LA1.502 (Lab)	Vo Duy Le Giang (BT)	3347	

CONTACT INFORMATION

Office	Contact information	Roles
Office of Under-graduate Academic Affairs or Office of Academic Affairs (OAA)	Room: O2.708 pddth@hcmiu.edu.vn ouaa.hcmiu.edu.vn dhqt.tvts@hcmiu.edu.vn tuyensinh.hcmiu.edu.vn/ Extension: 3221, 3321, 3229, 3885	<ul style="list-style-type: none"> •Counseling function, helping the Rector in planning short term and long-term programs of the university. •Organizing, conducting, carrying out, evaluating, and supervising all the teaching and studying work, the graduate and post graduate training program. •Propose the training purposes, training program, vocational structures, training method and scale, as well as developing necessary material basis for teaching and studying courses. •Responsible for coordinating with other departments to organize teaching schedule, register testing and evaluating studying results. •Inspection of teaching and studying regulation's performance and the suggestion of opportune adjustment, this department combines, classifies, processes, and stores the academic information from the faculties as well as instructs the faculties to develop the academic management forms.
Office of Finance and Planning (OFP)	Room: O2.701 khtc@hcmiu.edu.vn Extension: 3420, 3837	<ul style="list-style-type: none"> •Help the Rector in developing and managing the financial plans of the university. The department inspects the revenue, expenditures, and the financial planning work in the university. •Responsible for managing, receiving, using effectively all the expenses from the government budget. The department also monitors expenses from the revenue and other sources according to the government regulations about financial management.
Center for International Mobility (CIM)	Room: O2.604 studentexchange@hcmiu.edu.vn cim@hcmiu.edu.vn Extension: 3617	<ul style="list-style-type: none"> •Assist international students and scholars with the process of applying to IU, advising on immigration regulations, consulting on academic and daily challenges. •Assist the campus community involved with international educational exchange in the process of receiving international students studying at IU campus, or in sending IU's students study from one to two semester abroad. •Cooperate with other Schools, Departments and other divisions at IU to create and maintain a global campus.
Center of Information Services (CIS)	Room: O1.312 Extension: 3366, 3367, 3377	The center of information services provides technology support for the Internet and telephone systems, and the university website. The Division is also responsible for maintaining the website by upgrading it with pictures and information of all events.
Office of Students Services (OSS)	Room: O1.105 Extension: 3334, 3826	Practicing special policies for unprivileged students, selecting merit students for business donors' scholarships, and implementing the discipline – incentive rules. It organizes soft-skills trainings and provides students with study-related consultation and services such as health care services, or accommodations to boarding students.
Library	Room: 102 Extension: 3241	<p>The working schedule and the spacious area are for all students and teaching staff to use the library at their convenience. It is open from 8a.m to 4p.m from Monday to Saturday.</p> <p>The main functions of the library are organizing, preserving, and providing access to the archive. Additionally, the staff is planning to expand the archive with more sources of books and materials.</p> <p>With the accumulation of 400,000 books and materials, the library development has been going along with the long-term plan of the university.</p>
Clinic room	Room: O2.305 Extension: 3369	The Clinic is primarily the Rectorate Board's consultant on school health care. It is responsible for staff's health. It provides checkups, treatments, and medicines on prescriptions for ailments. For serious cases, it prepares paper work for staff patients to be transferred to a hospital. Besides, the Clinic organizes first-aid training programs for the staff and students.

CURRICULUM INTRODUCTION

The overview of the curriculum of chemical engineering and environment engineering degree is listed as followed. However, students should ask the academic advisor for the most-updated curriculum, course descriptions, and syllabus.

Chemical Engineering degree:

Department of Chemical Engineering:

The Chemical Engineering Department under the School of Chemical and Environmental Engineering at International University - Vietnam National University, Ho Chi Minh City (VNU), was established in 2018 to meet the demand for highly skilled and successful individuals that are fluent in English in the field of chemical engineering. In the trend of industrialization and modernization, the chemical engineering industry has assumed an indispensable position in the fields of consumer goods, agriculture, production of building materials, food industry, textile and leather industry, electrochemical industry, chemical industry, mechanical industry, electricity-fuel-energy industry, etc.

Objectives:

To train prospective chemical engineers with the philosophy of "Job ready", specifically as follows:

1. Acquire a solid basic knowledge of science and engineering in the field of chemistry and related fields (e.g., biology, pharmacology, environment, etc.).
2. Demonstrate the ability to creatively apply basic industry knowledge to solve diverse problems in career fields.
3. Display professional ethics and understanding of environmental, social, security, and economic issues.
4. Demonstrate a full range of soft skills, management skills, teamwork ability, leadership ability, and the ability to communicate and work professionally in English.

Environmental Engineering degree:

Department of Environmental Engineering

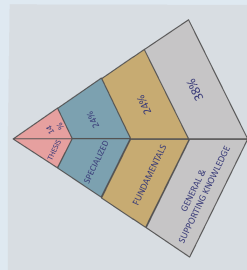
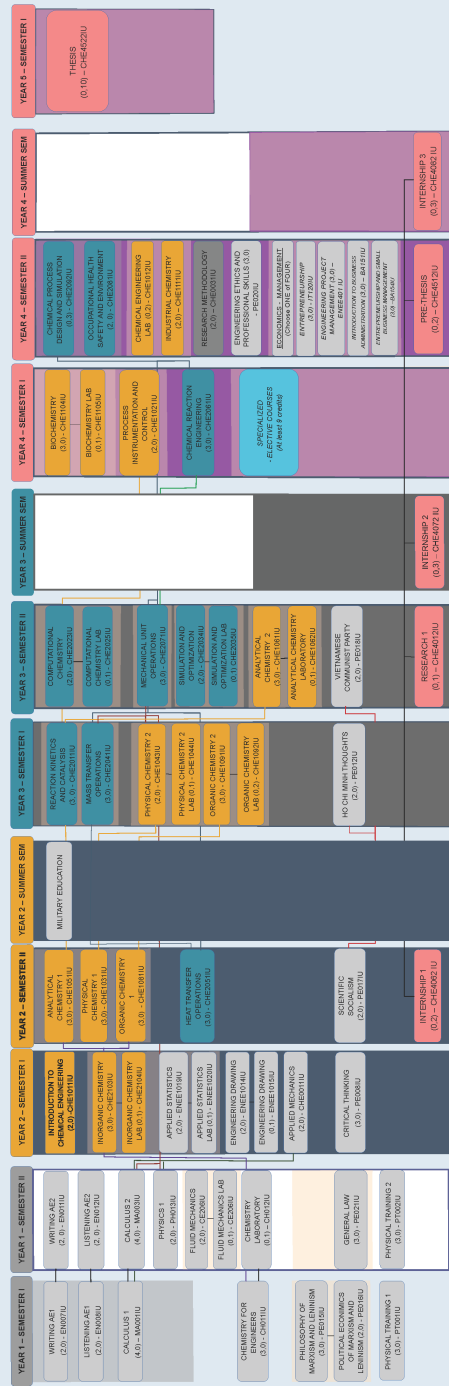
Environmental engineering is a multidisciplinary field that integrates chemistry, biology, physics with engineering to tackle with the emerging environmental issues such as water pollution, air pollution and waste disposal. The students will be equipped with necessary knowledge, skills, and attitude to pursue their professional career and/or research in the field to serve the country, society, and community in environmental protection.

Objectives:

1. Knowledge and professional background about the fundamental, basic, and engineering education as well as supportive knowledge related to water treatment, air pollution control, soil, and solid waste management to apply in solving the environmental issues and pursue further education.
2. Intellectual skills, personal attitude, teamwork, and effective communication skills in professional environment to deal with multidisciplinary related to environmental engineering
3. Idea, design, implementation and operation of technologies, equipment, and environmental treatment system under the context of the enterprises and the society.

Roadmap of Chemical Engineering - AEI

(for updated version, please consult your academic advisor)

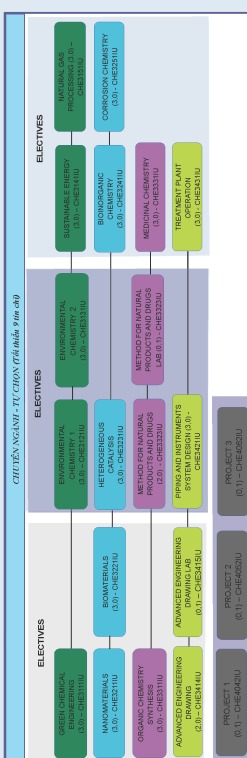


GENERAL KNOWLEDGE
SPECIALIZED KNOWLEDGE (Compulsory)
SPECIALIZED KNOWLEDGE (Elective)
INTERNSHIP
DISSERTATION/THESIS

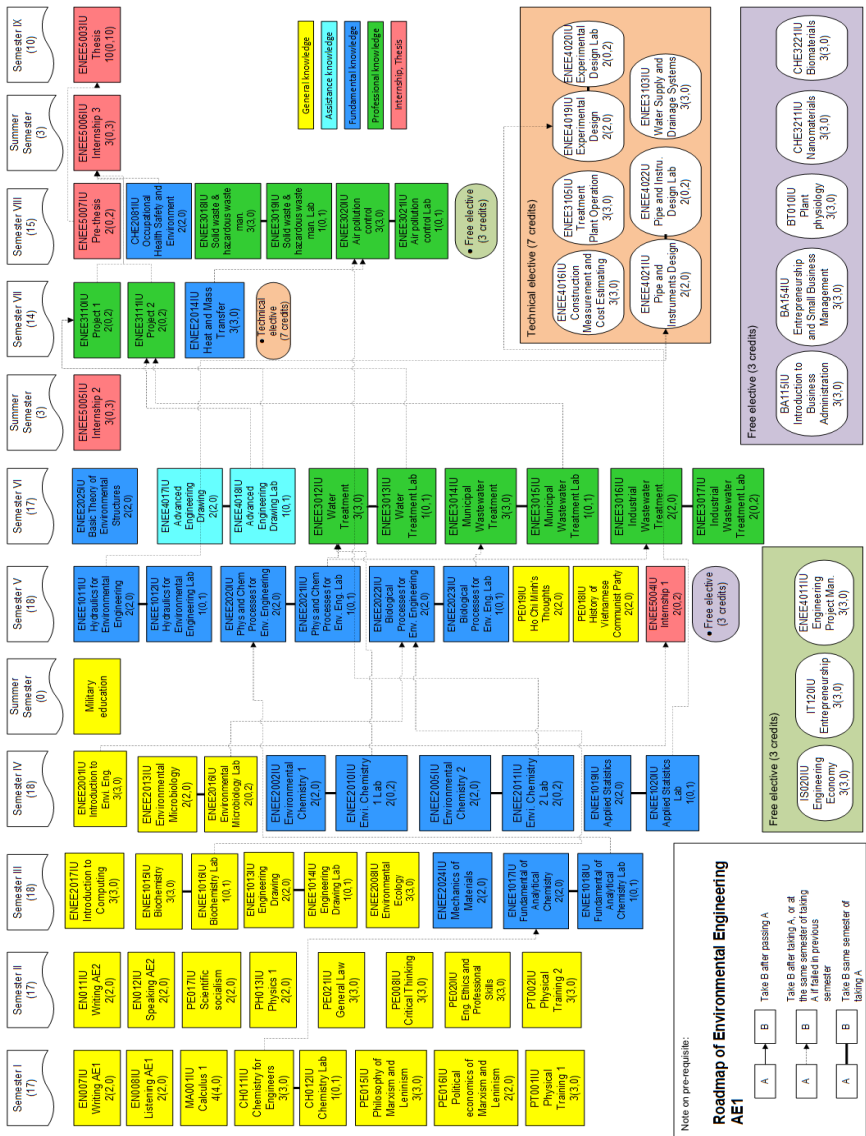
Course code explanation: CHEXY7U

X [Course Group] 0 - General knowledge/
Specialized (Compulsory) 1 - General knowledge/
Specialized (Elective) 2 - General knowledge/
Specialized (Compulsory) 3 - Specialized (Elective) |
4 - Internship/Dissertation/Thesis |
Y [Course order]

