VIETNAM NATIONAL UNIVERSITY – HCMC
INTERNATIONAL UNIVERSITY
DEPARTMENT OF INDUSTRIAL & SYSTEMS ENGINEERING

PROGRAM SPECIFICATION

PROGRAM LEVEL

BACHELOR OF ENGINEERING

IN INDUSTRIAL SYSTEM ENGINEERING

2019

VIETNAM NATIONAL UNIVERSITY - HCMC
INTERNATIONAL UNIVERSITY
Department of Industrial & Systems Engineering

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PREFACE

The ISE program was found in 2014 and has been reviewed annually. In 2015-2016 and 2016-2017 years, there were minor revisions of the program curriculum such as changing prerequisite courses, switching between elective and compulsory courses and the semester of study. Since then, the ISE program has remained unchanged to date. Information of the program specification has been made known to students via the Department website and student handbooks published every new academic year. In order to reach more interested stakeholders and also comply with the recommended practice of AUN accreditation, this Program Specification book was published in June 2019 with a more complete information of the program and is applicable for Batch 2015- 2019.

PROGRAM SPECIFICATION

1. Introduction to Department of Industrial and Systems Engineering

Vision

Take leadership role in education and research in the field of Industrial and Systems Engineering in Vietnam.

Mission

- Offering high-quality graduate and undergraduate education in the field of Industrial and Systems Engineering
- Offering excellent research including basic and applied research in the field of Industrial and Systems Engineering to meet the needs of industry, local provinces and society.
- Taking the pioneer role in developing the Industrial and Systems Engineering field in Vietnam by promoting the application of Industrial and Systems Engineering in a variety of production and service sectors in Vietnam

Objectives

The Department of Industrial and Systems Engineering views itself as a system in which students are both important input and output. Therefore, students are the main driver for all activities. In particular, its objectives are to:

- Maintain an excellent quality of teaching and learning
- Recruit and retain highly qualified faculty and staff to support the teaching, research, and service mission in the Department of Industrial and Systems Engineering
- Enhance the learning environment to support the teaching and research activities
- Attract excellent local and international students
- Enhance the **collaboration with industry** and other **prestigious educational institutions**

The ISE Department currently offers three programs: (1) Bachelor of Engineering in Industrial and Systems Engineering, (2) Master of Engineering in Industrial and Systems Engineering, and (3) Bachelor of Engineering in Industrial System and Engineering.

Program

- ***Language:*** English is the official language used in all teaching and research activities.
- ***Types of Program:*** The Industrial System Engineeringprogram is fully conducted at IU-VNU. Students are awarded the IU-VNU degree once completed the program. (IU program)

Qualification

- ***The Bachelor Degrees are awarded by IU-VNU***
- ***Degree title:*** “Bachelor of Engineering in Industrial System and Engineering”

2. Program Learning Outcomes

a. An ability to apply knowledge of mathematics, science and engineering

b. An ability to design and conduct experiments, as well as to analyze and interpret data

c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

d. An ability to function in multidisciplinary teams

e. An ability to identify, formulate, model and simulate and solve engineering problems

f. An understanding of professional and ethical responsibility

g. An ability to communicate effectively

h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

i. A recognition of the need for, and an ability to engage in life-long learning

j. A knowledge of contemporary issues and ability to self-update

k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

3. The Program Objective

The current set of the ISE Program Objectives is posted on the ISE Department website as listed below:

Within 3-5 years of graduation, graduates of the Bachelor of Engineering in Industrial System Engineering Program are

1. practicing engineers in the field of Industrial System and Engineering, who

(i) Design or redesign Industrial System Engineering system

(ii) Operate and manage Industrial System Engineering system

(iii) Improve the existing Industrial System Engineering system

(iv) Support for wise decision making

2. Engaging in lifelong learning to maintain and enhance professional skills

3. Working effectively with people and demonstrate leadership, professional skills and ethical behavior in the workplace

4. Fulfilling the needs of the community and industrial sector of Vietnam in solving Industrial System Engineering problems using industrial and systems engineering principles, tools and techniques.

The program objectives of the ISE program were determined by the program faculty with a consultation and analysis of visions and missions of the university and the needs of stakeholders. PO#1 refers to key abilities of ISE engineers, which requires the graduates as an engineer not only able to operate and manage an existing system, but also able to design a new system or improve it. The “design” ability is traditionally and internationally recognized a requirement of engineering, which distinguishes an engineering program to a business program. PO#2, lifelong learning and PO#3, human skills are requirements of all stakeholders. Thus, PO#1 and #2 satisfy the first mission of IU to offer high-quality graduate and undergraduate multidisciplinary education in general and in the field of Industrial System Engineering in particular. PO#1 and PO#4 also imply the capability of doing research and service for community and society, the second mission of the university. PO#4 contributes to promoting the application of Industrial System Engineering in a variety of production and service

sectors in Vietnam, which is relevant to the third mission of the university. The POs of the ISE program are consistent with the missions of the institution as shown in the Table below

Consistency of the POs with the Missions of the Institution

University Missions	ISE Program Objectives			
	PO #1	PO #2	PO #3	PO #4
Offering high-quality graduate and undergraduate multi-disciplinary education, striving for all educational programs to be internationally recognized and accredited (AUN and ABET).	X	X	X	
Offering excellent research including basic and applied research to meet the needs of industry, local provinces and society.	X			X
Taking the pioneer role in Vietnam by practicing management excellence, inspiring and assisting other VNU members in the advancement toward the development of Vietnam National University – HCMC as a whole.		X	X	

4. Job opportunities

ISE engineers can take on and perform excellently tasks in various fields, namely INDUSTRIAL SYSTEM ENGINEERING, Procurement Management, Project Management, Inventory Management, Quality Management, Production Management, Optimization in Production and Service, developing an integrated solution to reduce the operation cost, etc. Qualified graduated engineers can achieve the top-level positions in organizations such as Production Director and Chief Executive Officer.

5. Program offering

- **Awarding body/institution:** International University HCMC
- **Teaching institution:** Department of Industrial and Systems Engineering, International University HCMC
- **Accreditation:** MOET standard, 2014
- **Name of the final award:** Bachelor of Engineering in Industrial System and Engineering
- **Program Title:** Bachelor of Engineering in Industrial System and Engineering
- **Program objectives:** Within 3-5 years of graduation, graduates of the Bachelor of Engineering in Industrial System Engineering Program are:

1. Practicing engineers in the field of logistics and supply chain management, who

(i) Design or redesign Industrial System Engineering system

(ii) Operate and manage Industrial System Engineering system

(iii) Improve the existing Industrial System Engineering system

(iv) Support for wise decision making

2. Engaging in lifelong learning to maintain and enhance professional skills

3. Working effectively with people and demonstrate leadership, professional skills and ethical behavior in the workplace

4. Fulfilling the needs of the community and industrial sector of Vietnam in solving Industrial System Engineering problems using industrial and systems engineering principles, tools and techniques.

● **Admission criteria of the program:**

- Admission via the National High School Achievement Exam
- Admission based on Academic Records of the Candidates at the 10th, 11th and 12th Grades of Designated High Schools
- Admission for candidates with national and international awards
- Admission via Scholastic Aptitude Exam held by IU
- Admission via Scholastic Aptitude Exam held by VNU

● **Course Assessment:**

According to the Academic Regulations of IU-VNU, the assessments fall into three categories as follows:

- Final exam: 35% - 60%
- Mid-term exam: 20% - 40%
- Others (homework, assignment, project): 10% - 30%

The final grade of a laboratory course includes:

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

6. Teaching and learning Approach

6.1 The educational philosophy is well articulated and communicated to all stakeholders

The department follows the university educational philosophy which is published on the university website. The recent educational philosophy has been announced in 2018 in a university retreat for school and department representatives. IU educational philosophy can be summarized as comprehensive, liberal and global.

Comprehensive: IU offers multiple programs in diverse disciplines, ranging from science and technology to social sciences and the humanities and aims at training all-round individuals

Liberal: aims at developing each student's potential to the fullest and equipping them with necessary knowledge and skills, getting them ready for a complex, diverse and changing world.

- Students are encouraged to develop their free and critical thinking.

- Students are equipped with not only specific professional knowledge but also a broad knowledge base, not only professional expertise but also necessary soft skills such as rhetoric, critical thinking, independent learning, teamwork, leadership, etc.
- Free and critical thinking goes hand in hand with a sense of responsibility (for themselves and the community).

Global: IU aims at building an internationally oriented community of scholarship, aligned with the global integration policy initiated by the Vietnamese national government.

6.2 Teaching and learning activities are constructively aligned to the achievement of the expected learning outcomes.

The lecturers are to develop expected learning outcomes of the courses they are in charge of, teaching and learning activities to achieve the learning outcomes and assessment scheme. In the ISE program, the following teaching and learning activities are highlighted

Student oriented

While different lecturers may employ different teaching and learning strategies, the ultimate goal is always to bring the most to students, i.e. what the students need. Thus, at the beginning of each semester, all the students receive individual counseling from their assigned advisors on the subjects to be taken, which suit their individual ability and needs. At the beginning of the course, course objectives and syllabus are introduced to the students in order to help them become aware and appreciate the role of the course in the whole designed curriculum as well as how it is relevant to their future job. These objectives are repeated and highlighted in each lesson to strengthen students' motivation throughout the course. In addition, students are encouraged to actively get involved in the lesson through discussion, problem solving, games, and assigned reading in advance. These activities are to assure students can remember, understand and apply what they learned.

Collaborative learning

Group work in assignments, projects, laboratory experiments are common in most of ISE courses. Thus, students can learn how to work cooperatively and support each other, develop effective teamwork and communication, assimilate multiple views to deepen knowledge and promote critical thinking. These are also directly linked with the ELOs (d) and (e). Lecturers use different approaches in forming teams, promoting interdependence and individual accountability to assure the benefit of cooperative learning

Integration of theories and practices

Integration of theories and practices is emphasized in the ISE Program. The ISE department is equipped with simulation lab, work design & ergonomic lab, human machine interface lab, product design and development lab and FMS lab, which allows students to improve professional software, running simulation, doing experiments and get familiar with common equipment used in the industry. Junior students can start to get hands-on experience right in their early years in the program by participating in different projects in the Introduction to ISE course. Students are

encouraged to spend time in the lab working with each other on class assignments and projects. Labs are opened 24/24 for students doing projects upon request.

Students learn to correlate their acquired knowledge in school with industry practice in many ways. Each student experiences two internships and several field trips throughout their study in the ISE program. The first internship prepares junior students hand-on experience in advance, which will benefit them later when they learn related courses in their senior years. The second internship provides senior students opportunities to apply learned knowledge and practice their analysis skill and creativity in real cases. In addition, speakers from industry are also invited to share their experiences in relevant topics taught in different courses of the program.

Experiential learning

The teaching strategy also provides students with experiential learning which develops through the activities such as simulation & modeling, focused imaging (case studies, video), games, experiment. Through these activities, lecturers encourage students to observe, analyze and draw lessons for themselves.

Utilization of IT

Each classroom is well-equipped with a computer, projector and board. Blackboard system supports lecturers in providing course materials, making announcements to class. Lecturers can use professional software (Turnitin Originality Check) to teach students proper citation methods as well as to safeguard against potential plagiarism. Discussions between teachers and students are not limited to class hours; students can consult lecturers via emails, facebook or in the office.

6.3 The teaching and learning activities enhances life long learning

The fact that all classes are conducted in English helps students practice and improve their English competency, an important skill for life-long learning. Group projects help students to develop problem solving skills, critical thinking skills and teamwork ability. Students also learn by searching references, correlating their acquired knowledge with the real problems. The ISE students are also particularly strong in IT skills because they have to apply programming and advanced software to solve real problems of large scale.

7. Student Assessment

7.1 The student assessment is constructively aligned to the achievement of the expected learning outcomes

Course assessment

Lecturers in charge of specific courses have to develop course learning outcomes which can be related to the program ELOs. The relation between course learning outcomes and program ELOs are made explicit in the course syllabus. Based on the course learning outcomes and course contents, lecturers design quiz, assignments, midterm, final exams and projects. Different forms of assessment are utilized to be able to assess students' acquired knowledge and skills at different levels of Bloom taxonomy. Direct assessment includes quizzes, assignments, midterm exam and

final exam. These assessments use different kinds of questions such as multiple choice, essays, or written tests.

Internship assessment

Students' soft skills, attitudes and abilities of applying learned knowledge and solving problems are evaluated through internship.

Thesis assessment

Thesis is the final assessment of the program. It often takes one semester for students to complete their theses. Lecturers provide a list of thesis topics or their interest research areas. Students are encouraged to choose a thesis topic that is related to the existing problems of their intern companies. Thus, the thesis is considered an overall assessment of students' ability to apply their learned knowledge and skills to solve real problems.

7.2 The student assessments including timelines, methods, regulations, weight distribution, rubrics and grading are explicit and communicated to students

Course assessment

Regulation of course grading and classification is stated clearly in the Academic regulation and made known to students via student handbook and website The criteria to assess students' performance are clearly stated in the assessment plans of each course syllabus. At the beginning of the course, the instructor informs students of assessment criteria for the student progress towards course outcomes.

Internship assessment

Internship evaluation criteria are stated in the internship syllabus and made known to students at the beginning of the internship.

Thesis assessment

Regulation of thesis assessment is made known to students via student handbook and website. Thesis assessment process is announced to the students at the beginning of the semester. The thesis is evaluated throughout three stages: thesis proposal, midway defense, and final thesis defense. Guidelines of thesis proposal, final report format, evaluation rubrics, are also made known to students. After completing the thesis report, the students are required to defend their works before the thesis committee, which includes the department faculties and outside reviewers. Before presenting in front of the thesis examination committee, the student must obtain a positive recommendation from his/her thesis advisor. If there are disagreements between them, the Chair of Thesis Committee will be consulted to find a solution. If a student fails at the thesis presentation, he/she can ask for a prolongation or to change the thesis advisor or thesis topic. In any case, the duration of the entire study cannot exceed the permitted time, which is 6 years, determined by IU.

7.3 Methods including assessment rubrics and marking schemes are used to ensure validity, reliability and fairness of student as assessment

Lecturers use assessment rubrics and marking schemes to grade different types of student work.

School internship advisors and company internship supervisors evaluate the student performance based on criteria in the internship evaluation forms.

Evaluation forms for thesis advisor, thesis reviewers and thesis committee are used to assess students' thesis performance.

7.4 Feedback of student assessment is timely and help to improve learning

Student academic performance of each semester is recorded in Edusoft and accessible to student advisors. Thus, the advisors monitor their student progress through Edusoft and schedule a meeting to discuss any problems faced by the students that may influence their academic performances.

For a specific course, results of course examinations are given to the students no later than 2 weeks after the exam. Assignment, midterm grades are given timely to help the students evaluate and improve their performance toward the final exam.

7.5 Students have already access to appeal procedure

If a student is not satisfied with the assessment results, he/she can ask for a re-assessment. The department administrative staff assists students in these academic issues. The lecturer who is in charge of the course has to review the paper again and report the new result to the school. Nevertheless, if a student is still not happy with the new result, they can appeal again. This time, another lecturer will be assigned. Students will be announced if there is any change in their score as well as the reason.

As for the thesis, before presenting in front of the thesis examination committee, a student must obtain a positive recommendation from his/her thesis advisor and thesis reviewers. If there are disagreements between them, the Chair of Thesis Committee will be consulted to find a solution.

8. Program structure

Program Structure

CURRICULUM STRUCTURE	CREDITS	PERCENTAGE
General knowledge	**52**	36 %
Political education	10	
Humanity and Social Science	3	
Academic English	8	
Physical Training	0	
Mathematic, Physic, Chemical	31	
Core knowledge	**23**	16 %
Specialization knowledge	**53**	37 %
Internship and Thesis	**15**	11 %
TOTAL	**155**	100%

9. Industrial System Engineering Program

9.1 Standard curriculum for students of English entry level 1 (AE1 – TOEFL score > 500)

Total credits: 155 (not included credits for Physical Training)

Length of study: 4 years

No.	Courses code	Courses	Credits
Semester 1			
1	EN007IU	Writing AE1	2
2	EN008IU	Listening AE1	2
3	MA001IU	Calculus 1	4
4	PH013IU	Physics 1	2
5	PH014IU	Physics 2	2
6	PT001IU	Physical Training 1	3
7	CH012IU	Chemistry Laboratory	1
8	CH011IU	Chemistry for Engineers	3
		Total credits	**19**
Semester 2			
9	EN011IU	Writing AE2	2
10	EN012IU	Speaking AE2	2
11	MA003IU	Calculus 2	4
12	PE008IU	Critical Thinking	3
13	PT002IU	Physical Training 2	3
14	IS001IU	Introduction to Industrial Engineering	1
15	IS054IU	Engineering Drawing	3
16	PH015IU	Physics 3	3
		Total credits	**21**
Summer semester			
17	PE015IU	Philosophy of marxism and Leninism	3
18	PE016IU	Political economics of marxism and leninism	2
		Total credits	**5**
Semester 3			
19	MA027IU	Applied Linear Algebra	2
20	IS019IU	Production Management	3
21	IS086IU	Introduction to Computing	**3**
22	IS004IU	Engineering Probability & Statistics	4

23	MA023IU	Calculus 3	4
24	PE017IU	Scientific socialism	**2**
25	IS090IU	Engineering Mechanics – Dynamics	2
		Total credits	**20**
Semester 4			
26	IS020IU	Engineering Economy	3
27	IS081IU	Deterministic models in OR	4
28	IS017IU	Work design & Ergonomics + Lab	4
29	IS085IU	CAD/CAM/CNC	**3**
30	IS034IU	Product Design & Development	3
31	PE018IU	History of the Communist Party of Vietnam	**2**
32	PE019IU	HCM' s thoughts	**2**
		Total credits	**21**
Summer semester			
33	IS052IU	*Internship 1*	2
34		Military Training	0
		Total credits	**2**
Semester 5			
35	IS040IU	Management Information System	3
36	PE014IU	Environmental Science	**3**
37	IS025IU	Quality Management	3
38	IS026IU	Project Management	3
39	IS024IU	Probabilistic Models in OR	3
40	IS089IU	Numerical methods	3
	IS___IU	**ISE Elective Course (choose 1 course below)**	**3**
41	IS031IU	Experimental Design	3
42	IS087IU	Manufacturing Processes	**3**
43	IS058IU	Time series & forecasting technique	3
		Total credits	**21**
Semester 6			
44	IS079IU	Scientific Writing	2
45	IS028IU	Simulation Models in IE	4
46	IS027IU	Scheduling & Sequencing	3

47	IS041IU	Lean Production	3
48	IS078IU	Logistics engineering & supply chain design	3
49	PE020IU	Ethnics and professional skills for engineers	3
		Total credits	**18**
Summer semester			
50	IS053IU	*Internship 2*	3
		Total credits	3
Semester 7			
51	IS083IU	Capstone Design	**3**
52	IS033IU	Multi-Criteria Decision Making	**3**
54	IS032IU	Facility Layout	**3**
	IS___IU	**ISE Elective Course (choose 2 courses below)**	**6**
56	IS080IU	Creative Thinking	3
57	IS035IU	Systems Engineering	3
58	IS043IU	Flexible Manufacturing Systems	3
59	IS045IU	Leadership	3
60	IS023IU	Inventory Management	3
61	IS082IU	Retail Management	3
62	IS067IU	International Transportation & Logistics	3
63	IS062IU	E-Logistics in Supply Chain Management	3
55	**_____IU**	**Free Elective Course (the free elective course list is in section 9.4) (choose 1 course)**	**3**
		Total credits	**18**
Semester 8			
64	IS048IU	Thesis research	10
e		***Total credits***	**10**

9.2 Curriculum for students of English entry level 2 (IE2 – TOEFL score of 430 -500)

Total credits: 174 (additional 16 credits of Intensive English)

Length of study: 4 years

No.	Courses code	Courses	Credits
Semester 1			
1	EN074IU	Reading & writing IE2	8
2	EN075IU	Listening & speaking IE2	8
3	PT001IU	Physical Training 1	3
4	MA001IU	Calculus 1	4
		Total credits	**23**
Semester 2			
5	EN007IU	Writing AE1	2
6	EN008IU	Listening AE1	2
7	CH012IU	Chemistry Laboratory	**1**
8	CH011IU	Chemistry for Engineers	**3**
9	PH013IU	Physics 1	2
10	PH014IU	Physics 2	2
11	PT002IU	Physical Training 2	3
12	MA003IU	Calculus 2	4
13	IS001IU	Introduction to Industrial Engineering	1
14	IS054IU	Engineering Drawing	3
		Total credits	**23**
Summer semester			
15	PE015IU	Philosophy of marxism and Leninism	3
16	PE016IU	Political economics of marxism and leninism	2
		Total credits	**5**
Semester 3			
17	MA027IU	Applied Linear Algebra	2
18	IS019IU	Production Management	3
19	IS086IU	Introduction to Computing	**3**
20	IS004IU	Engineering Probability & Statistics	4
21	IS090IU	Engineering Mechanics – Dynamics	2
22	EN011IU	Writing AE2	2
23	EN012IU	Speaking AE2	2
24	MA023IU	Calculus 3	4
		Total credits	**22**
Semester 4			
25	IS020IU	Engineering Economy	3
26	IS081IU	Deterministic models in OR	4
27	IS017IU	Work design & Ergonomics + Lab	4
28	IS085IU	CAD/CAM/CNC	**3**

29	IS034IU	Product Design & Development	3
30	PE008IU	Critical Thinking	3
31	PE017IU	Scientific socialism	2
		Total credits	**22**
Summer semester			
32	IS052IU	Internship 1	2
33		Military Training	
		Total credits	**2**
Semester 5			
34	PH015IU	Physics 3	3
35	IS040IU	Management Information System	3
36	PE014IU	Environmental Science	**3**
37	IS025IU	Quality Management	3
38	IS026IU	Project Management	3
39	IS024IU	Probabilistic Models in OR	3
40	**IS___IU**	**Nhóm tự chọn số 01 - ISE Elective Course (choose 1 course below)**	**3**
41	IS031IU	Experimental Design	3
42	IS087IU	Manufacturing Processes	**3**
43	IS058IU	Time series & forecasting technique	3
		Total credits	***21***
Semester 6			
44	IS079IU	Scientific Writing	2
45	IS028IU	Simulation Models in IE	4
46	IS027IU	Scheduling & Sequencing	3
47	IS078IU	Logistics engineering & supply chain design	3
48	PE018IU	History of the Communist Party of Vietnam	2
49	PE019IU	HCM’ s thoughts	2
50	IS041IU	Lean Production	3
51	IS089IU	Numerical methods	3
		Total credits	**22**
Summer semester			
52	IS053IU	Internship 2	3
		Total credits	**3**
Semester 7			
53	IS083IU	Capstone Design	**3**
54	IS033IU	Multi-Criteria Decision Making	3
55	IS032IU	Facility Layout	3
56	PE020IU	Ethnics and professional akills for engineers	3
	IS___IU	**Nhóm tự chọn số 02 - ISE Elective Course (choose 2 courses below)**	**6**
56	IS080IU	Creative Thinking	3
57	IS035IU	Systems Engineering	3

58	IS043IU	Flexible Manufacturing Systems	3
59	IS045IU	Leadership	3
60	IS023IU	Inventory Management	3
61	IS082IU	Retail Management	3
62	IS067IU	International Transportation & Logistics	3
63	IS062IU	E-Logistics in Supply Chain Management	3
55	**_____IU**	**Nhóm tự chọn số 03 - Free Elective Course (choose 1 course)**	**3**
		Total credits	**21**
Semester 8			
66	IS048IU	Thesis research	10
		Total credits	**10**

9.3 Curriculum for students of English entry level 3 (IE2 – TOEFL score < 430)

Total credits: 196 (additional 38 credits of Intensive English)

Length of study: 4.5 years

No.	Courses code	Courses	Credits
Semester 1			
1	EN072IU	Reading & Writing IE1	11
2	EN073IU	Listening & Speaking IE1	11
3	PT001IU	Physical Training 1	3
		Total credits	**25**
Semester 2			
4	EN074IU	Reading & writing IE2	8
5	EN075IU	Listening & speaking IE2	8
6	PT002IU	Physical Training 2	3
7	IS001IU	Introduction to Industrial Engineering	1
8	MA001IU	Calculus 1	4
		Total credits	**24**
Summer semester			
9	PE015IU	Philosophy of marxism and Leninism	3
10	PE016IU	Political economics of marxism and leninism	2
		Total credits	**5**
Semester 3			
11	MA027IU	Applied Linear Algebra	2
12	EN007IU	Writing AE1	2
13	EN008IU	Listening AE1	2
14	IS004IU	Engineering Probability & Statistics	4
15	PH013IU	Physics 1	2
16	PH014IU	Physics 2	2
17	PE008IU	Critical Thinking	3
18	MA003IU	Calculus 2	4
		Total credits	**21**
Semester 4			
19	CH012IU	Chemistry Laboratory	**1**

20	CH011IU	Chemistry for Engineers	**3**
21	IS081IU	Deterministic models in OR	4
22	EN011IU	Writing AE2	2
23	EN012IU	Speaking AE2	2
24	IS054IU	Engineering Drawing	3
25	MA023IU	Calculus 3	4
26	IS089IU	Numerical methods	3
		Total credits	**22**
Summer semester			
27	IS052IU	Internship 1	2
28		Military Training	0
		Total credits	**2**
Semester 5			
29	PH015IU	Physics 3	3
30	PE014IU	Environmental Science	3
31	IS019IU	Production Management	3
32	IS040IU	Management Information System	3
33	IS025IU	Quality Management	3
34	PE017IU	Scientific socialism	2
35	IS090IU	Engineering Mechanics – Dynamics	2
	IS___IU	**Nhóm tự chọn số 01 - ISE Elective Course (choose 1 course below)**	**3**
36	IS031IU	Experimental Design	3
37	IS087IU	Manufacturing Processes	**3**
38	IS058IU	Time series & forecasting technique	3
		Total credits	**22**
Semester 6			
39	IS086IU	Introduction to Computing	**3**
40	IS020IU	Engineering Economy	3
41	IS017IU	Work design & Ergonomics + Lab	4
42	IS034IU	Product Design & Development	3

43	IS085IU	CAD/CAM/CNC	**3**
44	IS041IU	Lean Production	3
45	PE018IU	History of the Communist Party of Vietnam	**2**
46	PE019IU	HCM' s thoughts	**2**
		Total credits	**23**
Summer semester			
47	IS053IU	Internship 2	3
		Total credits	**3**
Semester 7			
48	IS083IU	Capstone Design	3
49	IS033IU	Multi-Criteria Decision Making	3
50	IS026IU	Project Management	3
51	IS024IU	Probabilistic Models in OR	3
	IS___IU	**Nhóm tự chọn số 02 - ISE Elective Course (choose 2 courses below)**	**6**
56	IS080IU	Creative Thinking	3
57	IS035IU	Systems Engineering	3
58	IS043IU	Flexible Manufacturing Systems	3
59	IS045IU	Leadership	3
60	IS023IU	Inventory Management	3
61	IS082IU	Retail Management	3
62	IS067IU	International Transportation & Logistics	3
63	IS062IU	E-Logistics in Supply Chain Management	3
55	**_____IU**	**Nhóm tự chọn số 03 - Free Elective Course (choose 1 course)**	**3**
		Total credits	**21**
Semester 8			
61	IS028IU	Simulation Models in IE	4
62	IS027IU	Scheduling & Sequencing	3
63	IS032IU	Facility Layout	3
64	IS078IU	Logistics engineering & supply chain design	3
65	IS079IU	Scientific Writing	2

66	PE020IU	Ethnics and professional akills for engineers	3
		Total credits	**18**
Semester 9			
67	IS048IU	Thesis research	10
		Total credits	**10**

9.4 Free elective course list

No	ID	Course name	Credits
1	BA115IU	Introduction to Business Administration	3
2	BA117IU	Introduction to Micro Economics	3
3	BA120IU	Business Computing Skills	3
4	BA123IU	Principles of Management	3
5	BA119IU	Introduction to Macro Economics	3
6	BA118IU	Introduction to Psychology	3
7	BA167IU	Introduction to Vietnamese Legal System	3
8	BA197IU	Introduction to Sociology	3
9	IT064IU	Introduction to Computing	3
10	IT011UN	Functional Programming	3
11	IT120IU	Entrepreneurship	3
12	IT007UN	Skills for Communicating Information	3
13	IT151IU	Statistical Methods	3
14	BM013IU	Entrepreneurship in Biomedical Engineering	3
15	BM005IU	Statistics for Health Science	3
16	BM033IU	Information Technology in the Health Care System	3
17	ENEE2001IU	Introduction to Environmental Engineering	3
18	ENEE2008IU	Environmental Ecology	3
19	BT152IU	Biostatistics	3
20	CHE2041IU	Mass Transfer Operations	3
21	MAFE105IU	Financial Economics	3
22	MAFE215IU	Financial Management	3
23	MAFE209IU	Financial markets	3

24	MAFE207IU	Decision Making	3
25	MAFE314IU	Financial Econometrics	3
26	MAFE308IU	Financial Risk Management 1	3
27	MAFE402IU	Portfolio Management	3
28	PH027IU	Earth Observation and The Environment	3
29	PH047IU	Navigation Systems	3
30	PH045IU	Fundamental of Surveying	3
31	PH046IU	Geographic Information Systems (GIS) and Spatical Analysis	3
32	CE505IU	Geotechnics	3
33	CE503IU	Pavement design & Maintenance	3
34	EE049IU	Introduction to Electrical Engineering	3

10. Relation of Program ELOs and Courses

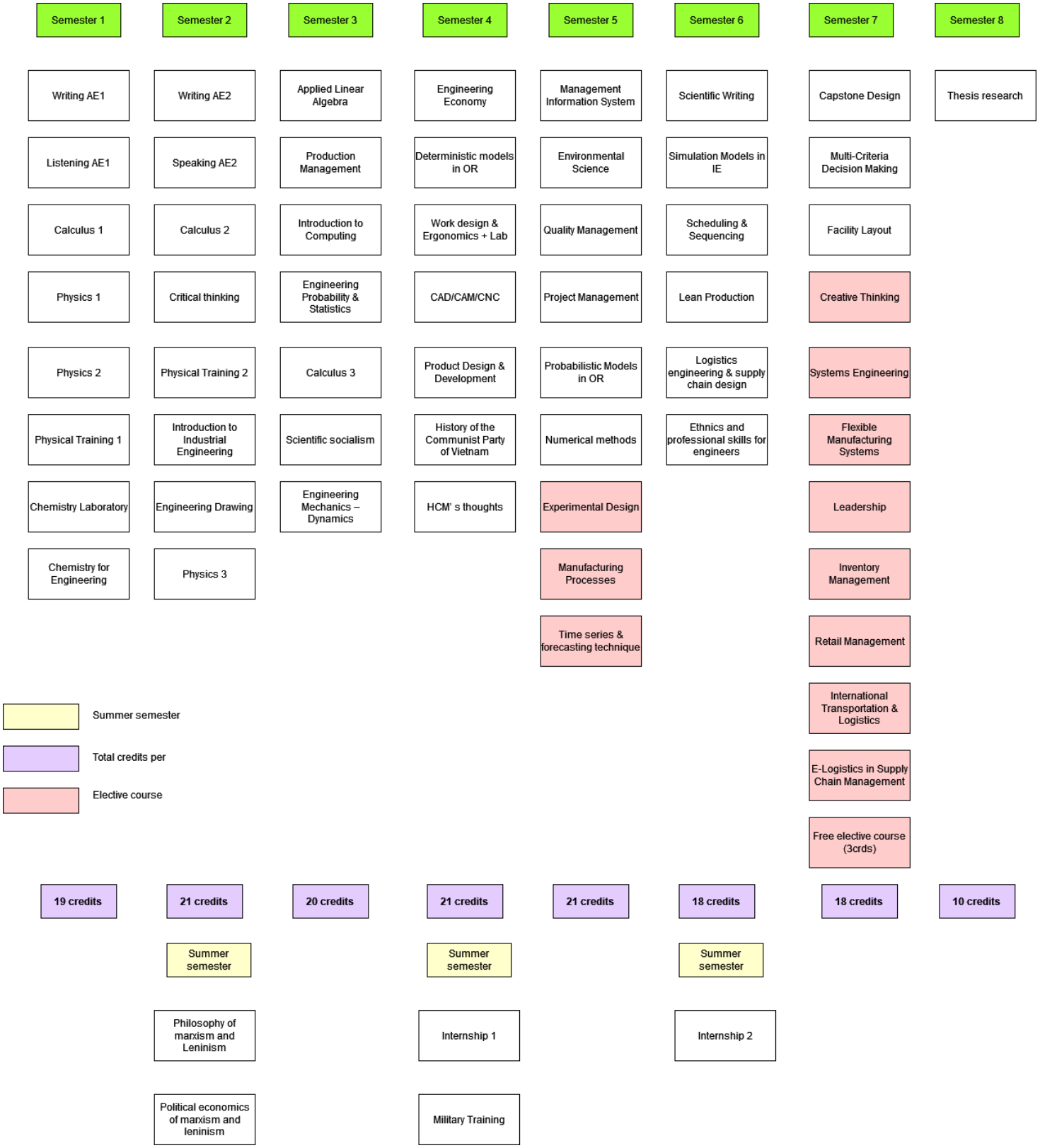
While each course may relate to all the ELOs at different degrees, only the most significant correlation is shown in the table