+ Z [Course type: 1 - Theory | 2 - Practice | 3 - Theory and Practice |



Roadmap of Environmental Engineering - AEI



CURRICULUM INTRODUCTION

CHEMICAL ENGINEERING

(for specific English levels, please consult your academic advisor)

No.	Code	Name	Credits/ECTS
1	CH011IU	Chemistry for Engineers (3,0)	3/4.6
2	PT001IU	Physical Training 1	0/0
3	PE015IU	Philosophy of Marxism and Leninism (3,0)	3/4.6
4	PE016IU	Political economics of Marxism and Leninism (2,0)	2/3.1
5	EN007IU	Writing AE1 (2,0)	2/3.1
6	EN008IU	Listening AE1 (2,0)	2/3.1
7	PH013IU	Physics 1 - Mechanics (2,0)	2/3.1
8	EN011IU	Writing AE2 (2,0)	2/3.1
9	EN012IU	Speaking AE2 (2,0)	2/3.1
10	MA001IU	Calculus 1 (4,0)	4/6.2
11	CE205IU	Fluid Mechanics (2,0)	2/3.1
12	CE206IU	Fluid Mechanics Lab (0,1)	1/2.5
13	PT002IU	Physical Training 2 (3,0)	0/0
14	PE008IU	Critical Thinking (3,0)	3/4.6
15	CHE2103IU	Inorganic Chemistry (3,0)	3/4.6
16	CHE2104IU	Inorganic Chemistry Lab (0,1)	1/2.5
17	CHE001IU	Applied Mechanics (2,0)	2/3.1
18	CHE108IU	Organic Chemistry 1 (3,0)	3/4.6
19	CHE111IU	Industrial Chemistry (2,0)	2/3.1
20	CHE105IU	Analytical Chemistry 1 (3,0)	3/4.6
21	MA003IU	Calculus 2 (4,0)	4/6.2
22	CHE103IU	Physical Chemistry 1 (3,0)	3/4.6
23	PE017IU	Scientific socialism (2,0)	2/3.1
24	CHE201IU	Reaction Kinetics and Catalysis (3,0)	3/4.6
25	ENEE1019IU	Applied Statistic (2,0)	2/3.1
26	ENEE1020IU	Applied Statistics Lab (0,1)	1/2.5
27	CHE101IU	Introduction to Chemical Engineering (2,0)	2/3.10
28	CHE1043IU	Physical Chemistry 2 (2,0)	2/3.1
29	CHE1044IU	Physical Chemistry 2 Lab (0,1)	1/2.5
30	CHE1104IU	Biochemistry (3,0)	3/4.6
31	CHE1105IU	Biochemistry Lab (0,1)	1/2.5
32	PE018IU	History of Vietnamese Communist Party (2,0)	2/3.1
33	IT120IU	Entrepreneurship (3,0)	3/4.6
34	ENEE4011IU	Engineering Project Management (3,0)	3/4.6
35	BA115IU	Introduction to Business Administration (3,0)	3/4.6
37	PE019IU	Ho Chi Minh's Thoughts (2,0)	2/3.1
38	CHE2024IU	Computational Chemistry (2,0)	2/3.1
39	CHE2025IU	Computational chemistry lab (0,1)	1/2.5
40	CHE206IU	Chemical Reaction Engineering (3,0)	3/4.6
41	CHE109IU	Organic Chemistry 2 (3,0)	3/4.6

CURRICULUM INTRODUCTION

CHEMICAL ENGINEERING

(for specific English levels, please consult your academic advisor)

No.	Code	Name	Credits/ECTS
42	CHE1061IU	Analytical Chemistry 2 (3,0)	3/4.6
43	CHE1062IU	Analytical Chemistry Laboratory (0,2)	2/4.9
44	CHE1092IU	Organic Chemistry Laboratory (0,2)	2/4.9
45	CHE1021IU	Process Instrumentation and Control (2,0)	2/3.1
46	PE020IU	Engineering Ethics and Professional Skills (3,0)	3/4.6
47	CHE2034IU	Simulation and Optimization (2,0)	2/3.1
48	CHE2035IU	Simulation And Optimization Lab (0,1)	1/2.5
49	CHE4012IU	Research 1 (0,1)	1/2.5
50	CHE2041IU	Mass Transfer Operations (3,0)	3/4.6
51	CHE2051IU	Heat Transfer Operations (3,0)	3/4.6
52	CHE2071IU	Mechanical Unit Operations (3,0)	3/4.6
53	CHE4062IU	Internship 1 (0,2)	2/4.9
54	CHE4072IU	Internship 2 (0,3)	3/7.4
55	CHE4082IU	Internship 3 (0,3)	3/7.4
56	CHE4512IU	Pre-thesis (0,2)	2/4.9
57	CHE2012IU	Chemical Engineering Laboratory (0,1)	1/2.5
58	PE021IU	General Law (3,0)	3/4.6
59	CHE2081IU	Occupational Health Safety and Environment (2,0)	2/3.1
60	CH012IU	Chemistry Laboratory (0,1)	1/2.5
61	CHE2092IU	Chemical Process Design and Simulation	3/4.6
63	BA154IU	Entrepreneurship and Small Business Management (3,0)	3/4.6
64	CHE0041IU	Research Methodology (2,0)	2/3.1
65	CHE0042IU	Project 1 (0,1)	1/2.5
66	CHE0052IU	Project 2 (0,1)	1/2.5
67	CHE0062IU	Project 3 (0,1)	1/2.5
68	CHE4522IU	Thesis (0,10)	10/24.55
69	ENEE1014IU	Engineering Drawing (2,0)	2/3.1
70	ENEE1015IU	Engineering Drawing Lab (0,1)	1/2.5
71	PE019U	Ho Chi Minh's Thoughts (2,0)	2/3.1
72	CHE3111IU	Green Chemical Engineering (3,0)	3/4.6
73	CHE3211IU	Nanomaterials (3,0)	3/4.6
74	CHE3221IU	Biomaterials (3,0)	3/4.6
75	CHE3311IU	Organic Chemistry Synthesis (3,0)	3/4.6
76	CHE3414IU	Advanced Engineering Drawing (2,0)	2/3.1
77	CHE3415IU	Advanced Engineering Drawing Lab (0,1)	1/2.5
78	CHE3121IU	Environmental Chemistry 1 (3,0)	3/4.6
79	CHE3131IU	Environmental Chemistry 2 (3,0)	3/4.6
80	CHE3231IU	Heterogeneous Catalysis (3,0)	3/4.6
81	CHE3324IU	Methods for Natural Products and Drugs (2,0)	2/3.1
82	CHE3325IU	Methods for Natural Products and Drugs Lab (0,1)	1/2.5

CURRICULUM INTRODUCTION

CHEMICAL ENGINEERING

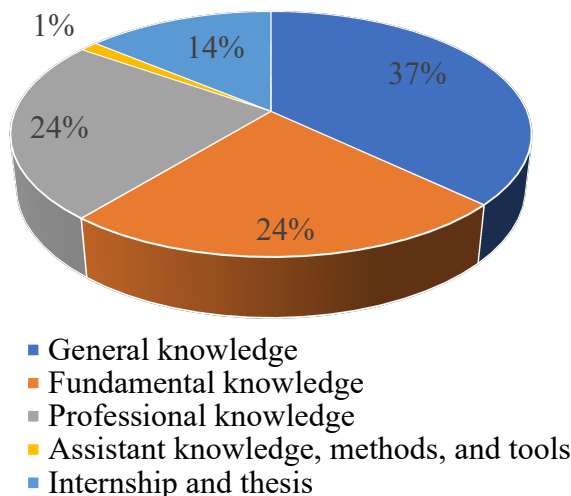
(for specific English levels, please consult your academic advisor)

No.	Code	Name	Credits/ECTS
83	CHE3421IU	Pipping and Instruments System Design (3,0)	3/4.6
84	CHE3141IU	Sustainable Energy (3,0)	3/4.6
85	CHE3151IU	Natural Gas Processing (3,0)	3/4.6
86	CHE3241IU	Bioinorganic Chemistry (3,0)	3/4.6
87	CHE3331IU	Medicinal Chemistry (3,0)	3/4.6
88	CHE3431IU	Treatment Plant Operation (3,0)	3/4.6
89	CHE3251IU	Corrosion Chemistry (3,0)	3/4.6

NOTE:

No. 33-35: Choose 1 course only

No. 72-89: Choose AT LEAST 9 credits



CURRICULUM STRUCTURE

CHEMICAL ENGINEERING - AE1 English level

(for other levels, please consult your academic advisor)

Year	Semester	Code	Name	Credits/ ECTS	Total
1	1	EN007IU	Writing AE1	2/3.1	16/24.7
		EN008IU	Listening AE1	2/3.1	
		MA001IU	Calculus 1	4/6.2	
		CH011IU	Chemistry for Engineers	3/4.6	
		PE015IU	Philosophy of Marxism and Leninism	3/4.6	
		PE016IU	Political Economics of Marxism and Leninism	2/3.1	
		PT001IU	Physical Training 1	0/0	
	2	EN011IU	Writing AE2	2/3.1	17/28.2
		EN012IU	Speaking AE2	2/3.1	
		MA003IU	Calculus 2	4/6.2	
		PE021IU	General Law	3/4.6	
		PH013IU	Physics 1 - Mechanics	2/3.1	
		CE205IU	Fluid Mechanics	2/3.1	
		CE206IU	Fluid Mechanics Lab	1/2.5	
2	1	CH012IU	Chemistry Laboratory	1/2.5	17/29.1
		PT002IU	Physical Training 2	0/0	
		CHE1011IU	Introduction to Chemical Engineering	2/3.1	
		CHE2103IU	Inorganic Chemistry	3/4.6	
		CHE2104IU	Inorganic Chemistry Lab	1/2.5	
		ENEE1019IU	Applied Statistics	2/3.1	
		ENEE1020IU	Applied Statistics Lab	1/2.5	
		ENEE1014IU	Engineering Drawing	2/3.1	
		ENEE1015IU	Engineering Drawing Lab	1/2.5	
	2	CHE0011IU	Applied Mechanics	2/3.1	16/26.4
		PE008IU	Critical Thinking	3/4.6	
		CHE1051IU	Analytical Chemistry 1	3/4.6	
		CHE1031IU	Physical Chemistry 1	3/4.6	
		CHE1081IU	Organic Chemistry 1	3/4.6	
		CHE2051IU	Heat Transfer Operations	3/4.6	
	Summer	PE017IU	Scientific socialism (2,0)	2/3.1	0/0
		CHE4062IU	Internship 1 (0,2)	2/4.9	

CURRICULUM STRUCTURE

CHEMICAL ENGINEERING - AE1 English level

(for other levels, please consult your academic advisor)