	COURSE NAME		Program ELOs										
			a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
	PE011IU	Principles of Marxism			x	x		x			x		
	PE012IU	Ho Chi Minh' s thoughts			x	x		x			x		
	PE013IU	Revolutionary Lines of Vietnamese Communist Party			x	x		x			x		
	PE008IU	Critical Thinking				x			x		x		
	EN007IU	Writing AE1									x		
	EN008IU	Listening AE1									x		
	EN011IU	Writing AE2									x		
	EN012IU	Speaking AE2									x		
	IS079IU	Scientific Writing									x		
	MA001IU	Calculus 1	x	x			x				x		
	MA003IU	Calculus 2	x	x			x				x		
	PH013IU	Physics 1	x	x			x				x		
	PH014IU	Physics 2	x	x			x				x		
	PH012IU	Physics 3	x	x			x				x		
	MA027IU	Applied Linear Algebra	x	x			x				x		
	CH011IU	Chemistry for Engineers	x	x			x				x		
Core knowledge			**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
	IS056IU	Introduction to Industrial System and Engineering				x			x		x		
	IS054IU	Engineering Drawing			x						x		x
	IS076IU	Introduction to Computing & Matlab Application					x						x
	IS077IU	Introduction to Programming – C++/C#, Python	x	x			x						x
	IS004IU	Engineering Probability & Statistics	x	x			x						
	IS020IU	Engineering Economy	x				x			x	x		x
Specialized Knowledge			**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
	IS019IU	Production Management	x							x		x	
	IS081IU	Deterministic Models in Operations Research	x				x						x

	IS055IU	Principles of Logistics and Supply Chain Management						x				x	
	IS073IU	Business Law								x		x	
	IS057IU	Warehouse Engineering Management			x			x				x	
	BA003IU	Principles Of Marketing				x				x			
	IS074IU	Import – Export Management								x		x	
	IS061IU	Management Information System			x						x	x	x
	IS025IU	Quality Management	x		x	x				x	x		
	IS026IU	Project Management				x			x		x		x
	IS078IU	Logistics Engineering & Supply chain Design	x		x		x						x
	IS024IU	Probabilistic Models in Operations Research	x				x						x
	IS028IU	Simulation Models in Industrial Engineering	x	x	x		x					x	x
	IS027IU	Scheduling & Sequencing	x		x		x					x	x
	IS067IU	International Transportation & Logistics	x							x		x	
	IS059IU	Materials Handling Systems		x	x		x	x					x
	BA184IU	Financial Accounting								x		x	
	IS033IU	Multi-criteria Decision Making	x				x						x
Specialization knowledge (Elective)			**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
	IS062IU	E-Logistics in Supply Chain Management										x	
	IS058IU	Time series & forecasting technique	x										
	IS035IU	Systems Engineering								x			
	IS068IU	Procurement Management	x					x	x	x			
	IS045IU	Leadership						x	x		x	x	
	IS023IU	Inventory Management	x		x		x					x	
	IS082IU	Retail Management	x					x	x	x			
	IS063IU	Sustainability in Supply Chain			x			x		x	x	x	
	IS064IU	Entrepreneurship in Supply Chain			x					x	x	x	
	IS065IU	Supply Security and Risk Management			x					x	x	x	
	IS066IU	Data Mining in Supply Chain			x					x	x	x	
	IS072IU	Port Planning and Operations			x					x	x	x	
	IS080IU	Creative Thinking				x	x	x	x		x	x	
	BA130IU	Organizational Behavior				x		x	x	x			
	BA032IU	Sales Management			x	x		x	x	x			
	BA156IU	Human Resource Management				x		x	x	x			
Internship and Thesis	IS069IU	Internship 1		x	x		x				x		
	IS070IU	Internship 2		x	x	x	x				x	x	
	IS071IU	Thesis	x	x	x		x	x	x	x	x	x	x

11. Curriculum Mapping

(Standard curriculum for students of English entrance level 1)



12. Course description

PE011IU Principles of Marxism 5 credits

An introduction to fundamental concepts of Marxism – Leninism. This course presents the world methodology, and economic theory on capitalist production of Marxism-Leninism. It also provide basics of Marxism – Leninism's theories on socialism and socialist realism.

PE012IU Ho Chi Minh's Thoughts 2 credits

This course introduces students to the fundamentals of Ho Chi Minh's thought. Students learn about the formation and development of Ho Chi Minh ideology as well as other basic contents of Ho Chi Minh Thought based on course objectives.

PE013IU Revolutionary Lines of Vietnamese Communist Party 3 credits

This course provides students with a basic understanding of the Party's policies, especially the way in the renovation process. It is organized into topics: The birth of the Communist Party of Vietnam and the first political platform of the Party, the way to Fight the Government (1930- 1945), resistance against French colonists and American invaders (1945-1975), industrialization, and the ways to build a socialist-oriented market economy, the political system, culture, foreign policy and to solve social problems

EN007IU Writing Academic English 1 2 credits

This course provides students with instruction and practice in essay writing, including transforming ideas into different functions of writing such as definitions, classifications, cause – effects, arguments. Through reading a few representative university-level texts, students will develop the ability to read critically and write accurately, coherently, and in appropriate academic style in response to those texts. They will also practice necessary skills to write a research report.

EN008IU Listening Academic English 1 2 credits

To provide students with the study skills needed to listen to academic lectures, take effective notes and prepare for examinations.

EN011IU Writing Academic English 2 2 credits

This course provides an overview of the organizational format for a research paper and assists students in completing research projects in any content area course by providing assistance in writing effective research papers using a step-by-step process approach. Course content includes the components of a research paper, and techniques of selecting and narrowing topics; writing argumentative thesis statements; outlining; locating and documenting sources; and taking notes. Students also have to read extensively about a chosen topic to explore different ideas of multiple authors about that topic. Students work with projects relating to their content area courses.

Prerequisite: *EN007 & EN008 (Academic English 1)*

EN012IU Speaking Academic English 2 2 credits

Students are provided with practical strategies for effective presentations. They also have a chance to practice giving presentations in class and receive feedback.

Prerequisite: *EN007 & EN008 (Academic English 1)*

MA001IU Calculus 1 4 credits

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 Calculus 2 4 credits

Sequence and Series; Convergence Tests; Power Series; Taylor and Maclaurin Series; Cartesian Coordinates; Lines, Planes and Surfaces; Derivatives and Integrals of Vector Functions, Arc Length and Curvature, Parametric Surfaces; Functions of Several Variables; Limits, Continuity, Partial Derivatives, Tangent Planes; Gradient Vectors; Extrema; Lagrange Multipliers; Multiple Integrals: Double Integrals, Triple Integrals, Techniques of Integration; Vector Fields, Line Integrals, Surface Integrals.

Prerequisite: *MA001 (Calculus 1)*

MA023IU Calculus 3 4 credits

Complex numbers, complex series, complex functions, complex derivatives; Laplace transform, z-transform, Fourier series, Fourier transform, the inverse transform, transforms of derivatives and integrals, first-order differential equations, second-order differential equations, difference equations, applications to electrical circuits and signal processing.

Prerequisite: *MA003 (Calculus 2)*

MA027IU Applied Linear Algebra 2 credits

The course provides the student with basic knowledge in linear algebra with applications, in particular the skill of solving linear systems of equations using Gauss elimination method.

Prerequisite: *None*

PH013IU Physics 1 2 credits

An introduction to mechanics including: planar forces, free body diagrams, planar equilibrium of

rigid bodies, friction, distributed forces, shear force and bending moment diagrams, simple stress and strain and associated material properties, kinematics and kinetic of particles, work and energy, motion of rigid bodies in a plane.

PH014IU Physics 2 2 credits

This course provides students basic knowledge about fluid mechanics; macroscopic description of gasses; heat and the first law of thermodynamics; heat engines and the second law of thermodynamics; microscopic description of gasses and the kinetic theory of gasses.

PH015IU Physics 3 3 credits

To provide a thorough introduction to the basic principles of physics to physics and engineering students in order to prepare them for further study in physics and to support their understanding and design of practical applications in their fields. Content: Electrostatics, particles in electric and magnetic fields, electromagnetism, circuits, Maxwell's equations, electromagnetic radiation.

***Co-requisite**: PH016 (Physic 3 Laboratory)*

PH016IU Physics 3 Lab 1 credit

Physics 3 Lab is an experimental course on electricity and magnetism given to undergraduate students who attended Physics 3 (Electricity and Magnetism). Each student will do eight different experiments in a small group, and then write a lab report based on the experimental results.

PH012IU Physics 4 2 credits

- Know and understand basic physical processes and phenomena.
- Solve basic physics problems by applying both theoretical and experimental techniques.
- Understand and acquire skills needed to use physical laws governing real processes and to solve them in the engineering environment.

CH011IU Chemistry for Engineers 3 credits

This course is designed for non-chemistry majors, as it is intended for students pursuing a degree in information technology, electronic and telecommunication. The course is designed to provide a strong background in the fundamentals of chemistry, preparing students for further study in their major field. Topics include important principles, theories, concepts of chemistry, and chemical calculations necessary for a comprehension of the structure of matter, the chemical actions of the common elements and compounds. The impact of chemistry on everyday life and on the environment is also introduced wherever possible.

***Prerequisite:** Co-requisite: CH012 (Chemistry for Engineers Laboratory)*

PE008IU Critical Thinking **3 credits**

This course aims to introduce to you the fundamentals of critical thinking. Its course integrates basic critical thinking, persuasive communication, and related errors in thinking lessons with examination of arguments from several sources, including literature, politics, commercials, and the media.

The primary focus of this course is the development of critical skills. To this end, you will learn to identify common fallacies, reflect on the use of language for the purpose of presentation, and think critically about ethical judgments, advertisement, TV and film, magazines and newspapers.

IS004IU Engineering Probability & Statistics ***4 credits***

The aim of this course is to examine various concepts in probability and statistics. This course also discusses various statistical techniques and the use of them in practical situations. Key topics of this course include: descriptive statistics, discrete and continuous random variables, sampling and sampling distributions, confidence intervals, hypothesis testing, analysis of variance, simple linear and multiple regressions.

IS017IU Work Design & Ergonomics **4 credits**

Problem solving tools (recording and analysis tools, activity charts, line balancing). Operation analysis, manual work design (principles of motion economy, motion study). Time study (performance rating and allowances). Work sampling, predetermined time systems. Work environment design.

IS019IU Production Management ***3 credits***

Introduction to production systems. Production planning and control in decision making. Forecasting. Aggregate production planning. Capacity planning. Materials requirement planning. Scheduling. Advanced techniques and approaches in modern production planning and control for designing manufacturing and service systems.

IS020IU Engineering Economy ***3 credits***

Economic decisions involving engineering alternatives; annual cost, present 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.

IS023IU Inventory Management ***3 credits***

Every organization holds stocks of materials to allow for variations and uncertainty in supply and demand. Stocks are replenished by deliveries from suppliers and reduced to meet demands from customers. Inventory management is responsible for all aspects of stock control. High stock buffer comes at a high price and organizations are continually looking for ways of

reducing their inventory costs without affecting service.

This course provides students with an understanding of the principles, processes and methods for the effective management of inventory in relation to other activities in the supply chain. The course examines both the independent demand and dependent demand methods. Attention is given to the information needed to support these methods, including information from the inventory management information system, forecasts of demand and planned operations.

IS024IU Probabilistic Models in Operations Research ***3 credits***

To introduce the student into basic topics of mathematical modeling process of decision problems in complex stochastic industrial environments. This course covers stochastic operations research models, algorithms, and applications. Markov chains and queuing models are discussed. Renewal theory, reliability theory, and stochastic models for manufacturing systems are also taken into consideration. Students will acquire in this course the basis for the study of other probabilistic topics in their curriculum.

IS025IU Quality Management ***3 credits***

This course introduces to the principles of quality management, with an emphasis on cross-functional problem solving. It provides methods for quality planning, improvement and control with applications in manufacturing and service. The students also gain a basic understanding of the philosophy, conceptual frameworks and the tools of Total Quality Management.

IS026IU Project Management ***3 credits***

Project management" course is developed to provide the principal concept on project management which was characterized by the project management body of knowledge guide (PMBOK Guide). The course 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.

In addition, this course also provides computer aid for project management by introducing the application of Microsoft Project and project scheduling.

IS027IU Scheduling and Sequencing ***3 credits***

This course gives an introduction to scheduling problems: techniques, principles, algorithms and computerized scheduling systems. Topics include scheduling algorithms for single machine, parallel machine, flow shop, job shop and also solution methodologies such as heuristic procedures, constructive algorithms, branch and bound approaches, and genetic algorithms.

IS028IU Simulation Models in Industrial Engineering ***4 credits***

Systems modeling and simulation techniques find applications in fields as diverse as physics,

chemistry, biology, economics, medicine, computer science, and engineering. The purpose of this course is to introduce fundamental principles and concepts in the general area of systems modeling and simulation. Topics to be covered in this course include basics of discrete-event system simulation, mathematical and statistical models.

IS029IU Logistics Engineering and Supply Chain Design ***3 credits***

Logistics and Supply chain management involves a number of decisions that benefit by quantitative techniques of analysis and design. The course will explore modeling, computation implementation of solutions in some areas of Logistics and Supply Chain Management. The content also includes material flow management across the supply chain, value management and analysis of total supply chain costs, robust design of supply chains, coordination of supply chain decisions and handling of uncertainties in supply chain management.

S033IU Multi- Criteria Decision Making ***3 credits***

Decision making is one of the important parts in operation research or management science. Decision making techniques help management to choose the best alternative based on quantitative criteria. This course provides students with basic knowledge about decision model formulation, so that they can make decisions based on the results of the models. This course also provides students with specific techniques for practical applications in production and services.

IS034IU Product Design and Development ***3 credits***

Product Design and Development course introduces to the students the role of multiple functions in creating a new product (*e.g.* marketing, finance, industrial design, engineering, production) as well as tools and methods for product design and development. Highlight of the course is the project in which the students will design a new product and produce a prototype version of it. Throughout the project, the students will apply their learned principles and methods of product development in a realistic context. The course also enables the students to coordinate interdisciplinary tasks in order to achieve a common objective.

IS035IU Systems Engineering ***3 credits***

Systems Science is the course of methods to develop and analyze the systems. This course provides the knowledge and skills necessary for the engineers in the development process and systems analysis (manufacturing and services): systems engineering processes, methods of evaluation, selection and integration of system components, system simulation, and assessment of reliability, availability, and serviceability of the systems.

IS061IU Management Information Systems ***3 credits***

Integrates topics of management and organization theory, information and communication theory, and systems theory relevant to managing an organization’s information resources. Includes computer hardware and software, telecommunications, and database concepts and

emphasizes the e-commerce and Internet based business models to get a competitiveness of global based business environments. This course meets the requirements for a Technology Intensive course.