Year	Semester	Code	Name	Credits/ ECTS	Total	
3	1	CHE2011IU	Reaction Kinetics and Catalysis	3/4.6	16/27.4	
		PE019U	Ho Chi Minh's Thoughts	2/3.1		
		CHE1043IU	Physical Chemistry 2	2/3.1		
		CHE1044IU	Physical Chemistry 2 Lab	1/2.5		
		CHE2041IU	Mass Transfer Operations	3/4.6		
		CHE1091IU	Organic Chemistry 2	3/4.6		
		CHE1092IU	Organic Chemistry Laboratory	2/4.9		
	2	CHE2023IU	Computational Chemistry	2/3.1	17/30.9	
		CHE2025IU	Computational Chemistry Lab	1/2.5		
		CHE2071IU	Mechanical Unit Operations	3/4.6		
		CHE2034IU	Simulation and Optimization	2/3.1		
		CHE2035IU	Simulation and Optimization Lab	1/2.5		
		CHE1061IU	Analytical Chemistry 2	3/4.6		
		CHE4012IU	Research 1	1/2.5		
		CHE1062IU	Analytical Chemistry Laboratory	2/4.9		
	PE018IU	History of Vietnamese Communist Party	2/3.1			
	Summer	CHE4072IU	Internship 2 (0,3)	3/7.4	3/7.4	
4	1	CHE1104IU	Biochemistry	3/4.6	18/28.7	
		CHE1105IU	Biochemistry Lab	1/2.5		
		CHE1021IU	Process Instrumentation and Control	2/3.1		
		CHE2061IU	Chemical Reaction Engineering	3/4.6		
		CHE0042IU	Project 1	1/2.5		
		CHE0052IU	Project 2	1/2.5		
		CHE0062IU	Project 3	1/2.5		
		Electives (Choose at least 9 credits) (9/13.9)				
		CHE3111IU	Green Chemical Engineering	3/4.6		
		CHE3211IU	Nanomaterials	3/4.6		
		CHE3221IU	Biomaterials	3/4.6		
		CHE3311IU	Organic Chemistry Synthesis	3/4.6		
		CHE3414IU	Advanced Engineering Drawing	2/3.1		
		CHE3415IU	Advanced Engineering Drawing Lab	1/2.5		
		CHE3121IU	Environmental Chemistry 1	3/4.6		
		CHE3131IU	Environmental Chemistry 2	3/4.6		
		CHE3231IU	Heterogeneous Catalysis	3/4.6		

CURRICULUM STRUCTURE

CHEMICAL ENGINEERING - AE1 English level

(for other levels, please consult your academic advisor)

Year	Semester	Code	Name	Credits/ ECTS	Total
4	1	CHE3324IU	Methods for Natural Products and Drugs	2/3.1	18/28.7
		CHE3325IU	Methods for Natural Products and Drugs Lab	1/2.5	
		CHE3421IU	Pipping and Instruments System Design	3/4.6	
		CHE3141IU	Sustainable Energy	3/4.6	
		CHE3151IU	Natural Gas Processing	3/4.6	
		CHE3241IU	Bioinorganic Chemistry	3/4.6	
		CHE3331IU	Medicinal Chemistry	3/4.6	
		CHE3431IU	Treatment Plant Operation	3/4.6	
		CHE3251IU	Corrosion Chemistry	3/4.6	
	2	CHE2092IU	Chemical Process Design and Simulation	3/4.6	18/30.5
		CHE2012IU	Chemical Engineering Lab	1/2.5	
		CHE4512IU	Pre-thesis	2/4.9	
		CHE1111IU	Industrial Chemistry	2/3.1	
		CHE2081IU	Occupational Health Safety and Environment (HSE)	2/3.1	
		CHE0041IU	Research Methodology	2/3.1	
		PE020IU	Engineering Ethics and Professional Skills	3/4.6	
		Economy - Management (Choose 1 course)			
		IT120IU	Entrepreneurship	3/4.6	
		ENEE4011IU	Engineering Project Management	3/4.6	
		BA115IU	Introduction to Business Administration	3/4.6	
		BA1511IU	Entrepreneurship and Small Business Management	3/4.6	
		PE020IU	Engineering Ethics and Professional Skills	3/4.6	
	Summer	CHE4082IU	Internship 3 (0,3)	3/7.4	3/7.4
5	1	CHE4522IU	Thesis	10/24.55	10/24.55

CURRICULUM INTRODUCTION

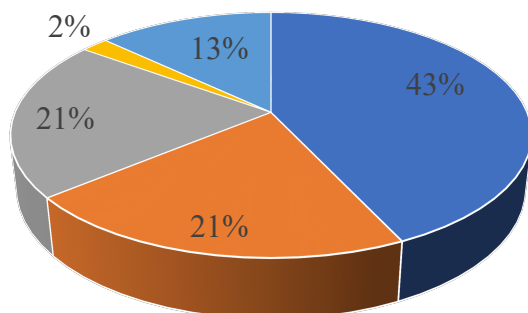
ENVIRONMENTAL ENGINEERING

No.	Code	Name	Credits/ECTS
1	PE015IU	Philosophy of Marxism and Leninism	3/4.64
2	PE016IU	Political economics of Marxism and Leninism	2/3.09
3	PE017IU	Scientific Socialism	2/3.09
4	PE018IU	History of Vietnamese Communist Party	2/3.09
5	PE019IU	Ho Chi Minh's Thoughts	2/3.09
		Military Education	0/0
	PT001IU	Physical Training 1	0/0
	PT002IU	Physical Training 2	0/0
6	PE021IU	General Law	3/4.64
7	PE008IU	Critical Thinking	3/4.64
8	PE020IU	Engineering Ethics and Professional Skills	3/4.64
9	EN007IU	Writing AE1	2/3.09
10	EN008IU	Listening AE1	2/3.09
11	EN011IU	Writing AE2	2/3.09
12	EN012IU	Speaking AE2	2/3.09
13	MA001IU	Calculus 1	4/6.18
14	CH011IU	Chemistry for Engineers	3/4.64
15	CH012IU	Chemistry Lab	1/2
16	ENEE1015IU	Biochemistry	3/4.62
17	ENEE1016IU	Biochemistry Lab	1/2
18	ENEE2013IU	Environmental Microbiology	2/3.09
19	ENEE2016IU	Environmental Microbiology Lab	2/4
20	PH013IU	Physics 1	2/3.09
21	ENEE2017IU	Introduction to Computing	3/4.64
22	ENEE100IU	Engineering Drawing	2/3.09
23	ENEE1014IU	Engineering Drawing Lab	1/2
24	ENEE2001IU	Introduction to Environmental Engineering	3/4.64
25	ENEE2008IU	Environmental Ecology	3/4.64
26	ENEE1019IU	Applied Statistics	2/3.09
27	ENEE1020IU	Applied Statistics Lab	1/2
28	ENEE1017IU	Fundamental of Analytical Chemistry	2/3.09
29	ENEE1018IU	Fundamental of Analytical Chemistry Lab	1/2
30	ENEE2002IU	Environmental Chemistry 1	2/3.09
31	ENEE2010IU	Environmental Chemistry 1 Lab	2/4
32	ENEE2005IU	Environmental Chemistry 2	2/3.09
33	ENEE2011IU	Environmental Chemistry 2 Lab	2/4
34	ENEE2024IU	Mechanics of Materials	2/3.09
35	ENEE2025IU	Basic Theory of Environmental Structures	3/4.64
36	ENEE1011IU	Hydraulics for Environmental Engineering	2/3.09
37	ENEE1012IU	Hydraulics for Environmental Engineering Lab	1/2
38	ENEE2020IU	Physical and Chemical Processes for Environmental Engineering	2/3.09
39	ENEE2021IU	Physical and Chemical Processes for Environmental Engineering Lab	1/2

CURRICULUM INTRODUCTION

ENVIRONMENTAL ENGINEERING

No.	Code	Name	Credits/ECTS
40	ENEE2014IU	Heat and Mass Transfer	3/4.64
41	ENEE2022IU	Biological Processes for Environmental Engineering	2/3.09
42	ENEE2023IU	Biological Processes for Environmental Engineering Lab	1/2
43	CHE2081IU	Occupational Health Safety and Environment	2/3.09
44	ENEE3012IU	Water Treatment	2/3.09
45	ENEE3013IU	Water Treatment Lab	1/2
46	ENEE3014IU	Municipal Wastewater Treatment	2/3.09
47	ENEE3015IU	Municipal Wastewater Treatment Lab	1/2
48	ENEE3016IU	Industrial Wastewater Treatment	2/3.09
49	ENEE3017IU	Industrial Wastewater Treatment Lab	2/4
50	ENEE3018IU	Solid Waste and Hazardous Waste Management	3/4.64
51	ENEE3019IU	Solid Waste and Hazardous Waste Management Lab	1/2
52	ENEE3020IU	Air Pollution Control	3/4.64
53	ENEE3021IU	Air Pollution Control Lab	1/2
54	ENEE3110IU	Project 1	2/4.91
55	ENEE3111IU	Project 2	2/4.91
56	ENEE4017IU	Advanced Engineering Drawing	2/3.09
57	ENEE4018IU	Advanced Engineering Drawing Lab	1/2
58	ENEE5004IU	Internship 1	2/4.91
59	ENEE5005IU	Internship 2	3/7.36
60	ENEE5006IU	Internship 3	3/7.36
61	ENEE5007IU	Pre-thesis	2/4.91
62	ENEE5003IU	Thesis	10/24.55



- General knowledge
- Fundamental knowledge
- Professional knowledge
- Assistant knowledge, methods, and tools
- Internship and thesis

CURRICULUM STRUCTURE

ENVIRONMENTAL ENGINEERING - AE1 English level (for other levels, please consult your academic advisor)

Year	Semester	Code	Name	Credits/ ECTS	Total
1	1	EN007IU	Writing AE1	2/3.09	17/26.73
		EN008IU	Listening AE1	2/3.09	
		MA001IU	Calculus 1	4/6.18	
		CH011IU	Chemistry for Engineers	3/4.64	
		CH012IU	Chemistry Lab	1/2	
		PE015IU	Philosophy of Marxism and Leninism	3/4.64	
		PE016IU	Political economics of Marxism and Leninism	2/3.09	
		PT001IU	Physical Training 1	0/0	
	2	EN011IU	Writing AE2	2/3.09	17/26.28
		EN012IU	Speaking AE2	2/3.09	
		PE008IU	Critical Thinking	3/4.64	
		PE021IU	General Law	3/4.64	
		PE020IU	Engineering Ethics and Professional Skills	3/4.64	
		PE017IU	Scientific Socialism	2/3.09	
		PH013IU	Physics 1	2/3.09	
		PT002IU	Physical Training 2	0/0	
2	1	ENEE2017IU	Introduction to Computing	3/4.64	18/29.19
		ENEE1017IU	Fundamental of Analytical Chemistry	2/3.09	
		ENEE1018IU	Fundamental of Analytical Chemistry Lab	1/2	
		ENEE1015IU	Biochemistry	3/4.64	
		ENEE1016IU	Biochemistry Lab	1/2	
		ENEE1001IU	Engineering Drawing	2/3.09	
		ENEE1014IU	Engineering Drawing Lab	1/2	
		ENEE2024IU	Mechanics of Materials	2/3.09	
		ENEE2008IU	Environmental Ecology	3/4.64	
	2	ENEE2001IU	Introduction to Environmental Engineering	3/4.64	18/31.00
		ENEE2013IU	Environmental Microbiology	2/3.09	
		ENEE2016IU	Environmental Microbiology Lab	2/4	
		ENEE2002IU	Environmental Chemistry 1	2/3.09	
		ENEE2010IU	Environmental Chemistry 1 Lab	2/4	
		ENEE2005IU	Environmental Chemistry 2	2/3.09	
		ENEE2011IU	Environmental Chemistry 2 Lab	2/4	
		ENEE1019IU	Applied Statistics	2/3.09	
		ENEE1020IU	Applied Statistics Lab	1/2	
	Summer		Military Education	0/0	0/0