IS041IU Lean Production ***3 credits***

This course will help students to understand the concepts and philosophies of lean, get familiar with lean tools/techniques, especially the concepts behind the tools/techniques used, and develop analytical, problem solving skills. Therefore, the students will be able to join well in most of foreign-invested enterprises or large organizations in Vietnam after graduation. Ultimately, they will be able to apply lean philosophy creatively in each unique practical situation.

IS045IU Leadership ***3 credits***

Organizational development and learning; leading learning organizations; leadership theories and perspectives, followership, leadership development; coaching and mentoring; leading groups and teams, leadership and diversity.

IS054IU Engineering Drawing ***3 credits***

This course provides students skills to present and interpret spatial models on planar models, and present engineering drawings according to international standards (ISO). Methods of presenting models: orthogonal projection, isometric projection, oblique projection… Apply the projections to present objects in the drawings.

IS055IU Principles of Logistics and Supply Chain Management ***3 credits***

This is an introductory course to Logistics and supply chain management (SCM). It provides an overview of fundamental concepts, business processes and models/tools. The objective of this course is to identify problems, issues and strategies in today's supply chain operations via real-world cases. Analytical models and technical tools are introduced as needed. This course combines SCM business knowledge with analytical thinking and pinpoints the role of SCM relative to other business disciplines. It serves as a roadmap to more in-depth courses on related topics.

IS056IU Introduction to Logistics and Supply Chain Management ***3 credits***

This course focuses on familiarizing new Logistics & Supply Chain Management students to Logistics & Supply Chain Management in general and Logistics & Supply Chain Management at IU. The intention is to prepare students to become successful at IU and successful Logistics & Supply Chain Management Engineers.

IS057IU Warehouse Engineering Management ***3 credits***

This course provides the students with an understanding of the principles, processes and

techniques for the effective planning, management and operation of warehouses. Through this exposure, students will gain insights into how warehousing adds value to the organization's supply chain and how warehousing decisions impact the performance of the organization.

IS058IU Time series & Forecasting Techniques ***3 credits***

The simplest definition of economic forecasting is that it is a process that has as its objective the prediction of future events or conditions to reduce that uncertainty so that our decisions will be better ones.

Specific objectives are to instruct you in:

1. The formulation and specification of forecasting models;

2. Data collection, interpretation, organization, and analysis for building forecasting models;

3. Fundamental statistical and probability concepts used in forecasting;

4. The existence of a hierarchy of forecasting models;

5. The use of econometric software in a lab setting.

IS059IU Materials Handling Systems ***3 credits***

Proper methods for material handling and storage including safety practices, proper equipment usage, engineering controls, and personal protective equipment. Included are procedures for storage of non-hazardous and hazardous materials, material handling equipment preventative maintenance, and motor fleet safety.

IS062IU E-Logistics in Supply Chain Management ***3 credits***

Comprehensive inquiry into the role of e-commerce in collaborative distribution and logistics relationships. Special attention is afforded to resource and technology interdependencies, exchange governance mechanisms and relationship management bench-marking. Emphasis is given to the tools for creating value in the supply chain.

IS063IU Sustainability in Supply Chain ***3 credits***

There is global experience and examples that show how comprehensive organizational environmental sustainability and archaeological criteria integrated into the supply chain management/procurement process and decision-making of public and private agencies, organizations and corporate entities can improve financial and environmental performance, while addressing ethics, social regeneration, resource/waste impacts and economic development concerns. This course will allow students to participate in applied research projects that include designing supply chain management and procurement systems and products, which address environmental, social and ethical considerations in organizational and corporate policy,

program and reporting.

IS064IU Entrepreneurship in Supply Chain ***3 credits***

The nature and importance of entrepreneurship; forms of entrepreneurship; the entrepreneurial process; the entrepreneurial mind; creativity, ideas and innovation; screening entrepreneurial opportunities; identifying resources to support entrepreneurial activities; intellectual property issues; accessing finance and other resources; the entrepreneurial team; assessing risk; business structure and ethics; entrepreneurial strategy; finding and reaching customers and marketing innovation; feasibility planning.

IS065IU Supply Security and Risk Management ***3 credits***

Supply security and risk management have become major business concerns in view of the need to protect the supply chain and maintain business continuity in the wake of high-consequence disruptive events. This course provides a broad overview of key supply chain security areas and issues in the context of homeland security.

IS066IU Data Mining in Supply Chain ***3 credits***

Data mining refers to a family of techniques used to detect interesting nuggets of relationships/knowledge in data. With the availability of large databases to store, manage and assimilate data, the new thrust of data mining lies at the intersection of database systems, artificial intelligence and algorithms that efficiently analyze data. The distributed nature of several databases, their size and the high complexity of many techniques present interesting computational challenges.

An overview of business intelligence in the field of supply chain management and marketing. Addresses how to leverage business intelligence systems to define KPIs, sharpen the accuracy of forecasting and planning, track business activities, and deliver dashboards, scorecards, strategic reporting, and operational/real-time reporting to enhance decision making for supply chain and marketing. SAP business intelligence solution is introduced to illustrate the concepts.

IS067IU International Transportation & Logistics ***3 credits***

Students learn the significance of international traffic and transport logistics. Students will learn basic methods and applications of operations research to implement, operate and optimize overall company material flow technical networks. This applies in particular to the subject of the optimal arrangement of sources and outflows and their dimension as well as their optimal interconnection from a transport technology point of view.

Topics include: requirements for logistics companies; active in road freight, rail, air and sea transport; competition in international transport; competition in international transport; cost accounting for freight forwarding; price setting in road freight, rail, air and sea transport;

information management in freight forwarding.

IS068IU Procurement Management ***3 credits***

This unit covers the following: the role of Purchasing and Procurement in Supply Chain Management, purchasing procedures, supplier sourcing and management, negotiations, supplier relationships, specifying product quality, matching supply with demand and support tools for purchasing and procurement. Comprehensive theories and models developed by practitioners are examined.

IS072IU Port Planning and Operations ***3 credits***

This course provides the students with an understanding of the port system, geographical location of ports, related planning and operational issues. Methods and processes for port planning and design. Besides that, the students are provided with knowledge about Inland connectivity, port's linkage to transport infrastructure, intermodal connections, and marine operations in ports. Traffic management, cargo handling, terminal operations, facilities and equipment, port security.

S073IU Business Law ***3 credits***

The aim of this course is to:

- Familiarize the student with legal language; basic concepts, principles and general knowledge of business Law.
- Introduce to students about main business forms in Vietnam and regulations for each. Also, possibility of reorganization and Insolvency for enterprises, as the main subject matter of this course.
- Increase the student's understanding of the Vietnamese regulations over business dispute resolution.
- Expose the student to legal reasoning and develop his/her ability to apply legal concepts.
- Introduce students to main trade international organizations and main international trade rules.
- Develop problem solving and legal analyzing skills and apply it to day-to-day practical situations.

IS074IU Import & Export Management ***3 credits***

The basic objective of this course is to provide students with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Import & Export Management. In addition, this course aims at imparting knowledge of trade procedures and documentation formalities with a view to enable the participants to develop a systematic approach in handling trade transactions and incidental paperwork.

IS076IU Introduction to Computing – Matlab Application ***3 credits***

Introduction to MATLAB, a powerful programming package for engineers and scientists. Students will learn the fundamentals of MATLAB, how to write programs in MATLAB, and how to solve engineering problems using MATLAB. Emphasis on problem-solving skills and mathematical tools of importance in engineering.

IS077IU Introduction to Programming – C++/C#, Python 2 credits

Introduction to programming in C++. Operators and the C++ system; fundamental data types; flow of control; functions; arrays, pointers, and strings; application of C++ for solving engineering problems and numerical analyses.

IS079IU Scientific Writing ***2 credits***

This course is offered for undergraduate students at School of IEM, IU. It aims to improve students' academic and scientific writing in English, and helps them successfully complete course reports, thesis, dissertations, and articles for publication as well as doing a proper presentation, etc. Upon completion of the course, we hope our students become more effective, more efficient, and more confident writers.

IS081IU Deterministic Models in Operations Research ***4 credits***

Elements of problem solving and algorithmic design. Use of numerical analysis and linear algebra to solve industrial engineering problems. Topics to be covered include: problem formulations, simplex method in tableau form, duality theory, an introduction to the geometry of the simplex method, sensitivity analysis, transportation and network flow problems, optimality conditions and basic numerical methods for nonlinear programs.

IS082IU Retail Management 3 credits

This course provides the student with a comprehensive view of retailing and an application of marketing concepts in a practical retail managerial environment. As a potential marketing manager, this course will give students insight into the retailing environment of which students will be a part and allow students to make informed decisions in your interaction with retailers. The course also provides a good foundation for those interested in owning or running a small retail business or those interested in pursuing a retail career as a merchandise buyer or store manager.

BA003IU Principles of Marketing 3 credits

The course of Principles of Marketing provides the students with necessary information on the basic concepts of Marketing. It focuses on the understanding of Market Demand and Customers Behaviors as well as Marketing strategies developed by firms in terms of Pricing, Product, Place, Promotion, etc. The course also mentions various methods to market research and

environmental factors that affect the marketing activities.

BA028IU Organizational Behavior 3 credits

The nature of organizational behavior, individual behavior in organizations; personality; perception; motivation concepts; decision-making; cultural differences; leadership; managing and understanding groups and teams; influence and power; managing organizations through change; stress management and organizational culture.

BA032IU Sales Management 3 credits

Problems, policies, and functions of sales management as the vital link between selling and marketing. Role of the sales manager in the development of a successful salesforce. Topics include territory and market analyses, compensation, sales planning, and control.

BA156IU Human Resource Management 3 credits

This course studies the effects of sociological, legal, economic, ethical, political, strategic and environmental changes, issues and developments on human resource management processes, practices, programs and policies.

BA184IU Financial Accounting 4 credits

This course develops a basic understanding on the theories, principles, and applications of accounting and financial reporting, essentials in the US standard, including topics such as the theory of debit and credit, accounts, special journals, the accounting cycle, notes and interest, accruals and deferrals, cash, receivables, inventory, fixed assets, and the preparation of financial statements. In general, its primary aim is to provide the basic knowledge in preparing and processing accounting transactions in order to present financial details in a relevant and effective manner, as well as interpreting this accounting information for different types of external and internal investors, management and other accounting information users.

IS080IU Creative Thinking 3 credits

The art of Creative Thinking is crucial for many individuals in different fields, whether it's school, job or personal use, everyone should learn how to think creatively. This course will help you understand the role of creativity and innovation in your own work and in other disciplines. It will challenge you to move outside of your existing comfort zone and to recognize the value of that exploration. This course will help you understand the importance of diverse ideas, and to convey that understanding to others

IS069IU Internship 1 2 credits

This course is an internship and is designed to supplement traditional classroom-based learning with experiential learning. The internship provides students with the opportunity to practically

apply knowledge gained in their courses of Industrial & Systems Engineering.

Internships can be with a variety of host organizations, including foreign companies, government agencies and private industries. A minimum of 15 working days is required (5 days visit factory, 5 days write report, 5 days to get approval from supervisor).

Whether the students have arranged their internship themselves or have been assisted in arranging one by the program assistant or other lecturers, they should let the program assistant know once there is a problem with the internship. The program coordinator can either intervene appropriately or see if the students can be transferred to a different company.

IS070IU Internship 2 3 credits

This course is an internship and is designed to supplement traditional classroom-based learning with experiential learning. The internship provides students with the opportunity to practically apply knowledge gained in their courses of Industrial & Systems Engineering.

Internships can be with a variety of host organizations, including foreign companies, government agencies and private industries. A minimum of 320 working hours or 40 working days is required. Whether the students have arranged their internship themselves or have been assisted in arranging one by the program assistant or other lecturers, they should let the program assistant know once there is a problem with the internship. The program coordinator can either intervene appropriately or see if the students can be transferred to a different company.

Students should be both supported and challenged and encouraged to take initiative and develop life-long learning skills. Each intern works under a site supervisor at the host organization and an advisor from IU (ISE's lecturer). The role of the site supervisor (or advisor) is to oversee the students and provide mentorship throughout the internship. The site supervisor and advisor will complete a performance evaluation form at the conclusion of the internship. Students will discuss their experiences through weekly reports and online discussions.

IS071IU Thesis 10 credits

Thesis project is a semester-long, individual study taken at the last semester of the senior year. Students are required to solve a large-scale problem by designing a new system or developing a comprehensive solution to improve the current system. The new design or solution for improvement must take into account realistic constraints such as economic, social and environmental conditions.

13. Academic Regulation

Summer Internship Registration

Students are allowed to register for summer internship before the academic year when they aim to apply for a thesis.

- **Objectives:**
  - To develop skills in the application of theory to practical work situations;
  - To develop skills and techniques directly applicable to their careers;
  - To provide students the opportunity to get involved with industry before graduation.
- **Internship duration: two internships are requirement**
  - Internship ***1:*** Minimum 4 weeks
  - Internship ***2:*** minimum 8 weeks to 12 weeks (full-time working)

Thesis Registration

- **Criteria:**
  - Successfully accumulate at least 95% of total required credits (not including 10 credits of the thesis course)
  - Do not under any academic admonishment.
- **Duration:** minimum 12 weeks

Graduation Criteria

- Students have to complete all of the following requirements for graduation:
- Successfully complete the academic curriculum (143 credits) with GPA ≥ 50
- Meet the minimum English requirement of 61 TOEFL iBT, 6.0 IELTS.
- Military Education Certification
- Meet other requirements in accordance with the regulations for graduation set by the IU.

Scholarship Information

- **University Scholarship (Decision No. 99 & 100/ĐHQT-ĐT)**

Each semester, top 10% of students with highest GPA will receive scholarship from the IU. 4% of students will receive full scholarship (12.000.000 VND for Fall/Spring semester or 6.00.00 VND for Summer semester) and 6% of students will receive half scholarship (6.000.000 VND for Fall/Spring semester or 3.000.000 for summer semester).

- ***Minimum requirements:***
  - Complete the Academic English 1 (AE1).
  - Register at least 12 credits for Fall/Spring semester or 6 credits for Summer semester;
  - Semester GPA ≥ 70 (with no course fails in that semester)

- **Admission Scholarship 2012**

- ***Full scholarship*** (full tuition exemption for 4 years – equivalent to 120.000.000 VND): Students have entrance examination scores ≥ 24.
- ***Partial scholarship*** (half tuition exemption for 4 years – equivalent to 60.000.000 VND): Students have entrance examination scores ≥ 23.
- ***Condition to maintain Scholarships:*** Students must have GPA each semester ≥ 70 and the score of every subject ≥50.

Course Registration

Course registration aims at helping students gain full success in building their own training plan, selecting appropriate subjects for every semester in such a way that can meet his or her own personal capacity and conditions for the highest achievement.

- Students should register a minimum of 12 credits, except for the last semester.
- Students should register a maximum of 24 credits in one semester, except for the last semester, for those who have cumulative GPA ≥65
- The subject registration form must be approved by the academic advisors.
- For exceptional cases, students must file for the consideration of the Head of Department.
- Students do online course registration on the website: https://hcmiu.edu.vn/edusoftweb/ (username and password for student will be created by the university).
- The registration time will be informed by the Department

Adjusting Student Timetable

When receiving the timetables, students must check the information including the number of registered courses, tuition fees, etc… If there should be any errors, students must report to the Department within three days of the timetable announcement.

The Department must check (through the academic advisors) and give their opinions on the students' file of documents, and then send them to the Office of Undergraduate Academic Affairs for settlement.

Adding and Dropping Courses

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

Academic Probation

The University Academic Committee will consider to settle the academic matters after the first and summer semester annually. The result of the summer semester will be added to that of the second semester of the corresponding year upon academic settling.

Student violating the below regulation will be admonished academically:

- Those who acquire insufficient credits as required by the specialization in one semester;
- Cumulative GPA < 35

- Having two consecutive cumulative GPA < 50

The duration for academic probation will last in the succeeding formal semester.

Academic suspension

Students violating one of the below regulation will be suspended academically:

- The ultimate time for studying has finished;
- To drop out of university more than one semester without approval of IU;
- Students are warned more than 2 times;
- Do not register courses for each semester;
- Do not finish tuition fees in the prescribed time.

Academic Information

- Students can see all studying results in each semester and training results at the Department of Industrial and Systems Engineering
- In the studying process, students can ask for a student's transcript at the Office of Undergraduate Academic Affairs.
- For students who are warned or suspended, the university will send the information to the student's family.