CURRICULUM STRUCTURE

ENVIRONMENTAL ENGINEERING - AE1 English level (for other levels, please consult your academic advisor)

Year	Semester	Code	Name	Credits/ ECTS	Total
3	1	ENEE1011IU	Hydraulics for Environmental Engineering	2/3.09	18/31.00
		ENEE1012IU	Hydraulics for Environmental Engineering Lab	1/2	
		ENEE2020IU	Physical and Chemical Processes for Environmental Engineering	2/3.09	
		ENEE2021IU	Physical and Chemical Processes for Environmental Engineering Lab	1/2	
		ENEE2022IU	Biological Processes for Environmental Engineering	2/3.09	
		ENEE2023IU	Biological Processes for Environmental Engineering Lab	1/2	
		PE018IU	History of Vietnamese Communist Party	2/3.09	
		PE019IU	Ho Chi Minh's Thoughts	2/3.09	
		ENEE5004IU	Internship 1	2/4.91	
		Elective courses	Free elective (2*) (page 43)	3/4.64	
	2	ENEE2025IU	Basic Theory of Environmental Structures	2/3.09	17/28.55
		ENEE4017IU	Advanced Engineering Drawing	2/3.09	
		ENEE4018IU	Advanced Engineering Drawing Lab	1/2	
		ENEE3012IU	Water Treatment	3/4.64	
		ENEE3013IU	Water Treatment Lab	1/2	
		ENEE3014IU	Municipal Wastewater Treatment	3/4.64	
		ENEE3015IU	Municipal Wastewater Treatment Lab	1/2	
		ENEE3016IU	Industrial Wastewater Treatment	2/3.09	
		ENEE3017IU	Industrial Wastewater Treatment Lab	2/4	
	Summer	ENEE5005IU	Internship 2	3/7.36	3/7.36
4	1	ENEE3110IU	Project 1	2/4.91	14/26.19
		ENEE3111IU	Project 2	2/4.91	
		ENEE2014IU	Heat and Mass Transfer	3/4.64	
		Elective courses	Technical elective (1*) (page 44)	7/11.73	
	2	CHE2081IU	Occupational Health Safety and Environment	2/3.09	15/25.92
		ENEE5007IU	Pre-thesis	2/4.91	
		ENEE3018IU	Solid Waste and Hazardous Waste Management	3/4.64	
		ENEE3019IU	Solid Waste and Hazardous Waste Management Lab	1/2	
		ENEE3020IU	Air Pollution Control	3/4.64	
		ENEE3021IU	Air Pollution Control Lab	1/2	
		Elective courses	Free elective (2*) (page 43)	3/4.64	
	Summer	ENEE5006IU	Internship 3	3/7.36	3/7.36
5	1	ENEE5003IU	Thesis	10/24.55	10/24.55

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Political courses

Code	Course	Description
PE015IU 3 (3,0) Parallel course: PE016IU	Philosophy of Marxism and Leninism	This course provides basic concepts of the worldview and political methodology of Marxism; that help students to utilize this knowledge creatively in scientific activities and practical works, in order to solve the societal issues of the country as well as the world. This course will be taught in Vietnamese.
PE016IU 2 (2,0) Parallel course: PE015IU	Political Economics of Marxism and Leninism	This course includes 6 chapters, in which chapter 1 discusses about the subjects, methods and function of Political Economics of Marxism and Leninism. From chapter 2 to chapter 6 is for the core content of the course, including products, market, and roles of those subjects in the economy. Competition and monopoly in market economy, market economy under the socialism, different types of economic benefits in Vietnam, urbanization, modernization and international economic integration in Vietnam are also discussed. This course will be taught in Vietnamese.
PE017IU 2 (2,0) Previous course: PE015IU PE016IU	Scientific Socialism	This course provides basic knowledge about the scientific socialism, help students to creatively apply this knowledge in conceptual and practical activities, in order to solve the societal issues of the country as well as the world. This course will be taught in Vietnamese.
PE018IU 2 (2,0) Previous course: PE017IU	History of Vietnamese Communist Party	The course will provide students with the basic knowledge of the revolutionary lines of the Party, especially in the innovative periods. The course equips students with basic knowledge about the history of the Communist Party of Vietnam. This course will be taught in Vietnamese.
PE019IU 2 (2,0) Previous course: PE017IU	Ho Chi Minh's Thoughts	The course includes 7 chapters: Chapter 1 presents the basis and the development process of Ho Chi Minh's thoughts; the remaining chapters cover the basic contents of Ho Chi Minh's thoughts, national independence and socialism, Vietnam Communist Party and Government, national and international solidarity in terms of culture, morality and humanity. This course will be taught in Vietnamese.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

General courses

Code	Course	Description
EN007IU 2 (2,0)	Writing AE1	This course provides students with comprehensive instructions and practice in essay writing, including transforming ideas into different functions of writing such as process, cause-effect, comparison-contrast, and argumentative essays. Throughout the whole course, students are required to read university-level texts to develop the ability to read critically and to respond accurately, coherently and academically in writing. Through providing them with crucial writing skills such as brainstorming, paraphrasing, idea developing, revising, and editing, this course prepares the students for research paper writing in the next level of AE2 writing.
EN008IU 2 (2,0)	Listening AE1	The course is designed to prepare students for effective listening and note-taking skills, so that they can pursue the courses in their majors without considerable difficulty. The course is therefore lecture-based in that the teaching and learning procedure is built up on lectures on a variety of topics such as business, science, and humanities.
EN011IU 2 (2,0) Previous course: EN007IU	Writing AE2	This course introduces basic concepts in research paper writing, especially the role of generalizations, definitions, classifications, and the structure of a research paper to students who attend English- medium college or university. It also provides them with methods of developing and presenting an argument, a comparison or a contrast. Students are required to work on the tasks selected to maximize their exposure to written communication and are expected to become competent writers in the particular genre: the research paper.
EN012IU 2 (2,0) Previous course: EN008IU	Listening AE2	Giving presentations today becomes a vital skill for students to succeed not only in university but also at work in the future. However, this may be seen as a nerve-racking task, especially when presented in a foreign language. Speaking AE2 provides the students with the knowledge and skills needed to deliver effective presentations. To do this, the course covers many aspects of giving presentation: preparing and planning, using the appropriate language, applying effective visual aids, building up confidence, performing body language, dealing with questions and responding, etc.
PE008IU 3 (3,0)	Critical Thinking	Critical Thinking studies a process which is indispensable to all educated persons—the process by which we develop and support our beliefs and evaluate the strength of arguments made by others in real-life situations. It includes practice in inductive and deductive reasoning, presentation of arguments in oral and written form, and analysis of the use of language to influence thought. The course also applies the reasoning process to other fields such as business, science, law, social science, ethics, and the arts.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