Grading Criteria

Classification	**Scale 0 of 100**	**Scale 0 of 4**	**Letter grade**
PASS			
Excellent	85 <= GPA <= 100	4.0	A
Very Good	75 <= GPA < 85	3.75	A-
Good	65 <= GPA < 75	3.5	B+
Fairly good	60 <= GPA < 65	3.0	B
Fair	55 <= GPA < 60	2.5	C+
Average	55 <= GPA < 60	2.0	C
FAIL			
Weak	30 <= GPA <= 50	1.3	D+
Rather weak	10 <= GPA <= 30	1.0	D
Too weak	GPA <= 10	0	F

COURSE SPECIFICATION

A. Course Syllabus

SYLLABUS OF GENERAL COURSES

Principles of Marxism

1. General Information

Course Title:

- Vietnamese: Những nguyên lý cơ bản của chủ nghĩa Mác-Lênin
- English: Principles of Marxism

2. Course ID: PE011IU

3. Course Type:

☒ General ☐ Fundamental

☐ Specialization (required) ☐ Specialization (elective)

☐ Project/Internship/Thesis ☐ Others: ……

4. Number of credits: 5

5. Prerequisites: None

6. Course Description

An introduction to fundamental concepts of Marxism – Leninism. This course presents the worldview, methodology, and economic theory on capitalist production of Marxism-Leninism. It also provides the basics of Marxism – Leninism's theories on socialism and socialist realism.

7. Textbooks and references

Textbooks

- Ministry of Education and Training, Basic principles of Marxism – Leninism, National Political Publishing House.

References

- Ministry of Education and Training; Marxist-Leninist Philosophy, Marxist-Leninist Political Science and Social Science Social Sciences, National Political Publishing House, 2007.

8. Course Objectives

- Know the most basic rationale of socialist theories
- Establish the world view, the humanities and the most general methodology to approach the specialized sciences

9. Learning Outcomes

Learning Outcome Codes	Course learning outcomes	Program Learning outcomes (*)
G1	Know the most basic rationale of socialist theories	c, f, i

G2	Establish the world view, the humanities and the most general methodology to approach the specialized sciences	c, d, f, i

10. Course Assessment

Assessment component (1)	Assessment form (2)	Percentage % (3)
A1. Process assessment	A1.1 Quiz	5%
	A1.2 Homework	10%
A2. Midterm assessment	A2.1 Midterm Exam	30%
	A3.1 Full Semester Project	15%
A3. Final assessment	A3.2 Final exam	40%

11. Course Policy

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

Ho Chi Minh's Thoughts

1. **General Information**

Course Title

- Vietnamese: Tư tưởng Hồ Chí Minh
- English: Ho Chi Minh's Thoughts

2. **Course ID:** PE012IU
3. **Course Type:**

☒ General ☐ Fundamental

☐ Specialization (required) ☐ Specialization (elective)

☐ Project/Internship/Thesis ☐ Others: ……

4. **Number of credits: 2**
5. **Prerequisites:** Principles of Marxism
6. **Course Description**

This course introduces students to the fundamentals of Ho Chi Minh's thought. Students learn about the formation and development of Ho Chi Minh ideology as well as other basic contents of Ho Chi Minh Thought based on course objectives.

7. **Textbooks and references**

Textbooks

- Ministry of Education and Training, The Ho Chi Minh ideology, National Political Publishing House.
- The Central Council, The Ho Chi Minh Thought.

References

- The Central Propaganda Department, study guides of Ho Chi Minh Thought.
- Resolutions and documents of the Vietnamese Communist Party.

8. **Course Objectives**

- Providing a systematic understanding of thought, morals, cultural values, Ho Chi Minh.
- Continue to provide basic knowledge about Marxism-Leninism.
- Along with the subject, the basic principles of Marxism-Leninism provide insights into the foundations of thought, the guiding principles of the Party and the revolution.
- Contribute to building a new human moral foundation

9. Learning Outcomes

Learning Outcome Codes	Course learning outcomes	Program Learning outcomes (*)
G1	Systematic understanding of thought, morals, cultural values, Ho Chi Minh	c, f, i
G2	The basic principles of Marxism-Leninism provide insights into the foundations of thought, the guiding principles of the Party and the revolution	c, d, f, i

10. Course Assessment

Assessment component (1)	Assessment form (2)	Percentage % (3)
A1. Process assessment	A1.1 Quiz	5%
	A1.2 Homework	10%
A2. Midterm assessment	A2.1 Midterm Exam	30%
	A3.1 Full Semester Project	15%
A3. Final assessment	A3.2 Final exam	40%

11. Course Policy

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

Revolutionary Lines of Vietnamese Communist Party

1. General Information

Course Title

- Vietnamese: Đường lối cách mạng của Đảng Cộng sản Việt Nam
- English: Revolutionary Lines of Vietnamese Communist Party

2. **Course ID:** PE013IU
3. **Course Type:**

☒ General ☐ Fundamental

☐ Specialization (required) ☐ Specialization (elective)

☐ Project/Internship/Thesis ☐ Others: ……

4. **Number of credits: 3**
5. **Prerequisites:** Principles of Marxism, Ho Chi Minh's thoughts
6. **Course Description**

This course provides students with a basic understanding of the Party's policies, especially the way in the renovation process. It is organized into topics: The birth of the Communist Party of Vietnam and the first political platform of the Party, the way to Fight the Government (1930-1945), resistance against French colonists and American invaders (1945-1975), industrialization, and the ways to build a socialist- oriented market economy, the political system, culture, foreign policy and to solve social problems.

7. **Textbooks and references**

Textbooks

- Ministry of Education and Training, The Communist Party of Vietnam's revolutionary guidelines, National Political Publishing House.
- The Central Council, History textbook of the Communist Party of Vietnam.

References

- Documents and Resolutions of the Vietnamese Communist Party.

8. **Course Objectives**

- To provide students the basics of the revolutionary lines of the Vietnamese Communist Party.
- To help students apply their specialized knowledge in order to solve economic, political, cultural and social problems in accordance with the Party's and State's lines, policies and laws.

9. **Learning Outcomes**

Learning Outcome Codes	Course learning outcomes	Program Learning outcomes (*)
G1	Understanding the basics of the revolutionary lines of the Vietnamese Communist Party	c, f, i
G2	Applying their specialized knowledge in order to solve economic, political, cultural and social problems in accordance with the Party's and State's lines, policies and laws.	c, d, f, i

10. Course Assessment

Assessment component (1)	Assessment form (2)	Percentage % (3)
A1. Process assessment	A1.1 Quiz	5%
	A1.2 Homework	10%
A2. Midterm assessment	A2.1 Midterm Exam	30%
	A3.1 Full Semester Project	15%
A3. Final assessment	A3.2 Final exam	40%

11. Course Policy

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

CRITICAL THINKING

1. General Information

- Course Title: CRITICAL THINKING *(Tư duy phân tích)*
- Course Code: PE008IU
- Semester: 2
- Course Coordinator/Lecturer: Dr. Pham Huynh Tram
  phtram@hcmiu.edu.vn

2. Number of credits: 3 credits

3. Prerequisites: None

4. Course description

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.
Number of Credits: 3
Lectures: 45 hours
Assignments & Presentations: Yes

5. Textbooks and Other Required Materials

[1] *Critical Thinking: A Student's Introduction*, 2nd ed. (Bassham, Irwin, Nardone, and Wallace).

and Reference:

[2] *Critical Thinking*, 9 th ed. (B. N. More, R. Parker)
Web:http://highered.mcgrawhill.com/sites/0072879599/student_view0/chapter1/multiple_choice_quiz.html

6. Course objectives/Course learning outcomes

No.	Course Objectives	Program Learning outcomes
1	Apply the standards of critical thinking to evaluate arguments.	(d) an ability to function on multidisciplinary teams (g) an ability to communicate effectively (i) a recognition of the need for, and an ability to engage in life-long learning
2	Understand the barriers to critical thinking and apply deductive and inductive reasoning	
3	Understand the various types of fallacies	

7. Course Outline

Class	Content	Activities
1	- Discuss Syllabus and Course - Introductions of Students and Teachers - What'sThinking: creative thinking, critical thinking. - What is critical thinking - Critical thinking standards Clarity Precision Accuracy Relevance Consistency Logical correctness Completeness Fairness - The benefits of critical thinking	Read Chapter 1 - Lecture
2	- Barriers to critical thinking Egocentrism Sociocentrism Unwarranted assumption and stereotypes Relativistic thinking Wishful thinking - Characteristics of a critical thinker	Chapter 1 - Discussion
3	ReadRecognizing arguments - What is an argument? - Identifying premises and conclusions - What is not an argument? Report Unsupported Assertions Conditional Statements Illustrations Explanations	Read Chapter 2/Lecture
4	Basic logical concepts Deduction and Induction How can we tell whether an argument is deductive or inductive? Common patterns of deductive reasoning Common patterns of inductive reasoning	Read Chapter 3/Lecture
5	Deductive validity	Chapter 3

Class	Content	Activities
	Inductive strength	Discussion - Lecture
6	Categorical logic Categorical statements Translating into standard categorical form Categorical syllogism	Read Chapter 9/Lecture/Quiz
7	Propositional logic Conjunction Conjunction and validity Negation Disjunctions Conditional statements	Read Chapter 10/Lecture & Quiz
Midterm Exam		
8	Language Finding the right words: the next for precision The important of precise definitions + Exercise	Chapter 4 - Lecture
9	Logical fallacies I The concept of relevance Personal attack Attacking the motive Look who's talking Two wrongs make a right Scare tactics Appeal to pity Bandwagon Argument Straw man Red herring Equivocation Begging the question	Chapter 5 – Lecture & Discussion
10	Logical fallacies Fallacies of insufficient evidence Inappropriate appeal to authority Appeal to ignorance False Alternatives Loaded question Questionable cause Hasty generalization Slippery slope	Chapter 6 – Lecture/Quiz

Class	Content	Activities
	Weak analogy Inconsistency	
11	Analyzing arguments Diagram short arguments Summarizing longer arguments	Chapter 7 – Lecture
12	Evaluating arguments and truth claims: What is an argument, a good one? When is it reasonable to accept a premise? Refuting arguments Sample critical essay	Chapter 8 – Lecture
13	Inductive reasoning Introduction to induction Inductive generalization Statistics arguments Induction analogy Induction and causal arguments A few words about probability	Chapter 11 – Lecture & Discussion
14	Finding, Evaluating, and Using sources Finding sources Evaluating sources Taking notes Using sources	Chapter 12 – Lecture & Quiz
15	Review	
Final exam		

8. Course Assessment Policy

- ► Mid-term exam: 30%
- ► Assignments: 30%
- ► Final Exam: 40%

Total: 100%

9. Course general requirements

Students are expected to spend at least **8 hours** per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

WRITING AE1

1. **General Information**
   - Course Title: Writing AE1 (Tiếng Anh chuyên ngành 1: Kỹ năng viết)
   - Course Code: EN007IU
   - Semester: 1
   - Course Coordinator/Lecturer: Dept. of English
2. **Prerequisites**: Writing IE2 completion
3. **Course description**

   This course provides students with comprehensive instructions and practice in essay writing, including transforming ideas into different functions of writing such as process description, cause-effect, comparison-contrast, argumentative, and paraphrase-summary 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, proofreading, documentation and editing, this course prepares the students for research paper writing in the next level of AE2 writing.
4. **Textbooks and Other Required Materials**

   Textbook:

   Oshima, A., & Hogue, A. (2006). *Writing academic English* (4rd ed.) White Plains, NY: Pearson Longman.

   Reference:

   Jordan, R. R. (1999). *Academic writing course* (3rd ed.). London: Collins.

   Hamp-Lyons, L., & Heasley, B. (2006). *Study writing: A course in writing skills for academic purposes* (2nd ed.). Cambridge: University Press.
5. **Course Expected Learning Outcomes**

After successfully completing this course, students should be able to:

No.	Course Objectives	Program Learning outcomes
1	Understand and follow different steps in the writing process to produce a complete essay	(i) a recognition of the need for, and an ability to engage in life-long learning
2	Improve their writing through self-assessment, peer's feedback and teacher's comments	
3	Use different functions of writing to successfully communicate their purposes to the audience (process description, cause-effect, comparison-	

No.	Course Objectives	Program Learning outcomes
	contrast, argumentative, and paraphrase-summary essays	
4	Read and respond critically in writing, analyze and annotate an academic text.	

6. Course outline

Week	No. of periods	Coursebook		Assignments
		Chapter	***Pages***	
1	2	**The process of Academic Writing** Step 1: Creating (Prewriting) Step 2: Planning (Outlining) Step 3: Writing Step 4: Polishing	265-277	Editing Practice
2	2	**From Paragraph to Essay** The introductory paragraph Body paragraphs The concluding paragraph	56 - 80	
3	2	**From Paragraph to Essay (Cont'd)** Essay outlining Review Writing Practice Reading (Questions & Suggestions for Discussion or Writing)		
4	2	**Process Essays** Thesis statements for process essay Transitional signals Writing Practice		*Sentence Structure* (**P. 179-193**) *Making an outline*
5	2	**Process Essays (Cont'd)** Review/ Correction Reading 2 (Questions & Suggestions for Discussion or Writing)	81-93	***In-class Assignment*** **Reading 1** (Questions & Suggestions for Writing **P.89-91**)

6	2	**Cause – Effect Essays** Organization Signal words and phrases Writing Practice	94-110	
7	2	**Cause – Effect Essays (Cont'd)** Review/ Correction Reading (Questions & Suggestions for Discussion or Writing)		
MID-TERM EXAMINATION				
8	2	**Comparison – Contrast Essays** Organization Signal words Writing Practice	111 - 126	
9	2	**Comparison – Contrast Essays (Cont'd)** Review Peer correction/ Self assessment		***Home Assignment*** **Reading** (Questions & Suggestions for Writing **P. 124-126**)
10	2	***Paraphrase and Summary*** Paraphrasing Plagiarism and How to avoid Plagiarism	127 – 141	*Paraphrasing Practice*
11		***Paraphrase and Summary (Cont'd)*** Review/ Correction Summarizing		*Summarizing Practice*
12	2	**Argumentative Essays** Organization The introductory paragraph Writing Practice	142-160	
13	2	**Argumentative Essays (Cont'd)** Review/Correction Topic 1 – Reading 1 & 2 (Questions)		***Writing Project*** **(home assignment)** Paraphrasing & Argumentative Essay Writing
14		**Argumentative Essays** **Project Presentation**		**Discussion**
15		**Review**		

FINAL EXAMINATION

7. Course Assessment Policy

Assessment Summary

► Mid-term exam:	30%
► Assignments:	30%
► Final Exam:	40%
Total:	100%

Writing Project: Students are asked to work in a small group (up to 5 students), and are supposed to search for one argumentative article, then paraphrase, and write one counter-argumentative essay. The project should be at least 5-page long including the front cover page (students' names & IDs, instructor's name, title), original article, paraphrasing, the counter-argument, and the back cover page (including source).

Bonus points *for students' participation and homework completion: From 1 to 5 pts added to the assignments score.*

For example: Student A has got a 78 for his assignments and he participated fully in all activities, then the instructor can decide to give him a bonus 5. As a result, he may gain an 83 (78+5) score for the No.1 assessment task.

Passing Grade: 50%

8. Course general requirements

Attendance

Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.

Missed Tests

Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may retake the examination.

Class Behaviors

Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE1 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below:

- Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.
- Participate fully and constructively in all course activities and discussions (if any).

- Display appropriate courtesy to all involved in the class.
- Provide constructive feedback to faculty members regarding their performance.

Plagiarism

Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination.

Writing Center (Room 509)

Students are encouraged to visit the Writing Center to schedule an appointment for additional help with essay writing.

LISTENING AE1

1. **General Information**
   - Course Title: Listening AE1 *(Tiếng Anh chuyên ngành 1: Kỹ năng nghe)*
   - Course Code: EN008IU
   - Semester: 1
   - Course Coordinator/Lecturer: Dept. of English
2. **Prerequisites**: TOEFL iBT $\geq$ 61
3. **Number of credits: 2 credits**
4. **Course description**

   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.