General courses

Code	Course	Description
MA001IU 4 (4,0)	Calculus 1	Functions; Limits; Continuity; Derivatives, Differentiation, Derivatives of Basic Elementary Functions, Differentiation Rules; Applications of Differentiation: l'Hôpital's Rule, Optimization, Newton's Method; Anti-derivatives; Indefinite Integrals, Definite Integrals, Fundamental Theorem of Calculus; Techniques of Integration; Improper Integrals; Applications of Integration.
MA003IU 4 (4,0) Previous course: MA001IU	Calculus 2	To provide the students with the main notions and techniques of calculus of functions of several variables concerning limits, continuity, differentiation and integration; basic skills of computing the sum of series. Many applications explain how to use these notions and techniques in practical situations.
PH013IU 2 (2,0)	Physics 1	This course introduces the basic knowledge of physics which is applied to the biotechnology for undergraduate students. It is a part of 2-semester course in Physics. These two courses in Physics examine. This particular module provides fundamental information on aspects of physical processes and phenomena.
PH014IU 2 (2,0) Previous course: PH013IU 2 (2,0)	Physics 2	Basic knowledge about fluid mechanics; macroscopic description of gases; heat and the first law of thermodynamics; heat engines and the second law of thermodynamics; microscopic description of gases and the kinetic theory of gases.
PE021IU (3,0)	General Law	The course will introduce students to Vietnamese legal systems. In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice, including ending corruption, in society.
PE020IU 3 (3,0)	Engineering Ethics and Professional Skills	This course is designed to introduce engineering students to the concepts, theory and practice of engineering ethics. It will allow students to explore the relationship between ethics and engineering and apply classical moral theory and decision making to engineering issues encountered in academic and professional careers. Our society places a great deal of responsibility on its professionals and requires that they conduct themselves in a manner fitting to the place of prominence accorded to them by the community. Studying and understanding professional ethics is as much a part of your development as an engineer as is the study of higher order mathematics You must be able to broaden your mind and be open to society's ever-changing character. It is important that you learn to share ideas and concepts although you may not always agree; therefore, we will be working in teams on majority of the assignments in this course.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CH011IU 3 (3,0)	Chemistry for Engineers	These courses are designed for engineering students those who are pursuing a non-chemistry engineering degree such as information technology, bio-technology, civil, biomedical, electronic and telecommunication engineering, environmental engineering. The course will introduce the basic principles of chemistry and connect those principles to issues in engineering professions. The related lab-work is not included in this course.
EE057IU 4 (3,1)	Programming for Engineers	This course provides the basics of programming and data structures in C programming language including basic data types, loops, branching, arrays, functions, recursion, strings, structures and pointers; introduction to abstract data types: lists, linked lists, binary trees; introduction to algorithm analysis: searching and sorting.
ENEE1019IU 2 (2,0) Previous course: ENEE2017IU MA001IU	Applied Statistics	This course is designed for students pursuing a degree in chemical/environmental engineering and provides knowledge on statistical data, plotting data, descriptive statistics, probability and distribution, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.
ENEE1020IU 1 (0,1) Parallel course: ENEE1019IU	Applied Statistics Lab	This course is designed for students pursuing a degree in chemical/environmental engineering and provides knowledge and skills in using Python/R software for plotting data, descriptive statistics, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.
CHE011IU 2 (2,0) Previous course: PH013IU MA001IU	Applied Mechanics	This subject presents the fundamental knowledge of equilibrium conditions of force system and the knowledge and skills of methods of calculation of strength of materials problems Tension and Compression, Torsion, Plane Bending, Combined Bending and Torsion; and the knowledge of transmissions of belt, chain, gear , shaft and drive shaft (bearings) in engineering.
CHE012IU 1 (0,1) Previous course: CH011IU	Chemistry Laboratory	The course will introduce students to basic laboratory safety, techniques, and apparatus, and complement the knowledge gained in the lecture. Prior to each lab, students must read the lab manual about the experiment and complete a pre-laboratory report. All students must complete mandatory safety training to participate in the course, which will be provided on the first day of the class. Students are expected to come to each lab on time and be prepared to carry out the day's tasks.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
EE05IU 3 (3,0)	Principles of Electrical Engineering 1	This course covers the following topics: Circuit elements; Independent sources; Dependent sources; Circuit analysis in DC and AC steady state; Network theorems; Operational amplifiers; Power Computations.
CE205IU 3 (2,1) Parallel course: CE206IU	Fluid Mechanics	<p>This course introduces the students to fundamental physical concepts and mathematical descriptions in fluid mechanics. These will prove vital for the comprehension and development of tools utilized by chemical engineers to analyze chemical, physical, or biological processes. In particular, the following topics will be discussed (not an extensive list by any mean).</p> <ul style="list-style-type: none"> - Dimensional analysis and dynamic similarity - Fluid statics - Stresses in fluid; elementary constitutive relations - Conservation principles: mass, momentum, and energy - Navier–Stokes equations, and few simple exact solutions - Viscous fluid: boundary layer and turbulence
CHE101IU 2 (2,0)	Introduction to Chemical Engineering	This course will introduce students to the engineering profession and the field of chemical engineering, guide students through the principles of engineering design and problem solving, and help students develop teamwork, time-management, and communication skills.
ENEE4011IU 2 (2,0)	Engineering Project Management	To increase management component in a project team environment, this course will equip learner with general project management skills to help her/him to deal with problems in any field of work. Learners will also gain practical experience of using project management techniques, such as the use of MS. Project, with a real project of her/his own. This course provides fundamental knowledges and skills of project management such as analyzing and selecting alternatives, planning, scheduling, monitoring, and controlling a project. This course introduced varied approaches to meet problems rising in the progress of a project. The course also introduces some software that can enhance the performance in the project management.
IT120IU 2 (2,0)	Entrepreneurship	An introduction to the creative and innovative managerial practices of successful entrepreneurship. This course reviews the significant economic and social contributions entrepreneurs provide to society, the intense lifestyle commitment, and the skills necessary for entrepreneurial success. It explores how to identify and develop solutions to the most common leadership and personal challenges faced by entrepreneurs when starting new ventures or launching new products. It also promotes a deeper understanding of what is required to be a successful entrepreneur, highlights the skills and tools necessary to start a new business and explores alternatives to common pitfalls.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE2103IU 4 (3,1) Previous course: CH011IU	Inorganic Chemistry	This course will be designed to provide students with a broad knowledge and understanding about the principles of focus on the molecular structures and properties of inorganic complexes and compounds.
CHE1081IU 3 (3,0) Previous course: CH011IU	Organic Chemistry 1	This course is the first part of 2-semester course in Organic Chemistry aiming to provide fundamental information on structure and reactions of organic compounds with an emphasis on industrial related aspects. In this Organic Chemistry 1 course, the relationship between structures and properties as well as reactions of hydrocarbons will be focused. The principle of different spectroscopy methods used for organic molecule determination will also be introduced.
CHE1091IU 3 (3,0) Previous course: CHE1081IU	Organic Chemistry 2	This course is the second part of 2-semester course in Organic Chemistry aiming to provide fundamental information on structure and reactions of organic compounds with an emphasis on industrial related aspects. In this Organic Chemistry 2 course, the relationship between structures and properties as well as reactions of functional groups and macromolecules will be focused.
CHE1092IU 2 (2,0) Parallel course: CHE1091IU	Practical Organic Chemistry (Organic Chemistry Laboratory)	The organic chemistry laboratory course introduces the student to fundamental techniques and procedures in extraction, purification, synthesis and characterization of organic compounds and simple reactions used in the organic chemistry laboratory. In addition, the student will be trained in the proper way to write a scientific laboratory report.
CHE1051IU 3 (3,0) Previous course: CH011IU	Analytical Chemistry 1	This is designed to introduce the students to the fundamentals of analytical chemistry, the statistical treatment of data along with practical principles for working in laboratories.
CHE1061IU 3 (3,0) Previous course: CHE1051IU Parallel course: CHE1062IU	Analytical Chemistry 2	This course develops knowledge, experience and skills related to a variety of mainstream instrumental techniques in areas of spectroscopy and separation science, and builds on the foundations provided in CHE1051IU (Analytical Chemistry 1).
CHE1062IU 2 (0,2) Parallel course: CHE1061IU	Analytical Chemistry Laboratory	This is designed to introduce the students to the fundamentals of analytical chemistry, the statistical treatment of data along with practical principles for working in laboratories. CHE1062IU is an introductory laboratory course in Analytical Chemistry. By the end of the semester, students are expected to demonstrate: <ul style="list-style-type: none"> o Proper laboratory techniques for quantitative chemical measurements including accuracy on unknowns o Knowledge of a select group of analytical methods o Competence in data analysis and preparation of basic laboratory reports.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE1031IU 3 (3,0) Previous course: MA0031IU PH013IU CH011IU	Physical Chemistry 1	The course is designed for chemical engineering students and others. The course provides the students with the necessary background in chemical engineering thermodynamics which includes thermodynamics, chemical equilibrium, and phase equilibrium. The knowledge in this course will be further elaborated on in the other fundamental courses as well as specialized courses in the chemical engineering program. The course includes two sections: o Thermodynamics: (i) Concepts and properties of pure substances (ii) the first law of thermodynamics, (iii) the second law of thermodynamics (iv) thermodynamic cycles and (v) Application of thermodynamic laws in chemical reaction systems. o Chemical and phase equilibrium: (vi) Chemical equilibrium, (vii) Theory of phase equilibrium and phase equilibrium of single component systems (viii) Liquid – vapor and liquid – liquid equilibrium (ix) Liquid – solid equilibrium.
CHE1043IU 4 (3,1) Previous course: CHE1031IU	Physical Chemistry 2	The course is designed for chemical engineering students, following Physical Chemistry 1, providing the students with the necessary background in chemical kinetics, electrochemistry, surface phenomena and catalysis. Also, after 10 weeks for lectures in class, the 5-week part of experiment related to all contents of Physical chemistry will be organized at the remaining time. The course includes 4 sections: o Electrochemistry: (i) Ideal and non-ideal solutions (ii) Electrochemical systems o Chemical kinetics (i) Concepts and classification of reaction rates (ii) Reaction kinetics of complex reactions (iii) Theories of reaction rates. o Surface phenomena (i) Concepts (ii) Physical chemistry of surface (iii) Effect of curvature on equilibrium variables (iv) Adsorption (v) Heterogeneous catalysis o Experiment (i) Heat of reaction (ii) Liquid – Solid equilibrium (iii) Reaction's rate order Transport number (v) Adsorption.
CHE1104IU 3 (3,0) Previous course: CH011IU Parallel course: CHE01105IU	Biochemistry	The course is designed to provide students with fundamental concepts in biochemistry and an introduction to metabolisms occurring in living organisms in order to understand the molecular basic of life. The course topics will include enzyme kinetics and mechanisms and metabolisms of important biological molecules such as carbohydrates, fatty acids, amino acids with an emphasis on their degradation pathways. Techniques and approaches used in biochemistry field will also be introduced.
CHE1021IU 2 (2,0) Previous course: CHE011IU	Process Instrumentation and Control	A process cannot be operated without measurement, analysis, and controlling its factors. This course is to introduce the calculation method to determine potential errors in analysis and measurement for chemical engineering processes, basic background of process instrumentation of basic factors, such as temperature, pressure, flow rate, pH, liquid of solid particle level, etc. An important part of the course is also to introduce students about basic principles in controlling chemical engineering processes.
CHE1111IU 2(2,0) Previous course: CHE2011IU, CHE011IU	Industrial Chemistry	This course will provide students with essential skills and knowledge involved in industrial chemistry. The covered topics include Chemical process technology; Surface, Adsorption and heterogeneous catalysis, Polymeric materials; Colloids and surfactant; Sustainable and green chemistry.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE2011IU 3 (3,0)	Reaction Kinetics and Catalysis	This course provides students with the principles and methods of homogeneous and heterogeneous catalysis. The course covers definition of catalysis, adsorption-desorption, surface area and porosity; Langmuir-Hinshelwood kinetics, kinetic modelling; characterization of catalysis; and reaction rate theory.
CHE204IU 3 (2,1) Previous course: CH011IU	Computational Chemistry	The course addresses computer-based calculations within chemistry. The course integrates theory with practical computation elements applied within the fields of environmental chemistry, protein chemistry and medicinal chemistry. The students are expected to acquire knowledge within quantum chemistry, molecular mechanics, bioinformatics, and the theoretical characterization of molecules, and applied methods for computation of the geometric and electronic structure of molecules. The course comprises both theory and practical application of important concepts within quantum chemistry and molecular mechanics. Central concepts for the computer-based application of organic molecules within quantum chemistry will be described and discussed. The focus within molecular mechanics is on describing and discussing the practical application of organic molecules, including proteins. The bioinformatics part of the course addresses the construction and use of databases containing biological information, protein sequence comparisons and 3D structure comparisons. The theory behind methods, practical execution and assessment of the quality of the sequence comparison are addressed and discussed. The theoretical characterization of molecules interconnects the various sections of the course, i.e., quantum chemistry, molecular mechanics and bioinformatics.
CHE2034IU 3 (2,1) Parallel course: CHE2035IU	Simulation and Optimization	This course is to introduce the fundamental methods used in deterministic operations research and the use of numerical analysis and linear algebra to solve industrial engineering problems. Topics to be covered include: problem formulations, simplex method in table form, duality theory, an introduction to the geometry of the simplex method, sensitivity analysis, transportation and network flow problems.
CHE2041IU 3 (3,0) Previous course: CHE2051IU	Mass Transfer Operations	Mass transfer processes are vital in chemical engineering because it is the method to separate or purify components from their mixtures. Through this course, students learn the principles of mass transfer and their application. The course integrates fluid dynamics and thermodynamics in order to develop rate expressions for mass transfer in multiphase and multicomponent systems. Based on Fick's law and phase equilibrium rules, the course provides knowledge of designing large scale separation processes such as distillation, extraction, drying, stripping and absorption to selectively obtain or remove specific components from mixtures.
CHE2051IU 3 (3,0) Previous course: CHE1031IU	Heat Transfer Operations	The course will introduce the fundamental concepts of various modes of heat transfer: conduction, convection, and radiation. It will further elaborate these concepts with theories and applications to the solutions of practically relevant chemical engineering problems. Some aspects of process design principles of various heat transfer equipment will be taken up in the later part of this course. Finally, to present a physical picture of the convection process, heat transfer in boundary layer flows will be addressed. Even though the course is primarily designed to meet the requirements of an undergraduate chemical engineering course on heat transfer, it will be useful for the practicing engineers to refresh with fundamental and technical information.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE2071IU 3 (3,0) Previous course: PH013IU MA0031IU CHE2041IU	Mechanical Unit Operations	In chemical engineering processes, it is quite common that one must deal with fluids and solid particles in mixtures. In this course, students are provided with the basic knowledge of chemical engineering in fluid mechanics and mechanical process operations for heterogeneous systems. This subject is a vital part of background for a chemical engineer. o Part 1 – fundamentals of solid particles to apply in chemical engineering, including particles properties and its important role in mechanical unit operations o Part 2 – Transportation of fluids: pumps, pipeline calculation, blowers and compressors. o Part 3 – Processing heterogeneous phase systems: Separation (settling and filtration) and Agitation processes and equipment.
CHE2061IU 3 (3,0) Previous course: CHE1043IU CHE2071IU	Chemical Reaction Engineering	The intent of this course is to help the student master several advanced concepts in chemical reaction engineering, notably: 1) advanced reactor design, including consideration of the energy balance; 2) chemical reaction mechanisms and rate theories; 3) transport effects in reactive systems; 4) biomolecular applications of chemical kinetics.
CHE3111IU 3 (3,0) Previous course: CHE2011IU	Green Chemical Engineering	This course will introduce students with green chemical engineering in order to devise new technologies and methods of chemical processing that generate little or no pollution and promote the practice of more sustainable engineering options. In particular, designing a chemical reactor to achieve maximum performance is the key for waste minimization. The course will focus on the principles of chemical reaction engineering with some key factors which influence reactor performance will be introduced.
CHE3121IU 3 (3,0) Previous course: CHE1061IU	Environmental Chemistry 1	This course aims to provide fundamental understanding of water chemistry that will serve the students as a basis in all common phases of practice and research on environmental engineering, water pollution control, management, and monitoring water resource quality.
CHE3131IU 3 (3,0) Previous course: CHE1061IU	Environmental Chemistry 2	Description: In this course students will use the fundamental principles of chemistry to gain an understanding of source, fate, and reactivity of compounds in natural and polluted environments. Emphasis will be placed on the chemistry of the atmosphere, and lithosphere. The basic laboratory work supports lecture topics.
CHE3141IU 3 (3,0) Previous course: CHE1031IU CHE1043IU	Sustainable Energy	This course will introduce students with concepts of sustainable energy conversion. Some of the main energy conversion such as solar, wind, hydroelectricity, hydrogen, biomass and geothermal energy together with technologies of energy storage will be discussed.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE3151IU 3 (3,0)	Natural Gas Processing	This course is to provide an overview on chemical processes typically implemented to process the natural gas extracted from the ground into a valuable commodity. This course includes basic elements of economic analysis, optimization, and the description of a few unit operations that are essential for the implementation of natural gas processing plants.
CHE3211IU 3 (3,0)	Nanomaterials	This course will discuss the synthesis, properties characterization and applications of materials structured on the nanometer scale. The course will discuss fabrication methods including epitaxy, lithography, and self-assembly. Optical and electronic properties of nanomaterials (including zero- one- and two-dimensional nanomaterials) will be presented. Special attention will be paid to carbon-based nanomaterials, including carbon nanotubes and graphene. Other types of nanomaterials discussed include: quantum dots, nanowires and nanoparticles. The section dealing with the applications of nanomaterials is interactive: each student will be assigned a specific type or application of nanomaterials, which will be studied individually and presented to the class in a short lecture.
CHE3231IU 3 (3,0)	Heterogeneous Catalysis	More than 90% of all the chemical product formation processes are catalytic in nature and heterogeneous catalysis plays an enormous role. Heterogeneous catalysis plays a very important and defining role in most of the chemical industry. This course will be very useful for undergraduate and post-graduate students, and practitioners to understand heterogeneous catalytic processes. This course starts with basics of catalysis and goes deeper into various aspects of catalytic preparation and characterization techniques. Aspects of catalytic testing and reactor types are to be included. The topics will also include study of reaction mechanism and kinetics of the heterogeneous catalytic reactions. Effect of external and internal transport processes on reaction rates will be covered. Topics will include Modeling, parameter estimations and model discriminations. Catalyst deactivation which is the main problem faced in heterogeneous catalytic process will be covered in details. Various actual industrial catalytic processes will be discussed. New developments in catalysis will be covered. Concept of fuel cell catalysts, monolith catalysts and nanocatalysts will be introduced. The latest methods of catalysts designing and corresponding simulations techniques will also be included in the course. Each topic will be developed progressively and associated with up-to-date information along with references. Wherever required the concepts will be illustrated with case studies and solved problems.
CHE3241IU 3 (3,0)	Bioinorganic Chemistry	This course will take the students to the wonderland laying at the interface of inorganic chemistry and biochemistry. It first introduces the basic concepts of biochemistry and inorganic chemistry, which will serve as the basis for the extensive discussions on the diverse chemistry of metals in biology. As bioinorganic chemistry is a highly interdisciplinary field, this course cannot cover all of its aspects. This course focuses on the common themes found in the field. Some important systems and recent advances with potential applications will be highlighted.
CHE3221IU 3 (3,0)	Biomaterials	An engineer of tissue engineering major should understand biomaterials, and its surface modification for specific applications. Also, an engineer must understand how to choose materials and how to design a scaffold for specific implantation zone.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE3251IU 3 (3,0)	Corrosion Chemistry	This course will introduce students with concepts of corrosion. The mechanism of corrosion including active corrosion, galvanic corrosion, passivity and localized corrosion and electrochemical reduction reactions and environmentally assisted cracking will be covered. The methods of corrosion mitigation including cathodic protection, coatings, inhibitors and passivators as well as the influence of material's chemical composition and microstructure on corrosion behavior will also be discussed.
CHE3311IU 3 (3,0) Previous course: CHE1091IU	Organic Chemistry Synthesis	This course provides the students with intermediate level of organic chemistry with an emphasis on organic synthesis. Organic synthesis is the process of building organic molecules from simpler starting materials through chemical reactions. This is an important subject since organic molecules form the basic fabric of life.
CHE33241IU 3 (3,0) Parallel course: CHE3325IU	Methods for Natural Products and Drugs	This course is to introduce the special methods and technics used in studying of natural products and drugs. Topics to be covered include: typical methods for separation and isolation of natural products; structure determination of organic compound by modern analysis such as NMR, MS, IR,...; total synthesis of drugs and organic compounds.
CHE3331IU 3 (3,0) Previous course: CHE1091IU CHE1104IU	Medicinal Chemistry	This course provides students with the principles to correlate chemical structure with the physicochemical properties and biological activity of drug molecules. These principles will be applied to the design, production and optimization of both historical and new drug entities. This course will integrate the concepts of structure – activity relationships and the chemistry behind drug activity with the processes and techniques used in the chemical synthesis of pharmacological agents.
CHE3414IU 3 (2,1) Previous course: ENEE1001IU Parallel course: CHE3415IU	Advanced Engineering Drawing	This subject aims at providing the abilities of effectively construct and manage the engineering drawing complied with TCVN and ISO by using AutoCAD software. The subject provides the advanced knowledge for using and geometrical construction with the drawing instruments and AutoCAD software, the standard of presentation of engineering drawing.
CHE3421IU	Piping and Instruments System Design	This subject aims at providing the abilities of design Piping and Control System for water/wastewater Treatment Plant. The subject provides the knowledge of pipes and fitting, pumps air blowers and electrical control systems for water/ wastewater treatment plant.
CHE2012IU (0,1)	Chemical Engineering Laboratory	This course is designed for students pursuing a degree in chemical engineering and provides professional skills in applying fundamentals of chemical engineering via experimentation.
CHE3431IU	Treatment Plant Operation	This course provides the fundamentals for cost-effective, safe and lawful operation of wastewater or sanitation treatment systems. This course provides skill of experimental set- up used for operation units of wastewater treatment plants. It also provides the basics on environmental legislation and regulations, risk management and HSE.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
CHE2081IU (2,0)	Occupational Health Safety and Environment	The course is to introduce students to the application of health safety and environment (HSE) concepts in engineering. It emphasizes mainly the management of risk associated with any hazardous products and processes throughout its life cycle. Generally, implementing an HSE program is to minimize and control the risks that come from any hazards of products and processes. This makes HSE an integral part of any engineering discipline.
CHE2092IU (3,0) Previous course: CHE2011IU, CHE2061IU, CHE2041IU, CHE2051IU, CHE2071IU	Chemical Process Design and Simulation	To study the modeling & simulation techniques of chemical processes and to gain skills in using process simulators.
BA154IU (3,0)	Entrepreneurship and Small Business Management	This course aims to provide a hands-on introduction to the scalable venture creation process for students with a strong interest in entrepreneurship. The course is designed for a variety of student interests. It directly addresses the concerns of students wanting to become entrepreneurs in the near or more distant future. It is also useful to anyone who expects to be interacting with entrepreneurs in their business careers. Finally, this course is useful for anybody with a curious mind and a willingness to combine serious analysis with creative thinking.
BA151IU (3,0)	Introduction to Business Administration	Employing the interactive learning and problem-based teaching approach, this course emphasizes the interaction between lecturers and students. The lecture materials will be uploaded in Blackboard to help the students to preview the materials and to concentrate on listening and critical thinking during the lecture. This will help students to interact with the lecturer during the classroom. The sessions for presentations and discussions comprise company case studies as well as answering some theoretical and conceptual questions, which help the students to see how the concepts are applied in the real business context. Students will present the case to the class and discuss with the peers. Guest speakers are invited to talk about selected topics or real-life experiences.
CHE0041IU (2,0)	Research Methodology	Lectures include an introduction to scientific research, research planning and proposal development, experimental design and hypothesis testing, publication procedure with focus on thesis preparation. Students are requested to conduct a course project that is used to evaluate how theory is applied in practice as well as to develop inter-personal skills.
CHE0042IU (0,1)	Project 1	Lectures include an introduction to scientific research, research planning and proposal development, experimental design and hypothesis testing, publication procedure with focus on thesis preparation. Students are requested to conduct a course project that is used to evaluate how theory is applied in practice as well as to develop inter-personal skills.
CHE0052IU (0,1)	Project 2	This course belongs to a series of two courses offered for the students in their 3rd year and the 1st semester of the 4th year. The course is designed to allow the students to be exposed to a wide variety of research areas in Chemical Engineering through participation in laboratory group. The students will learn to devise hypotheses, design experiments that test their hypotheses, record their data in laboratory notebooks, critically analyze the results of their analyses, and present their findings to others.

COURSE DESCRIPTION

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Professional courses

Code	Course	Description
CHE0062IU (0,1)	Project 3	The course is to introduce students to the application of health safety and environment (HSE) concepts in engineering. It emphasizes mainly the management of risk associated with any hazardous products and processes throughout its life cycle. Generally, implementing an HSE program is to minimize and control the risks that come from any hazards of products and processes. This makes HSE an integral part of any engineering discipline.
CHE4012IU 1 (0,1)	Research 1	This course belongs to a series of three courses offered to the students in their 3rd year and the 1st semester of the 4th year. The course is designed to allow the students to be exposed to a wide variety of research areas in Chemical Engineering through participation in laboratory group. The students will learn to devise hypotheses, design experiments that test their hypotheses, record their data in laboratory notebooks, critically analyze the results of their analyses, and present their findings to others.
CHE4062IU 2 (0,2)	Internship 1	This course requires students to organize field trips by School of Chemical and Environmental Engineering to learn the functional activities in chemical engineering field. Through observing and exchanging information with officials and experts at the institute, companies, students will better understand chemical engineering in practice and aggregate these understandings into a report.
CHE4072IU 3 (0,3) Previous course: CHE4052IU	Internship 2	Internships are opportunities for the students to learn about and apply chemical engineering principles outside the classroom in the laboratory, work place and/or field. Before the internship, the faculty mentor assign the student responsibilities that have been previously agreed upon and approved by the department/school chair. These duties will vary depending on the particular discipline. The student will work accordingly under the guidance and direction of an internship mentor who is an employee of the internship site. In the end, students will submit to the department a written report and give an oral presentation in front of the committee of works done, and a report card including remarks and recommendations from the internship mentor.
CHE4082IU 3 (0,3) Previous course: CHE4051IU	Internship 3	The chemical engineering Internship program provides students with practical, hands-on experience in the field of chemical engineering. This course aims to bridge the gap between classroom learning and real-world application by offering students the opportunity to work in an industrial or research setting. Through this internship, students will gain valuable insights into the chemical engineering profession, enhance their technical skills, and develop a professional network.
CHE4522IU Previous course: CHE4512IU	Thesis	Thesis is a semester-long course taken at the senior year following the success of the pre-thesis work. This is an independent work, students are expected to spend about 30 h/per week. Students work on a specific research topic whose plan has been developed in detail. Students and advisors meet to discuss together as much as needed. The work can be the experiments to discover the effects of certain factors on a scientific issue. For an unsatisfactory work, students must prolong the time until completion. In an unavoidable situation, students may require to change the topic or the advisor. The course culminates in a written thesis report. Students also defend their results in an oral presentation in front of a Department faculty committee, in due form.
CHE4512IU 2 (0,2)	Pre-thesis	The Pre-Thesis in Chemical Engineering is a specialized course designed to guide students through the initial stages of their thesis research in the field of chemical engineering. Through interactive discussions, hands-on workshops, and expert guidance, students will develop a deep understanding of the research process, refine their research proposals, and lay the foundation for their upcoming thesis projects.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
ENEE1017IU 2 (2,0) Previous course: CH011IU	Fundamental of Analytical Chemistry	These courses are designed for students pursuing a degree in environmental field and provides a fundamental knowledge for environmental monitoring. The course covers the basic principles of analytical chemistry including range and unit usage in analytical methods, errors in measurement and performance of analytical results. The course also introduces analytical techniques, from volumetric techniques to the instrumental techniques with emphases on techniques relevant to environmental analysis. In addition, students also gain laboratory work including basic laboratory safety, usage of basic glassware and practicing volumetric and spectroscopic techniques in analyzing some basic environmental parameters.
ENEE1018IU 1 (0,1) Previous course: CH012IU	Fundamental of Analytical Chemistry Lab	
ENEE1015IU 3 (3,0) ENEE1016IU 1 (0,1) Parallel course: ENEE1015IU	Biochemistry Biochemistry Lab	These courses are designed to provide students with fundamental concepts in biochemistry and an introduction to metabolisms occurring in living organisms in order to understand the molecular basic of life. The course topics will include enzyme kinetics and mechanisms and metabolisms of important biological molecules such as carbohydrates, fatty acids, amino acids with an emphasis on their degradation pathways. Techniques and approaches used in biochemical research will be presented.
ENEE2013IU 2 (2,0)	Environmental Microbiology	This course provide a general introduction of microbiology in human-impacted and nature environments. Especially, the course will provide fundamental microbiology in water and wastewater treatment engineering, microbial detection methodologies, dissemination of waterborne pathogen, microbial risk assessment and microbe-mediated cycling of organic materials (i.e. pollutants) in a variety of natural and engineered systems. In the program of environmental engineering, this is an essential course for further courses such as Bioprocess Engineering, and Wastewater treatment.
ENEE2016IU 2 (0,2) Parallel course: ENEE2013IU	Environmental Microbiology Lab	This course provide basic microbiological laboratory skills for studying environmental samples. Students can learn about how to perform isolation, culturing, storage, and identification of bacterial strains from some environmental samples (e.g., soil, wastewater, surface water).
ENEE2017IU 3 (3,0)	Introduction to Computing	This course will cover some basic topics and applications of Matlab about variables, data types, statements, control structures, arrays, strings, functions and Graphical User Interfaces (GUIs). Students are learning consists solely of an extensive lesson, a broad overview of Matlab.
ENEE1001IU 2(2,0) ENEE1014IU 1 (0,1)	Engineering Drawing Engineering Drawing Lab	These courses aim at providing the abilities of understanding technical ideas on the technical scheme, the skill to construct the engineering drawing compliance with TCVN and ISO by hand and by using AutoCAD software. The course provides the knowledge for using geometrical construction with the drawing instruments and AutoCAD software, the standard of presentation of engineering drawing; base, standard, constructing and the skill of analysis, understanding drawing representation.