5. **Textbooks and Other Required Materials**

   Textbook:

   Lecture Ready 3 – Laurie Frazie, Shalle Leming, Oxford University Press, 2007

   Reference:

   Lecture Ready1, 2f;a – Laurie Frazie, Shalle Leming, Oxford University Press

6. **Course objectives/Course learning outcomes:** Upon completion of the course, students are able to:

No.	Course Objectives	Program Learning outcomes
1	Respond to academic lectures with appropriate strategies and confidence;	(i) A recognition of the need for, and an ability to engage in life-long learning
2	Improve their specialized knowledge of academic lectures;	
3	Communicate effectively with their classmates and professors.	

7. **Course outline**

WEEK	P.	Chapter	Listening oriented activities	Speaking oriented activities
WEEK 1	2	ORIENTATION		
WEEK 2	2	**Unit 1** **New Trends in Marketing Research**	Recognizing topic introducing and lecture plan presenting expressions Organizing ideas by outlining	Expressing ideas during a discussion
WEEK 3	2	**Unit 2** **Business Ethics**	Recognizing transition expressions Using symbols and abbreviations	Asking for clarification and elaboration during a discussion
WEEK 4	2	**Unit 3** **Trends in Children's Media Use**	Recognizing generalization and support expressions	Giving opinions and asking for opinions during a discussion
WEEK 5	2	WRAP-UP AND REVIEW		
WEEK 6	2	**Unit 4** **The Changing Music Industry**	Recognizing expressions for clarification or emphasis Organizing notes by using a split-page format	Expressing interest and asking for elaboration during a discussion
WEEK 7	2	**Unit 5** **The Placebo Effect**	Recognizing cause and effect expressions Noting causes and effects	Agreeing and disagreeing during a discussion
WEEK 8	2	WRAP-UP AND REVIEW		
MID-TERM EXAMINATION				

WEEK 9	2	**Unit 6** **Intelligent Machines**	Recognizing expressions used to predict causes and effects Using arrows to show the relationship between causes and effects	Learning to compromise and reach a consensus during a discussion
WEEK 10	2	**Unit 7** **Sibling Relationships**	Recognizing expressions of comparison and contrast Noting comparison and contrast	Expanding on ideas during a discussion
WEEK 11	2	**Unit 8** **Multiple Intelligences**	Recognizing non-verbal signals indicating important information Representing information in list form	Keeping the discussion on topic
WEEK 12	2	WRAP-UP AND REVIEW		
WEEK 13	2	**Unit 9** **The Art of Graffiti**	Recognizing expressions of definition Reviewing and practicing all note taking strategies	Indicating to other when preparing to speak or pausing to collect thoughts
WEEK 14	2	**Unit 10** **Design Basics**	Recognizing expressions of citations: paraphrases and quotations Reviewing and practicing all note taking strategies	Supporting ideas through paraphrasing and quoting others
WEEK 15	2	WRAP-UP AND REVIEW		
FINAL EXAMINATION				

8. Course Assessment Policy

No.	*Assessment Task*	*Scoring*	*Weighting*
1	Class participation (individual work, group work, presentations, etc)	Out of 100	20%
2	In-class ongoing assessment	Out of 100	40%
3	Final Exam	Out of 100	40%

Studying activity organization:

(a) Preparation activities: aim to activate students' current knowledge of the topic, and to provide them with lecture language and effective strategies in listening and note-taking to prepare themselves for the coming lecture. These activities include reading, discussing and reviewing what they have learned from the reading.

(b) While-and post-listening activities: are intended to enable students to put their newly activated knowledge and the acquired strategies into work by taking notes on the lecture, using the outline given by the teacher or prepared by themselves. They are later on asked to assess their understanding based on their notes and discuss them with their classmates. Finally, as an optional activity, depending on time and students' needs, students are asked to summarize the lecture.

(c) Follow-up activities: students are required to discuss the lecture topic and to prepare arguments for or against the topic in the debate. The purpose is to enhance students' comprehension of the lecture, and to allow them to put their acquired academic language into practice, and to experience the atmosphere of a university lecture class.

(d) Wrap-up and review week: After two or three weeks, there is a wrap-up and review week in which instructors and students will review the foci of the previous units and work on their residue.

9. Course general requirements

Attendance

Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.

Missed Tests

Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may retake the examination.

Class Behaviors

Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE1 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below:

- Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.
- Participate fully and constructively in all course activities and discussions (if any).
- Display appropriate courtesy to all involved in the class.
- Provide constructive feedback to faculty members regarding their performance.

WRITING AE2

1. General Information

- Course Title: Writing AE2 (Tiếng Anh chuyên ngành 2: Kỹ năng viết)
- Course Code: EN011IU
- Semester: 2
- Course Coordinator/Lecturer: Dept. of English

2. Prerequisites: Writing AE1

3. Number of credits: 2 credits

4. Course description

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.

As writing is part of an integrated skill of reading and writing where reading serves as input to trigger writing, this course is designed to familiarize non-native students with academic literature in their major study by having them read and critically respond to texts of a variety of topics ranging from natural sciences such as biology to social sciences and humanities like education, linguistics and psychology.

5. Textbooks and Other Required Materials

Textbook:

Hamp-Lyons, L. and B. Heasley (2006). Study Writing. Cambridge, UK: Cambridge University Press.

Reference:

Keezer, S. (ed) (2003). *Write your research report. A real-time guide*. New Jersey: Pearson Learning Group.

Articles and Essays taken from *The Allyn and Bacon Guide to Writing* by Ramage et al (2009), Pearson Longman.

6. Course objectives/Course learning outcomes

No.	Course Objectives	Program Learning outcomes

	To employ the research writing skills obtained to work on their own paper in their major study.	(i) A recognition of the need for, and an ability to engage in life-long learning

7. Course outline

WEEK	CONTENT—SUGGESTED TASKS (SMALL GROUPS)	ASSIGNMENT/ HOMEWORK
1	**Orientation of the Course** **Unit 1: The Academic Writing Process** **Introduction**	
2	**Unit 1: The Academic Writing Process (Cont.)** Thinking about writing processes Distinguishing between academic and personal styles of writing Grammar of academic discourse	HW: Task 10
3	**Unit 2: Researching and Writing** Recognizing categories and classification The language of classification The structure of a research paper	HW: Task 17
4	**Unit 3: Fundamentals & Feedback** Exploring comparison and contrast structures The language of comparison and contrast Using comparisons and contrasts to evaluate and recommend	HW: Task 12
5	**Unit 3: Fundamentals & Feedback (Cont.)** The research paper Identifying a research gap The writing process	**Assignment 1:** **Task 20**
6	**Unit 4: Definitions, Vocabulary & Clarity** The clarity principle The language of definition The place of definition The writing process	HW: Task 15
7	**Unit 5: Generalizations, Facts and Honesty** Honesty principle The language of generalization	HW: Task 13
MID-TERM EXAMINATION		

8	**Unit 5: Generalizations, Facts and Honesty (Cont.)** Writing a literature review The writing process	HW: Task 15

	Brainstorming and clustering	
9	**Unit 6: Seeing Ideas and Sharing Texts** Writing about events in time Connecting events Learning about peer reviews	HW: Tasks 12 & 13
10	**Unit 7: Description, Methods & Reality** Describing processes and products The language for writing about processes Writing the Methods section Giving and getting formal peer feedback	HW: Tasks 9 & 11
11	**Unit 8: Results, Discussion & Relevance** What is an argument? The language of argument The Results and Discussion sections Finding an academic voice	HW: Task 9
12	**Unit 9: The Whole Academic Text** S-P-S-E: Focus on structure S-P-S-E in the introduction The language of coherence and connection Teacher evaluation	HW: Task 9
13	**Unit 10: Creating the Whole Text** Structure of the research paper Creating your own research	**Assignment 2: Tasks 11 &12**
14	**Unit 10: Creating the Whole Text** Plagiarism Creating citations Paraphrase and summary Authorial identity	
15	**Course Review**	
FINAL EXAM		

8. Course Assessment Policy

Regular on-time attendance in these courses is expected. Students may miss only 4 classes without penalty. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.

- ► Mid-term exam: 25%
- ► Assignments: 25%
- ► Final Exam: 50%

Total:	100%

9. Course general requirements

Attendance

Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.

Missed Tests

Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may retake the examination.

Class Behaviors

Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE1 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below:

- Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.
- Participate fully and constructively in all course activities and discussions (if any).
- Display appropriate courtesy to all involved in the class.
- Provide constructive feedback to faculty members regarding their performance.

Plagiarism

Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination.

Writing Center (Room 509)

Students are encouraged to visit the Writing Center to schedule an appointment for additional help with essay writing.

SPEAKING AE2

1. **General Information**
   - Course Title: Speaking AE2 (Tiếng Anh chuyên ngành 2: Kỹ năng nói)
   - Course Code: EN012IU
   - Semester: 2
   - Course Coordinator/Lecturer: Dept. of English
2. **Prerequisites**: Placement into Speaking AE2 is by TOEFL iBT score (above 60)
3. **Number of credits: 2** credits
4. **Course description**

   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 a presentation: preparing and planning, using the appropriate language, applying effective visual aids, building up confidence, performing body language, dealing with questions and responding, etc.

5. **Textbooks and Other Required Materials**

   Textbook:

   Effective Presentations - Jeremy Comfort, Oxford University Press, 1997

   Reference:

   Study Speaking: a course in spoken English for academic purposes - By Kenneth Anderson, Joan Maclean, Tony Lynch - Cambridge University Press (2004)

6. **Course objectives/Course learning outcomes**

No.	Course Objectives	Program Learning outcomes
	To prepare and deliver effective, formal, structured presentations that are appropriate to the specific environment and audience.	(i) A recognition of the need for, and an ability to engage in life-long learning

7. **Course outline**

WEEK	MATERIAL COVERED	ACTIVITY

WEEK 1	ORIENTATION & INTRODUCTION	Students will receive an introduction to Effective Public Speaking. Students will select a topic for Mid-term examination.
WEEK 2	BUILDING UP CONFIDENCE	Student will give a short speech about themselves to help them overcome initial shyness of standing up and speaking in public
	EFFECTIVE PRESENTATIONS **Unit 1: What is the Point?** Pages 6-11 Video clip Handouts: - Pages 32-34 (Teacher's book) - Page 11 (Student book)	Students will watch and discuss a poor presentation and will practice giving presentations in groups of four. Time permitting selected students will present to the class.
	EFFECTIVE PRESENTATIONS **Unit 2: Making a Start** Pages 12-17 Video clip Handouts: - Page 35 (Teacher's book) - Page 17 (Student book)	Students will see and discuss a video of poor and good versions of an introduction, and will practice giving introductions to speeches in groups of four.
	EFFECTIVE PRESENTATIONS **Unit 3: Linking the Parts** Pages 18-23 Video clip Handouts: - Pages 36-37 (Teacher's book) - Page 22 (Student book)	Students will watch and discuss a video of poor and good versions of transitions, and practice giving short speeches in groups of six. Time permitting selected students will present to the class.

	EFFECTIVE PRESENTATIONS **Unit 7: Finishing Off** Pages 40-43 Video clip Handouts: - Pages 44-45(Teacher's book)	Students will watch and discuss a video showing good and poor closings and will practice giving endings to presentations in groups of three. Time permitting students will also practice their mid-term presentation in their groups
WEEK 7	PRACTICE PRESENTATIONS 1	Students will prepare and deliver a short presentation on one of the topics chosen by the instructor. Time permitting selected students will present to the class.
MIDTERM EXAMINATION Students will give a five to six minute informative presentation to be determined.		
	EFFECTIVE PRESENTATIONS **Unit 4: The Right Kind of Language** Pages 24-29 Video clip Handouts: - Pages 38-39(Teacher's book) - Pages 74-74 (Student book)	Students will watch and discuss a video of an individual reading a research report and giving a presentation, will discuss advantages and disadvantages of reading a speech, and will learn how to analyze text to determine complexity level. Time permitting students will work change text to more natural form (Teacher book 38,39
WEEK 9	EFFECTIVE PRESENTATIONS **Unit 5: Visual Aids** Pages 30-35 Video clip Handouts: - Pages 40-42 (Teacher's book) - Page 35 (Student book)	Students will view and discuss a video showing use of good and poor visual aids, and practice giving presentations using visual aids in groups of four. Time permitting selected students will present to the class.

WEEK 10	REPORTING CHANGE	Students will practice using the vocabulary to describe reporting changes in organizations (profit, sales, revenue, cost) and explaining why these changes occurred. Students will practice giving presentations in groups of eight. Time permitting selected students will present to the class.
WEEK 11	EFFECTIVE PRESENTATIONS **Unit 6: Body Language** Pages 36-39 Video clip Handouts: - Page 43(Teacher's book)	Students will view and discuss a video showing use of good and poor body language, and practice giving presentations in groups of four. Time permitting selected students will present to the class.
WEEK 12	EFFECTIVE PRESENTATIONS **Unit 8: Questions Time** Pages 44-49 Video clip Handouts: - Pages 46-48(Teacher's book) - Page 49 (Student book)	Students will view and discuss a video showing use of appropriate and inappropriate answering of questions, and practice giving answering questions in groups of three. Time permitting selected students will present to the class.
WEEK 13	EFFECTIVE PRESENTATIONS **Unit 9: Finishing Up** Pages 44-49 Video clip Unit 1 & Unit 9	Students will view and discuss a video showing use of good and bad presentations, and then practice giving their final presentations in their groups
WEEK 14	EXTRA SPEAKING ACTIVITIES	Example: Public debating lecture & students will debate in groups.
WEEK 15	PRACTICE PRESENTATIONS 2	Students will practice their presentation in class and be evaluated by peers

FINAL EXAMINATION

Students will deliver a seven to eight minute persuasive presentation on a topic to be determined

8. Course Assessment Policy

Regular on-time attendance in these courses is expected. Students may miss only 4 classes without penalty. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.

Assessment Summary

No.	*Assessment Task*	*Scoring*	*Weighting*
1	Extra Speaking Activities (debate, discussion, group presentation, etc.)	Out of 100	30%
3	Mid-term Exam (Students will give a five to six minute informative presentation to be determined.)	Out of 100	30%
4	Final Exam (Students will deliver a seven to eight minute persuasive presentation on a topic to be determined.)	Out of 100	40%

9. Course general requirements

Attendance

Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.

Missed Tests

Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may retake the examination.

Class Behaviors

Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Speaking AE2 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below:

- Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.
- Participate fully and constructively in all course activities and discussions (if any).
- Display appropriate courtesy to all involved in the class.

- Provide constructive feedback to faculty members regarding their performance.

Plagiarism

- Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination.

SCIENTIFIC WRITING

Instructor: Dr. Dao Vu Truong Son

1. **Name of course**: SCIENTIFIC WRITING
2. **Course code:** IS079IU
3. **Course type:**

☐ Specialization

☐ Core

☒

☐ Requirement

Elective

4. **Number of credits:** 2 credits

- Theory: 3 credits

5. **Prerequisite:** none
6. **Parallel teaching in the course:** None

7. Course Description: It aims to improve students' academic and scientific writing in English, and helps them successfully complete course reports, thesis, dissertations, and articles for publication as well as doing a proper presentation, etc. Upon completion of the course, we hope our students become more effective, more efficient, and more confident writers.

8. Course objectives: The course provides students with different concepts and requirements regarding scientific writing fields. After the course, students will be able to effectively write different components of a scientific paper, technical writing report, and students will be able to effectively communicate in both professional and academic settings.

9. **Textbooks and references:**

Textbooks:

- L.A. Krishnan, Engineering your report – from start to finish (Prentice Hall, 2003).

References: William Strunk, The elements of style (Pearson, 2010).

10. **Course Learning Outcomes**

	Course Learning outcomes	**Program Learning outcome**
Knowledge	1. Understand the fundamentals and concepts related to scientific paper, technical report writing, etc.	(i) a recognition of the need for, and an ability to engage in life-long learning

	2. Understand and apply knowledge to iterative writing different components of a scientific paper or technical report writing such as abstract, literature review, describing methods, materials and process, findings and results, and finally the conclusion.	
Skill	3. Develop poster and oral presentation skills in professional and academic settings	
Attitude	6. To develop a life-long learning attitude.	

11. Course implementation

Time: 15 weeks for theory (03 periods per week).