COURSE DESCRIPTION

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Professional courses

Code	Course	Description
ENEE2001IU 3 (3,0)	Introduction to Environmental Engineering	This course is designed for students pursuing a degree in environmental engineering and provides knowledge of the fundamental science and engineering principles needed for an environmental engineer; deliver to the students the contemporary environmental issues such as environmental pollution and treatment technologies at a basic level. Students also know how to interpret basic knowledge about environmental problems and performing professional ethics and softskills for environmental engineers.
ENEE2008IU 3 (3,0)	Environmental Ecology	This course provides the principal concepts and theories about ecology, ecosystems and natural processes, the interaction between organisms and the environment. The course also equips students with background knowledge of ecosystems that can be applied to solve environmental pollution and protect the ecosystems. The course also introduces student research methodology including literature searching, research experiment with a fieldtrip, and simulation methods.
ENEE2002IU 2 (2,0) Previous course: ENEE1017IU	Environmental Chemistry 1	This course is designed for students pursuing a degree in environmental engineering and provide fundamental understanding of water chemistry including natural processes and pollution problems to water that will serve the students as a basis in all common phases of practice and research on environmental engineering, water pollution control, management, and monitoring water resource quality. Knowledge of this course will be useful for students in explaining the fate and behavior of typical compounds in water.
ENEE2010IU 2 (0,2) Previous course: ENEE1018IU Parallel course: ENEE2002IU	Environmental Chemistry 1 Lab.	This course is designed for students pursuing a degree in environmental engineering and provides students professional skill and techniques for analyzing common parameters in water quality assessment. Students will also be familiar with analytical devices such as UV-Vis, Kjeldahl digestion system and semi-automatic titration and further develop their scientific writing skills.
ENEE2024IU 2 (2,0)	Mechanics of Materials	This course provides essential knowledge of Statics on forces and moments, resultants, equilibrium of rigid body, reactions and equations of equilibrium. Students are taught to understand mechanical properties of material, stress-strain relations and Hooke law; strain energy, and how to determine internal loadings as axial force, shear, moments, and torque in structural members subjected to external loadings; stress, strain.
ENEE2025IU 2 (2,0)	Basic Theory of Environmental Structures	This course aims to introduce the students for analyzing, designing of some common structures in environmental engineering field. After this course the students familiarize themselves with analysis of internal forces, understand of design skills, and apply for real structures.

COURSE DESCRIPTION

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Professional courses

Code	Course	Description
ENEE2014IU 3 (3,0)	Heat and Mass Transfer	This course is designed for students pursuing a degree in environmental engineering and provides fundamental knowledge of physical processes in environmental engineering field, especially in mass and heat transfer. This course provides knowledge of diffusion phenomenon and transfer processes that influence natural and engineered environmental systems. Students will be able to evaluate species transport and transformations in these systems by mass transport, chemical kinetics, chemical equilibria and interfacial phenomena reactor engineering: adsorption, ion exchange, membrane separation, chemical oxidation, neutralization.
ENEE1011IU 2 (2,0)	Hydraulics for Environmental Engineering Hydraulics for Environmental Engineering Lab	Fluid mechanics is a basic course for the civil, mechanical and engineering programs. These courses introduce the fundamental principles of fluid at rest or in motion, provides the concepts and applications of fluid mechanics on fluid behavior, internal and external flows, analysis of engineering applications of incompressible pipe systems, external aerodynamics and ideal fluid flow including potential flow theory, lift and drag. Besides, student carries out the experiments in the lab to understand well the principles and basic phenomena of fluid mechanics and to know how to use the equipments for measuring the flow.
ENEE1012IU 1 (0,1)		
ENEE2005IU 2 (2,0) Parallel course: ENEE2011IU	Environmental Chemistry 2	This course is designed for students pursuing a degree in environmental engineering and provides core knowledge in environmental monitoring with emphasizing on the chemistry of the atmosphere and lithosphere. The course will use the fundamental principles of atmospheric and soil chemistry to gain an understanding of source, transport, deposition, fate, and reactivity of compounds in natural and polluted environments. The knowledge of this course will be helpful for students to explain fate and behaviours of typical compounds in soil and air.
ENEE2011IU 2 (0,2)	Environmental Chemistry 2 Lab.	This course is designed for students pursuing a degree in environmental engineering and provides professional skills in environmental monitoring with emphasizing on sampling and analysis of compounds in atmosphere and soil. Students will practice basic techniques for chemical analysis of common parameters to assess atmosphere and soil quality, perform with analytical skills such as UV-VIS, gravimetry and titration.
ENEE2020IU 2 (2,0) Previous course: ENEE2002IU	Physical and chemical processes in Environmental Engineering	These courses are designed for students pursuing a degree in environmental engineering and provides a fundamental knowledge in techniques of environmental treatment. The course will apply mass balance, flow characteristics, reaction kinetics to study physical and chemical processes in EE.
ENEE2021IU 2 (2,0) Previous course: ENEE2010IU	Physical and chemical processes in Environmental Engineering Lab	

COURSE DESCRIPTION

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Professional courses

Code	Course	Description
ENEE2022IU 2 (2,0) ENEE2023IU 1 (0,1) Previous course: ENEE1015IU ENEE2013IU	Biological Processes for Environmental Engineering Biological Processes for Environmental Engineering Lab	These courses equip students with knowledge and skills in environmental bio-technology to be applicable in the calculation and design of wastewater and solid waste treatment systems.
ENEE3012IU 3 (3,0) ENEE3013IU 1 (0,1) Previous course: ENEE2010IU ENEE2020IU	Water Treatment Water Treatment Lab	These courses provide skills and knowledge related to water treatment engineering. Main parts of the course convey the knowledge of water treatment process and technology such as coagulation – flocculation, sedimentation, filtration, and disinfection. Iron removal from groundwater, special technologies such as lime – soda softening, demineralization, deodorization, fluoridation, etc. are also mentioned.
ENEE3014IU 3 (3,0) ENEE3015IU 1 (0,1) Previous course: ENEE2010IU ENEE2022IU	Municipal Wastewa- ter Treatment Municipal Wastewa- ter Treatment Lab	These courses provide the fundamental knowledge for the selection and design of the most appropriate, cost-effective and sustainable municipal wastewater treatment systems. The course concentrates on typical processes including aerobic, nitrification, denitrification, sludge treatment processes; and specific design of septic tank, aerotank, sequencing batch bioreactor (SBR), trickling filter (TF), aerobic-membrane bioreactor (aerobic-MBR), sludge digester. This course also provides skill of experimental set-up used for design of processes and operation units of municipal wastewater treatment plants.
ENEE3016IU 2 (2,0) ENEE3017IU 2 (0,2) Previous course: ENEE2010IU	Industrial Wastewa- ter Treatment Industrial Wastewa- ter Treatment Lab	These courses provide the fundamental knowledge for the selection and design of the most appropriate, cost-effective and sustainable industrial wastewater treatment systems. The course concentrates on anaerobic, flotation and advanced oxidation processes. This course also provides skill of experimental set-up used for design of processes and operation units of wastewater treatment plants.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Professional courses

Code	Course	Description
ENEE3018IU 3 (3,0) ENEE3019IU 1 (0,1) Previous course: ENEE2011IU ENEE2005IU	Solid Waste & Hazardous Waste Management Solid Waste & Hazardous Waste Management Lab	These courses are designed for students pursuing a degree in environmental engineering and provides knowledge about solid waste and hazardous waste management, types and amounts of waste, storage, collecting and transportation systems, technology for waste treatment, and political instruments; properties of hazardous wastes and materials, transformation and behavior of hazardous chemicals in soil, groundwater, and treatment systems, assessment of toxicity and risk associated with exposure to hazardous chemicals, application of scientific principles of hazardous waste to their management, remediation, and treatment.
ENEE3020IU 3 (3,0) ENEE3021IU 1 (0,1) Previous course: ENEE2011IU ENEE2014IU	Air Pollution Control Air Pollution Control Lab	These courses provide students knowledge of principles and methods of treatment of particles and air pollutants; also train the students with calculation and design skills for air pollution control. This subject presents the fundamental methods of Air Pollution Control Engineering, for example: absorption, adsorption, thermal oxidation, catalytic oxidation, biofiltration, settling chamber, cyclone, filtration.
ENEE3110IU 2 (0,2) Previous course: ENEE3012IU ENEE4017IU	Project 1	This course is designed for students pursuing a degree in environmental engineering and provides professional skills with emphasis on water treatment. Students will identify raw water's sources and characteristics, specify treatment's requirements, list all possible methods for water treatment, choose the best suitable process, perform necessary calculation and design main/principal operation in the system and estimate the overall cost.
ENEE3111IU 2 (0,2) Previous course: ENEE3014IU ENEE4017IU	Project 2	This course is designed for students pursuing a degree in environmental engineering and provides professional skills with emphasis on wastewater treatment. Students will identify raw wastewater's sources and characteristics, specify treatment's requirements, list all possible methods for wastewater treatment, choose the best suitable process, perform necessary calculation and design main/principal operation in the system and estimate the overall cost.
BA115IU 3 (3,0)	Introduction to Business Administration	Employing the interactive learning and problem-based teaching approach, this course emphasizes the interaction between lecturers and students. The lecture materials will be uploaded in Blackboard to help the students to preview the materials and to concentrate on listening and critical thinking during the lecture. This will help students to interact with the lecturer during the classroom. The sessions for presentations and discussions comprise company case studies as well as answering some theoretical and conceptual questions, which help the students to see how the concepts are applied in the real business context. Students will present the case to the class and discuss with the peers. Guest speakers are invited to talk about selected topics or real-life experiences.