Teaching and learning activities

- Classroom activities: Lectures, discussions, presentations
- Self-learning: Reading, homework
- Team work: Group assignment

12. Course outline

Week	Topic
1	**Introduction to scientific paper, technical report writing** - What makes good writing? - Principles of effective writing
2	**Introducing your work** - Role of introduction - How to organize the introduction section - How to write suitable background to the study, suitable objective statement, expand the objectives and state the scope of work
3	**Literature review** - Guidelines on how to gather and collate information - What is plagiarism? How to avoid unintentional plagiarism and write the literature review successfully - How to use software for reference management

4	**Describing your method** - What are primary sources of data? - How different methods can be used for the collection of data from primary sources. - Precise methodology to allow other researchers to replicate the research as

	well as to establish the validity of the research
5	**Describing materials and processes** - Detailed description of equipment of your experiment (materials) and process involved in the operation of this equipment (process).
6	**Presenting your findings visually** - What are general formats for tables, figures, drawings, etc. - Guidelines for selecting, preparing and presenting illustrations effectively
7	Review
8	**Presenting your results** - How to report your findings. - Discuss your findings with respect to previous works.
9	**Writing your abstract** - Provide a preview of the report, it presents the most salient information from the different sections of a report.
10	**Writing your conclusion** - State whether or not the objective of the study has been met. - What can be improved in the future?
11	**Poster presentations** - Organization and formats for posters - Using Microsoft Powerpoint
12	**Oral presentation** - Designing and preparing slides for an oral presentation - Importing tables, charts and graphs from Excel - Visual aids design
13	**Review**

13. Course Assessment

13.1. Grading

- In-class quizzes, class participation and labs: 30%
- One midterm exam: 30%
- One comprehensive final exam: 40%

13.2. Assessment Plan

No.	Assessment tasks	Assessment criteria	Level of cognitive Domain												Weigh (%)
			Applying			Analyzing			Evaluating			Creating			
			MCQ	WQ	P	MCQ	WQ	P	MCQ	WQ	P	MCQ	WQ	P	
1	Homeworks Group Project	Identify and discuss a topic in IE. Provide literature review. Find possible ways to collect and analyze data.		x	x		x	x						x	30
2	**- Midterm exam**	Understand the steps of classes of scientific writing principles and practices by getting more than 50% points of the test.	x			x	x		x						30
3	**- Final exam**	Understand the steps of classes of scientific writing principles and practices by getting more than 50% points of the test.	x	x		x	x		x	x			x		40
	Total														100

Note: MCQ: Multiple choice questions ; **WQ**: Writing questions; **P**: Presentation

14. Student responsibility & Policies:

- *Student responsibility:* Students are expected to spend at least 8 hours per week self – studying. This time should be made up of reading, working on exercises and problems and group assignments.
- *Attendance:* Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- *Missed tests:* Students are not allowed to miss any of the tests (both on-going assessment and final test). There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students retake the tests.)

CALCULUS 1

Instructor: Dept. of Mathematics

1. **General Information**

   - Course Title: Calculus 1 *(Giải tích 1)*
   - Course Code: MA001IU
   - Semester: 1
   - Course Coordinator/Lecturer: Dept. of Mathematics

2. **Prerequisites**: None

3. **Number of credits: 4** credits

4. **Course description**

   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.

   Number of Credits: 4 *(Lecture: 3 ; Assignment:1 ; Lab: 0)*

   Lectures: 60 hours

   Assignments & Presentations: Yes

5. **Textbooks and Other Required Materials**

   J. Stewart, *Calculus. Concepts and Contexts*, 5th ed., Thomson Learning, 2005.

   Other textbook:

   J. Rogawski, *Calculus, Early Transcendentals*, W.H. Freeman, 2008.

6. **Course objectives/Course learning outcomes**

No.	Course Objectives	Program Learning outcomes
1	◆ To provide the main ideas and techniques of calculus, concerning limits, continuity, differentiation and integration.	(a) an ability to apply knowledge of mathematics, science and engineering (b) an ability to design and conduct experiments, as well as to analyze and
2	◆ To provide an understanding of the practical meaning, significance and applications of these ideas and techniques,	

	through practical examples taken from many areas of engineering, business and life science.	interpret data (e) an ability to identify, formulate, model and simulate and solve industrial and systems problems (i) a recognition of the need for, and an ability to engage in life-long learning
3	◆ To develop skills in mathematical modeling and problem solving, in thinking logically, and in creatively applying existing knowledge to new situations	
4	◆ To develop confidence and fluency in discussing mathematics in English.	

7. Course Outline

Class	**Content**	**Activities**
1	1.1 What is Calculus? 1.2 Straight Lines. Equations of Lines 1.3 Functions and Graphs 1.4 New Functions from Old Functions. Inverse Functions	Lecture
2	1.5 Parametric Curves 1.6 Definition of a Limit. One-sided Limits 1.7 Laws of Limits. Evaluating Limits. The Squeeze Theorem	Lecture/Homework
3	1.8 Continuity 1.9 The Intermediate Value Theorem 1.10 Limits Involving Infinity	Lectures/Homework
4	2.1 The Tangent and Velocity Problems. Rates of Change 2.2 The Derivative. Higher-Order Derivatives 2.3 Rules of Differentiation. Finding Derivatives using Maple	Lecture/Homework
5	2.4 Rates of Change in the Natural and Social Sciences 2.5 Implicit Differentiation	Lecture/Quiz
6	2.6 Differentiation of Inverse Functions 2.7 Linear Approximations. Differentials	Lecture/Homework
7	3.1 Related Rates 3.2 Maxima and Minima. Critical Points	Lecture/Quiz

	3.3 The Mean Value Theorem. The First Derivative Test. Concavity. Shapes of Curves.	
Midterm Exam		
8	3.4 Curve Sketching. Graphing with Calculus and Computers using Maple 3.5 Indeterminate Forms and l'Hôpital's Rules Maxima and Minima Problems	Lecture/Homework
9	3.1 Newton's Method Antiderivatives and Indefinite Integrals	Lecture/Homework
10	4.1 Areas under Curves and Distances 4.2 The Definite Integral 4.3 Properties of the Definite Integral. 4.4 The Fundamental Theorem of Calculus	Lecture/Homework
11	4.5 Integration by Substitution 4.6 Integration by Parts 4.7 Additional Techniques of Integration. Partial Fractions	Lecture/Homework
12	4.8 Integration Using Bångs and Computer Algebra Systems 4.9 Numerical Integration 4.10 Improper Integrals	Lecture
13	5.1 Areas between Curves 5.2 Areas Enclosed by Parametric Curves 5.3 Volumes	
14	5.4 Arc Length 5.5 Average Value of a Function	Lecture/Homework
15	5.6 Applications to Engineering, Economics and Science	Lecture/Homework
Final Examination		

8. Course Assessment Policy

- ► Mid-term exam: 30%
- ► Assignments: 30%
- ► Final Exam: 40%

Total: 100%

9. Course general requirements

Students are expected to spend at least **8 hours** per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

CALCULUS 2

Instructor: Dept. of Mathematics

1. General Information

- Course Title: Calculus 2 *(Giải tích 2)*
- Course Code: MA003IU
- Semester: 2
- Course Coordinator/Lecturer: Dept. of Mathematics

2. Prerequisites: None

3. Number of credits: 4 credits

4. Course description

Sequence and Series; Convergence Tests; Power Series; Taylor and Maclaurin Series; Cartesian Coordinates; Lines, Planes and Surfaces; Derivatives and Integrals of Vector Functions, Arc Length and Curvature, Parametric Surfaces; Functions of Several Variables; Limits, Continuity, Partial Derivatives, Tangent Planes; Gradient Vectors; Extrema; Lagrange Multipliers; Multiple Integrals: Double Integrals, Triple Integrals, Techniques of Integration; Vector Fields, Line Integrals, Surface Integrals.

Number of

Credits: 4

Lectures: 60

hours

Assignments & Presentations: Yes

5. Textbooks and Other Required Materials

Main documents:

1. J. Rogawski, *Calculus, Early Transcendentals*, W. H. Freeman, 2008.

2. J. Stewart, *Calculus. Concepts and Contexts*,Thomson Learning, 5fth edition,

2005. References:

1. R. Adams, Calculus. A Complete Course, Addison-Wesley, 1991.

2. R.N. Greenwell, N.P. Ritchey, and M.L. Lial, Calculus with Applications for the Life Science, Addition Wesley, 2002.

3. M.L. Lial, R.N. Greenwell, and A.D. Miller, Calculus with

Applications, Addition Wesley, 1998.

6. Course objectives/Course learning outcomes

No.	Course Objectives	Program Learning outcomes
	To provide 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.	(a) an ability to apply knowledge of mathematics, science and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret data (e) an ability to identify, formulate, model and simulate and solve industrial and systems problems (i) a recognition of the need for, and an ability to engage in life-long learning

7. Course Outline

Class	Content	Activities
1	1.1 Sequences 1.2 Series 1.3 The Integral and Comparison Tests; Estimating Sums	Lecture
2	1.4 Other Convergence Tests 1.5 Power Series 1.6 Representations of Functions as Power Series	Lecture/Homework
3	1.7 Taylor & Maclaurin Series 1.8 Applications of Taylor Polynomials	Lectures/Homework
4	2.1 Euclidean n-Space and Cartesian Coordinates 2.2 Vectors in 3-Spaces 2.3 The Dot Product and Applications 2.4 The Cross Product and Applications	Lecture/Homework
5	2.5 Lines, Planes, and Surfaces 2.6 Cylindrical & Spherical Coordinate Systems	Lecture/Quiz

Class	Content	Activities
6	2.7 Vector Functions and Space Curves 2.8 Parametric Surfaces	Lecture/Homework
7	3.1 Functions of Several Variables 3.2 Limits and Continuity	Lecture/Quiz
Midterm Exam		
8	3.3 Partial Derivatives 3.4 Tangent Planes and Linear Approximations 3.5 The Chain Rule	Lecture/Homework
9	3.6 Directional Derivatives and Gradient Vectors 3.7 Maximum and Minimum Values 3.8 Lagrange Multipliers	Lecture/Homework
10	4.1 Double Integrals over Rectangular Regions 4.2 Iterated Integrals 4.3 Double Integrals over General Regions	Lecture/Homework
11	4.4 Double Integrals in Polar Coordinates 4.5 Applications of Double Integrals 4.6 Surface Area	Lecture/Homework
12	4.7 Triple Integrals 4.8 Triple Integrals in Cylindrical and Spherical Coordinates	Lecture
13	5.1 Vector Fields 5.2 Line Integrals 5.3 The Fundamental Theorem of Line Integrals	
14	5.4 Green's Theorem 5.5 Curl and Divergence	Lecture/Homework
15	5.6 Surface Integrals 5.7 Stokes' Theorem and Divergence Theorem	Lecture/Homework
Final Examination		

8. Course Assessment Policy

► Mid-term exam:	20%
► Assignments:	20%
► Final Exam:	60%
Total:	100%

9. Course general requirements

Students are expected to spend at least **8 hours** per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

PHYSICS 1

Course Coordinator/Lecturer: Dept. of Physics

1. General Information

- Course Title: PHYSICS 1 *(Vật lý 1)*
- Course Code: PH013IU
- Semester: 1
- Course Coordinator/Lecturer: Dept. of Physics

2. Number of credits: 2 credits

3. Prerequisites: None

4. Course description

Survey kinetics, dynamics, energetics of motion of the solid substance and point. Survey fluid dynamics and characteristics of an ideal gas, and the principles of thermodynamics.
Number of Credits: 2
Lectures: 30 hours
Assignments & Presentations: Yes

5. Textbooks and Other Required Materials

Halliday D., Resnick R. and Merrill, J. (1988). Fundamentals of Physics.Extended third edition.John Willey and Sons, Inc.

Alonso M. and Finn E.J. (1992).Physics. Addison-Wesley Publishing

Company Hecht, E. (2000). Physics.Calculus.Second Edition.Brooks/Cole.

Faughn/Serway (2006). Serway's College Physics. Thomson Brooks/Cole.

6. Course objectives/Course learning outcomes

No.	Course Objectives	Program Learning outcomes
1	● Know and understand basic physical processes and phenomena.	(a) an ability to apply knowledge of mathematics, science and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret data (e) an ability to identify, formulate, model and simulate and solve industrial and systems problems
2	● Solve basic physics problems by applying both theoretical and experimental techniques.	
3	● Understand and acquire skills	

No.	Course Objectives	Program Learning outcomes
	needed to use physical laws governing real processes and to solve them in the engineering environment.	(i) a recognition of the need for, and an ability to engage in life-long learning

7. Course Outline

Class	Topic	Activities
1	**Bases of Kinematics** ● **Motion in One Dimension** Position, Velocity, and Acceleration One-Dimensional Motion with Constant Acceleration Freely Falling Objects	**Read Chapter 1 - Lecture**
2	● **Motion in Two Dimensions** The Position, Velocity, and Acceleration Vectors Two-Dimensional Motion with Constant Acceleration. Projectile Motion Circular Motion. Tangential and Radial Acceleration Relative Velocity and Relative Acceleration	**Chapter 1 – Lecture/Homework**
3	**The Law of Motion** Newton's First Law and Inertial Frames Newton's Second Law Newton's Third Law	**Read Chapter 2**
4	**The Law of Motion** Some Applications of Newton's Laws The Gravitational Force and Weight Forces of Friction Uniform Circular Motion and Nonuniform Circular Motion Motion in the Presence of Resistive Forces Motion in Accelerated Frames	**Chapter 2 – Lecture/Quiz**

Class	Topic	Activities
5	**Work and Mechanical Energy** Work Done by Force. Power Kinetic Energy and Work. Kinetic Energy Theorem	**Read Chapter 3**
6	**Work and Mechanical Energy** Potential Energy of a System Conservation of Mechanical Energy Conservative and Non-conservative Forces	**Chapter 3 – Lecture/Homework**
7	**Work and Mechanical Energy** Changes in Mechanical Energy for Non-conservative Forces Relationship Between Conservative Forces and Potential Energy	**Chapter 3-Lecture/Quiz**
Midterm Exam		
8	**Linear Momentum and Collisions** Linear Momentum and Its Conservation Impulse and Momentum Collisions in One Dimension and Two-Dimensional Collisions	**Read Chapter 4**
9	**Linear Momentum and Collisions** The Center of Mass. Motion of a System of Particles Rocket Propulsion	**Chapter 4 – Lecture**
10	**Rotation of a Rigid Object About a Fixed Axis** Rotational Kinematics: Rotational Motion with Constant Angular Acceleration Torque and Angular Acceleration Moments of Inertia	**Read Chapter 5**
11	**Rotation of a Rigid Object About a Fixed Axis** Rotational Kinetic Energy Rolling Motion of a Rigid Object Angular Momentum of a Rotating Rigid Object Conservation of Angular Momentum	**Chapter 5 – Lecture/Homework**
12	**Static Equilibrium** The Conditions for Equilibrium	**Read Chapter 6**

Class	Topic	Activities
13	**Static Equilibrium** The Center of Gravity	**Chapter 6 Lecture/Quiz**
14	**Universal Gravitation** Newton's Law of Universal Gravitation Kepler's Laws and the Motion of Planets	**Chapter 7 – Lecture**
15	**Universal Gravitation** The Gravitational Field and Gravitational Potential Energy	**Chapter 7 – Lecture/Homework**
Final Exam		

8. Course Assessment Policy

► Mid-term exam:	30%
► Assignments:	30%
► Final Exam:	40%
Total:	100%

9. Course general requirements

Students are expected to spend at least **8 hours** per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

PHYSICS 2

Course Coordinator/Lecturer: Dept. of Physics

1. **Name of course**: PHYSICS 2 (FLUID MECHANICS AND THERMAL PHYSICS)
2. **Course code:** PH014IU
3. **Course type:**

   General ☒

   Requirement

   Course

   ☐ Elective Course
4. **Number of credits:** 2 credits
   - Theory: 2 credits
   - Practice: 0 credit
5. **Prerequisite:** No
6. **Parallel teaching in the course:** No
7. **Course Description:**

This course provides students with basic knowledge of fluid mechanics; macroscopic description of gasses; heat and the first law of thermodynamics; heat engines and the second law of thermodynamics; microscopic description of gasses and the kinetic theory of gasses.