COURSE DESCRIPTION

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Professional courses

Code	Course	Description
ENEE4017IU 2 (2,0) Previous course: ENEE1001IU	Advanced Engineering Drawing	These courses are the main skills training courses of the environmental engineering curriculum as it conveys the advanced knowledge of AutoCAD that environmental engineers must achieve. It requires the essential knowledge from the course "Engineering Drawing" about objects, projections and basic of AutoCAD. This course aims at providing the abilities of effectively construct and manage the engineering drawing complied with TCVN and ISO by using AutoCAD software, provides the advanced knowledge for using and geometrical construction with the drawing instruments and AutoCAD software, the standard of presentation of engineering drawing.
ENEE4018IU 1 (0,1) Previous course: ENEE1014IU	Advanced Engineering Drawing Lab	
ENEE5004IU 2 (0,2) Previous course: ENEE2001IU	Internship 1 Internship 2 Internship 3	These courses are designed for students pursuing a degree in environmental engineering and provides the students an opportunity to study, observe, and operate a complete air/water/wastewater or solid waste treatment system as well as collect the data for their thesis and opportunities for seeking their jobs in the future. In addition, students have a chance to know the social context and business environment, to form an idea and build the system, to design environment treatment processes in a specific condition of the company.
ENEE5005IU 3 (0,3) Previous course: ENEE5004IU		
ENEE5006IU 3 (0,3) Previous course: ENEE3110IU ENEE3111IU CHE0282IU		
ENEE5007IU 2 (0,2) Previous course: ENEE5006IU	Pre-thesis	
ENEE5003IU 10 (0,10) Previous course: ENEE5007IU	Thesis	The primary goal of this 1-credit class is to help students develop research skills through its focus on writing and critiquing research proposals. In addition to preparing a complete proposal for his or her research project, each student will be required to read assigned materials, hand in reflections about readings, give status updates, conduct peer reviews, make presentations, and participate actively in class discussions. Students also know how to review components of research proposals and practice developing effective aims, hypotheses, background materials and analytic strategies.
		The thesis works are implemented under the instruction of one or more teachers. The topic, including theory, research, or real application, will be proposed by the teacher or students and must be approved by the Head of Department. Students also know how to apply obtained knowledge systematically to solve environmental problems.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

Free Elective courses

Code	Course	Description
IS020IU 3 (3,0)	Engineering Economy	Economic decisions involving engineering alternatives; annual cost, present & future worth, rate of return, and benefit-to-cost; before and after-tax replacement economy; organizational financing; break-even charts; unit and minimum-cost public sector studies.
IT120IU	Entrepreneur- ship	...
ENEE4011IU	Engineering Project Manage- ment	...
BA155IU 3 (3,0)	Introduction to Business Ad- ministration	This course introduces students the complexities and the multi-dimensional aspects of business. It attempts to give familiarity as well as an applied understanding of each of the core subject areas: Marketing, Management, Human Resource. It also increases the students awareness of global issues. This is one of the elective courses.
BA155IU 3 (3,0)	Entrepre- neurship and Small Business Management	Employing the interactive learning and problem-based teaching approach, this course emphasizes the interaction between lecturers and students. This will help students to interact with the lecturer during the classroom. The sessions for presentations and discussions comprise company case studies as well as answering some theoretical and conceptual questions, which help the students to see how the concepts are applied in the real international business context. This is one of the elective courses.
BT010IU 4 (3,1)	Plant Physiology	Plant physiology is a foundation course for more advanced ones in Plant Biotechnology. This course covers a wide range of knowledge regarding plant physiology such as plant metabolism, development and essential conditions for development, environmental stresses and secondary metabolites and engineered plants in plant biotechnology. This is one of the elective courses.
ENEE3103IU 3 (3,0)	Water Supply and Drainage Systems	This course introduces the basic concepts of the project management of the water distribution network, sewerage and stormwater systems. Students are provided with the essential knowledge to interpret issues as planning, designing, construction and installation of water supply distribution network, sewerage and stormwater systems, the management issues such as planning steps for management and operation, maintenance, construction and maintenance of water supply and sewer infrastructure. This is one of the elective courses.
IS026IU 3 (3,0)	Project Management	This course is developed to provide the principal concept on project management which was characterized by the project management body of knowledge guide (PMBOK Guide). This guide emphasizes the five project process groups of initiating, planning, executing, controlling and closing, and the nine knowledge areas of project integration, scope, time, cost, quality, human resources, communication, risk, and procurement management. This is one of the elective courses.

COURSE DESCRIPTION

For updated version, please consult your academic advisor

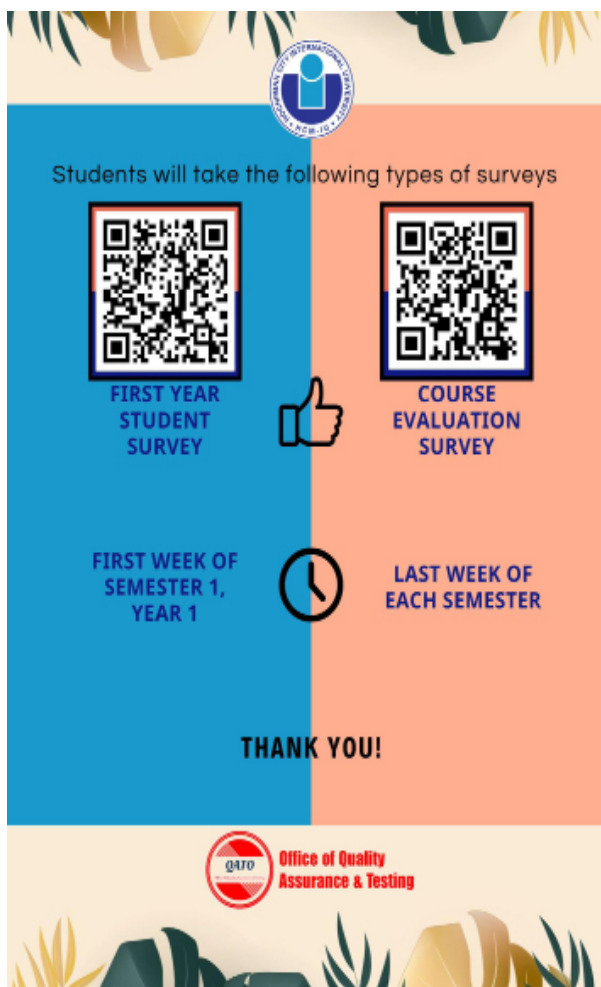
Technical Elective courses

Code	Course	Description
ENEE4016IU 3 (3,0)	Construction Measurement and Cost Estimating	This course is designed to provide students knowledge about quantity measurement and cost estimation. The measured quantity is used to estimate construction cost and developed procurement and contract documents.
ENEE3105IU 3 (3,0)	Treatment Plant Operation	This course provides the fundamentals for cost-effective, safe and lawful operation of wastewater or sanitation treatment systems. This course provides skill of experimental set-up used for operation units of wastewater treatment plants. It also provides the basics on environmental legislation and regulations, risk management and HSE.
ENEE4019IU 2 (2,0) Previous course: ENEE1019IU	Experimental Design	These courses are designed for students pursuing a degree in environmental engineering and provides advanced knowledge of statistic application with emphasis on environmental engineering case. The course will cover experimental design, data analysis and visualisation and data archiving. The course also provides students with practical, powerful and accessible tools through using R statistical software that will allow students to design, execute, analyze, and interpret data of environmental engineering's experiments.
ENEE4020IU 2 (0,2)	Experimental Design Lab	
ENEE4021IU 2 (2,0) Previous course: ENEE1011IU	Pipe and Instruments Design	These subjects aim at providing the abilities of design Piping and Control System for water /Wastewater Treatment Plant. The subject provides the knowledge of pipes and fitting, pumps air blowers and electrical control systems for water/ wastewater treatment plants.
ENEE4022IU 2 (0,2)	Pipe and Instruments Design Lab	
ENEE3103IU 3 (3,0)	Water Supply and Drainage Systems	This course introduces the basic concepts of the project management of the water distribution network, sewerage and stormwater systems. Students are provided with the essential knowledge to interpret issues as planning, designing, construction and installation of water supply distribution network, sewerage and stormwater systems, the management issues such as planning steps for management and operation, maintenance, construction and maintenance of water supply and sewer infrastructure.
ENEE3112IU 1 (0,1) Previous course: ENEE3020IU ENEE4017U	Project 3	
ENEE3113IU 2 (0,2) Previous course: ENEE3018IU ENEE3019IU	Project 4	

STUDENT'S FORMS

- Forms from IU: <https://onlinerequestoaa.hcmiu.edu.vn/login/?next=/>
- Forms from CEE: <https://cee.hcmiu.edu.vn/en/students/student-forms-english/>

STUDENT'S SURVEYS



The infographic is a vertical poster with a blue and orange background. At the top, it features the HCMIU logo and the text 'Students will take the following types of surveys'. Below this, there are two QR codes. The left QR code is labeled 'FIRST YEAR STUDENT SURVEY' and is associated with a thumbs-up icon. The right QR code is labeled 'COURSE EVALUATION SURVEY'. Below the QR codes, there are two clock icons. The left clock is labeled 'FIRST WEEK OF SEMESTER 1, YEAR 1' and the right clock is labeled 'LAST WEEK OF EACH SEMESTER'. At the bottom, it says 'THANK YOU!' and features the QATO logo and the text 'Office of Quality Assurance & Testing'.

Students will take the following types of surveys

FIRST YEAR STUDENT SURVEY

COURSE EVALUATION SURVEY

FIRST WEEK OF SEMESTER 1, YEAR 1

LAST WEEK OF EACH SEMESTER

THANK YOU!

QATO Office of Quality Assurance & Testing

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This image shows a full page of primary-ruled paper. It features a solid black vertical margin line on the left side. The rest of the page is filled with horizontal dotted lines, providing a guide for handwriting practice. There are no other markings or text on the page.

[illegible]

[illegible]



REQUIRED SURVEY



Office: A2.403

Website: cee.hcmiu.edu.vn

Email: cee@hcmiu.edu.vn

Facebook: <https://www.facebook.com/CEE.IU.VNUHCM>

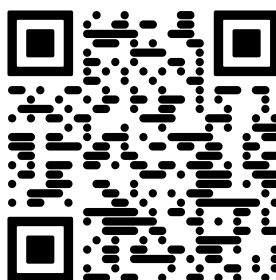
IU.VNUHCM

Phone number: (84-28)

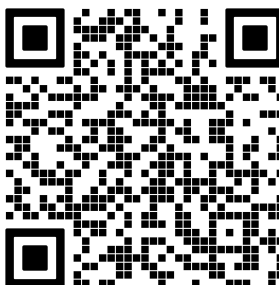
3724 4270 ext 3959, 3950



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