8. **Course objectives/Course learning outcomes:**

No.	Course Objectives	Program Learning outcomes
1	Construct the basic knowledge of Fluid Mechanics and Thermal Physics	(a) An ability to apply knowledge of mathematics, science, and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret (e) An ability to identify, formulate, model and simulate and solve engineering (i) a recognition of the need for, and an ability to engage in life-long learning
2	Solve problems in engineering environment by applying both theoretical and experimental techniques	

3	Understand and acquire skills needed to use physical laws governing real process and to solve them in the engineering environment	
4	Develop confidence and fluency in discussing Physics in English.	

9. Textbooks and references:

Textbooks :

- Halliday D., Resnick R. and Walker, J. (2011) *Fundamentals of Physics*, 9th edition, John Willey and Sons, Inc.

References:

- Alonso M. and Finn E.J. (1992) *Physics,* Addison-Wesley Publishing Company.
- Hecht, E. (2000) *Physics: Calculus,* 2nd edition, Brooks/Cole.
- Faughn/Serway (2006) *Serway's College Physics*, Thomson Brooks/Cole.

10. Course implementation

Time: 15 Weeks; 2 Periods per week

Teaching and learning activities

- Classroom activities: Lectures, discussions, presentations
- Self-learning: Reading, homework
- Team work: Assignment

11. Course outline

Week	Topics	Chapter
1	- Variation of Pressure with Depth	**Chapter 1: Fluid Mechanics**
2	- Fluid Dynamics - Bernoulli's Equation	
3	- Temperature and the Zeroth Law of Thermodynamics - Ideal Gas	**Chapter 2: Macroscopic Description of An Ideal Gas**
4	- Experimental Laws of an Ideal Gas	
5	- Equation of State for an Ideal Gas	
6	- Thermal Expansion of Solids and Liquids. - Heat and Internal Energy	**Chapter 3: Heat and The First Law of Thermodynamics**
7	- Heat Capacity and Specific Heat. Phase	

	Change. Latent Heat - Heat Transfer : Convection, Conduction, and Radiation	
8	- Work and Heat in Thermodynamic Processes - The First Law of Thermodynamics. Some Applications.	
9	- Reversible and Irreversible Processes	**Chapter 4: Heat Engines and the Second Law of Thermodynamics**
10	- The Carnot Engine	
11	- Entropy. Entropy Changes in Irreversible Processes	
12	- Molecular Model of an Ideal Gas - Molar Specific Heat of an Ideal Gas	**Chapter 5: The Kinetic Theory of Gasses**
13	- Adiabatic Processes for an Ideal Gas - The Equipartition of Energy	
14	- The Boltzmann Distribution Law - Distribution of Molecular Speeds	
15	- Mean Free Path - Entropy on a Microscopic Scale	

12. Course Assessment:

Grading:

- Assignment: 20%
- Midterm Test: 20%
- Final Exam: 60%

13. Policies:

- *Attendance:* Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- *Student responsibility:* Students are expected to spend at least 8 hours per week self – studying. This time should be made up of reading, working on exercises and problems and group assignments.
- *Missed tests:* Students are not allowed to miss any of the tests (both on-going assessment and final test). There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students retake the tests.)

PHYSICS 3

Course Coordinator/Lecturer: Dept. of Physics

1. **Name of course**: PHYSICS 3 (ELECTRICITY AND MAGNETISM)
2. **Course code:** PH015IU
3. **Course type:**

   General ☒

   Requirement

   Course

   ☐ Elective Course
4. **Number of credits:** 3 credits
   - Theory: 3 credits
   - Practice: 0 credit
5. **Prerequisite:** Basic Mathematical Analytics, Physics 1, High school Physics
6. **Parallel teaching in the course:** No
7. **Course Description:**

This course provides students with basic knowledge of electricity and magnetism.

8. **Course objectives/Course learning outcomes:**

No.	Course Objectives	Program Learning outcomes
1	Construct the basic knowledge of electricity and magnetism such as electric charge, electric potential, magnetic fields, electromagnetic waves,…	a) An ability to apply knowledge of mathematics, science, and engineering
2	Solve problems in engineering environment by applying both theoretical and experimental techniques	(b) an ability to design and conduct experiments, as well as to analyze and interpret
3	Understand and acquire skills needed to use physical laws governing real process and to solve them in the engineering environment	(e) An ability to identify, formulate, model and simulate and solve engineering
4	Develop confidence and fluency in discussing physics in English.	(i) a recognition of the need for, and an ability to engage in life-long learning

9. Textbooks and references:

- Halliday D., Resnick R. and Walker, J. (2011) *Fundamentals of Physics*, 9th edition, John Willey and Sons, Inc.
- Alonso M. and Finn E.J. (1992) *Physics*, Addison-Wesley Publishing Company.
- Hecht, E. (2000) *Physics: Calculus,* 2nd edition, Brooks/Cole.
- Faughn/Serway (2006) *Serway's College Physics*, Thomson Brooks/Cole.

10. Course implementation

Time: 45 Weeks; 2 Periods per week

Teaching and learning activities

- Classroom activities: Lectures, discussions, presentations
- Self-learning: Reading, homework
- Team work: Assignment

11. Course outline

Week	Topics	Chapter
1	- Properties of Electric Charges - Conductors and Insulators - Coulomb's Law	**Chapter 1: Electric Fields**
2	- The Electric Field. Electric Field Lines - Electric Field of a Continuous Charge Distribution - Electric Flux. Gauss' Law	
3	- Conductors in Electrostatic Equilibrium - Motion of Charged Particles in a Uniform Electric Field	
4	- Potential Difference and Electric Potential - Potential Difference in a Uniform Electric Field - Electric Potential and Potential Energy Due to Point Charges - Electric Potential Due to Continuous Charge Distributions	**Chapter 2: Electric Energy and Capacitance**
5	- Electric Potential of a Charged Isolated Conductor - Capacitance. Combinations of Capacitors	

	- Energy Stored in a Charged Capacitor - Capacitors with Dielectrics	
6	- Electric Current - Resistance and Ohm's Law - A Model for Electrical Conduction	**Chapter 3 Current and Resistance. Direct Current Circuits**
7	- Resistance and Temperature - Superconductors - Electrical Energy and Power	
8	- Electromotive Force - Resistors in Series and in Parallel - Kirchhoff's Rules - *RC* Circuits	
9	- The Magnetic Field - Magnetic Force Acting on a Current-Carrying Conductor - Torque on a Current Loop in a Uniform Magnetic Field - Motion of a Charged Particle in a Uniform Magnetic Field - The Hall Effect - The Biot–Savart Law - Ampère's Law	**Chapter 4: Magnetism**
10	- The Magnetic Field of a Solenoid - Magnetic Flux. Gauss's Law in Magnetism - Displacement Current and the General Form of Ampère's Law - Magnetism in Matter - The Magnetic Field of the Earth - Motional emf - Lenz's Law	
11	- Faraday's Law of Induction - Induced emf and Electric Fields - Self-Inductance	**Chapter 5: Electromagnetic Induction**
12	- *RL* Circuits - Energy in a Magnetic Field - Mutual Inductance	
13	- AC Sources and Phasors	**Chapter 6: Alternating-**

	- Resistors in an AC Circuit - Inductors in an AC Circuit - Capacitors in an AC Circuit	**Current Circuits**
14	- The *RLC* Series Circuit - Power in an ac Circuit - Resonance in a Series RLC Circuit - The Transformer and Power Transmission	
15	- Maxwell's Equations and Hertz's Discoveries - Plane Electromagnetic Waves - Energy Carried by Electromagnetic Waves - Momentum and Radiation Pressure - Production of Electromagnetic Waves by an Antenna - The Spectrum of Electromagnetic Waves	**Chapter 7: Electromagnetic Waves**

12. Course Assessment:

Grading:

- Assignment: 20%
- Midterm Test: 20%
- Final Exam: 60%

13. Policies:

Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.

Student responsibility: Students are expected to spend at least 8 hours per week self – studying. This time should be made up of reading, working on exercises and problems and group assignments.

Missed tests: Students are not allowed to miss any of the tests (both on-going assessment and final test). There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students retake the tests.)

APPLIED LINEAR ALGEBRA

Course Code: **No. of Credits: 2**

Instructor: ***Prof. D.Sc. Phan Quoc Khanh, Dr. Mai Duc Thanh***

A. COURSE OVERVIEW:

1. **Course Objective**: The course provides the student with basic knowledge in linear algebra with applications, in particular the skill of solving linear systems of equations using Gauss elimination method.
2. **Prerequisite**: None
3. **Major Contents:** Systems of linear equations, Matrices in echelon form, Gauss elimination method, Algebra of matrices, Determinants and their properties, Vector Spaces, Linear independence, Basis, Rank of a matrix, Linear transformation, Inner product spaces, Eigenvalues and Eigenvectors.
4. **Assessment**

   Assignment and Class Attendance: 20%

   Midterm Test: 20%

   Final Exam: 60%

5. **Textbook**

1. R.O. Hill, Elementary linear algebra with applications, 3rd edition, Thomson, 2006.
2. E. Kreyszig, Advanced Engineering Mathematics, 9th edition, John Wiley & Sons, 2006.

B. A DETAILED OUTLINE:

Name of Chapter	Descriptions
Chapter 1. Introduction to linear equations and matrices	1.1. Introduction to linear systems and matrices 1.2. Gauss elimination 1.3. The algebra of matrices 1.4. Inverse matrices 1.5. Transpose and symmetric matrices
Chapter 2. Determinants	2.1 The Determinant of a Matrix 2.2 Evaluation of a Determinant using Elementary Operations 2.3 Properties of Determinants 2.4 Cramer's Rule

Chapter 3. Vector spaces	3.1 Euclidean n-spaces 3.2 General vector spaces 3.3 Subspaces, span, null spaces 3.4 Linear independence 3.5 Basis and Dimension 3.6 Rank of a matrix
Chapter 4. Linear Transformation, Inner product spaces, Eigenvalues and eigenvectors	4.1 Linear transformation 4.2 Inner product spaces 4.3 Eigenvalues and eigenvectors 4.4 Diagonalization

CHEMISTRY FOR ENGINEERS

Instructor: School of Biotechnology

1. General Information

- Course Title: CHEMISTRY FOR ENGINEERS *(Hóa học cho kỹ sư)*
- Course Code: CH011IU
- Semester: 1
- Course Coordinator/Lecturer: Dept. of Chemistry

2. Number of credits: 3 credits

3. Prerequisites: None

4. Course description

This course is designed for non-chemistry majors, as it is intended for students pursuing a degree in information technology, electronic and telecommunication. The course is designed to provide a strong background in the fundamentals of chemistry, preparing students for further study in their major field. Topics include important principles, theories, concepts of chemistry, and chemical calculations necessary for a comprehension of the structure of matter, the chemical actions of the common elements and compounds.. The impact of chemistry on everyday life and on the environment is also introduced wherever possible.

Number of Credits: 3 + 1

Lectures: 45 hours

Assignments & Presentations: Yes

5. Textbooks and Other Required Materials

- ✓ Petrucci, RH, WS Harwood, FG Herring, & Madura. General chemistry: Principles and Modern Applications. 9th ed. Upper Saddle River, NJ: Prentice Hall, 2007.
- ✓ Masterton and Hurley. Chemistry, Principles and Reactions. Saunders College Publishing, 2007.
- ✓ D.W. Oxtoby, W.A. Freeman, and T.F. Block, Chemistry : Science of Change, Saunders College Publishing, 2003.
- ✓ Steven S. Zumdahl, Chemical Principles, 5th Ed., Houghton Mifflin Company, 2005.
- ✓ World Wide Web access

6. Course objectives/Course learning outcomes

No.	Course Objectives	Program Learning outcomes

1	▪ be able to demonstrate basic knowledge of the role of chemistry for engineers	a) An ability to apply knowledge of

No.	Course Objectives	Program Learning outcomes
2	▪ To provide a thorough introduction to the basic principles of physics to physics and engineering students in order to prepare for further study in physics and to support understanding and design of practical applications in the fields such as Nature of chemistry; Matter and state of matter; Structure of atoms, molecules and ions; Chemical bonds and types of compounds; Name chemical compounds; Stoichiometric calculations; Measurements in chemistry…	mathematics, science, and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret (e) An ability to identify, formulate, model and simulate and solve engineering (i) a recognition of the need for, and an ability to engage in life-long learning

7. Course Outline

Class	Content	Activities
1	**Chapter 1: INTRODUCTION TO GENERAL CHEMISTRY FOR ENGINEERS** - The role of general chemistry for engineers - Chapter outline	Lecture
	Chapter 2: INTRODUCTION TO MATTER - Matter and state of matter (gas, liquid, solid and plasma) -General concepts of mass and energy -Matter and change: chemical change and physical change -Classification of matter: element, compound and mixture (homogeneous and heterogeneous)	
2	Chapter 3: ATOMS, MOLECULES AND IONS - Atoms and their structure, model of an tom - Nucleus of an atom - Electron cloud of an atom - Chemical symbols	Lectures/Homework

Class	Content	Activities
	- Isotopes - Rules about electrons - Molecular compounds - Communicating molecular structure - Ions and ionic compounds - Monatomic ions and polyatomic ions - Hydrates - Chemical nomenclature	
3	**Chapter 4: CHEMICAL BONDS** - The concepts of chemical bonds - Classification of chemical bonds - Ionic bonds - Covalent bonds - Metallic bonds - Valence electrons - Bond and lone pairs - Molecular geometry, the VSEPR model and structure determination by VSEPR - Bond polarity - Polar and nonpolar molecules - Electronegativity and chemical bonds - Bond lengths and bond strengths	Lecture/Homework
4	**Chapter 5: MEASUREMENTS IN CHEMISTRY** -Physical quantities: number and unit - Measurement and significant figures - Scientific notation - Measuring mass - Measuring length and volume - Density - Measuring temperature - Rounding off numbers - Converting a quantity from one unit to another	Lecture/Quiz
5	**Chapter 6: PERIODICITY** - Classification of the elements - General periodic trends	Lecture/Homework

Class	Content	Activities
	- Atomic size and trends in atomic size - Ionization energy - The first ionization energy with atomic number - Electron affinity - Electronegativity	
6	**Chapter 7: CHEMICAL REACTIONS** - Chemical change - Chemical equation - Types of reactions	Lecture/Quiz
7	**Chapter 8: CHEMICAL EQUILIBRIUM** - The concepts of chemical equilibrium - Equilibrium constant - Equilibrium expression - Homogeneous equilibrium - Heterogeneous equilibrium - Le Chatelier's Principles - Applications of chemical equilibrium	
Midterm Exam		
8	**Chapter 9: ELECTROLYTES, ACID- BASE, pH, AND BUFFER SOLUTIONS** - Strong and weak electrolytes - Acid-base theories: Arrhenius, Bronsted-Lowry and Lewis theories - Conjugate pairs - Conjugate acid-base strength - Ionization of water, ion-product constant Kw for water - pH - the role of pH in everyday life - Equilibrium constants for weak acids - Equilibrium constants for weak bases - Calculating pH from Ka - Buffer, calculating pH of a buffer - Henderson-Hasselbalch equation - Buffer capacity	Lecture/Homework

Class	Content	Activities
	- buffer applications	
9	**Chapter 10: THERMOCHEMISTRY AND THERMODYNAMICS** - System and surrounding - Energy and work - Internal energy: kinetic and potential energy - Energy and temperature - Heat and heat transfer mechanism - Conservation of energy - Heat of reaction and calorimetry - State of a system and state functions - The first law of thermodynamics - Enthalpy and enthalpy change - Enthalpy of reaction - Hess's law - Enthalpy of formation - Standard enthalpy - Enthalpy from bond energy - Enthalpy of solution - Entropy and the second law of thermodynamics - The third law of thermodynamics - Standard entropy - Gibbs free energy	Lecture/Homework
10	**Chapter 11: CHEMICAL KINETICS** - Rates of chemical reactions - Factors that affect the reaction rates - Rate laws - First order reaction - Second order reaction - Third order reaction - Zero order reaction	Lecture/Homework
11	**Chapter 12: GASSED AND THEIR BEHAVIORS** - The concepts of gas and vapor - Properties of gasses - Gas pressure	Lecture/Homework

Class	Content	Activities
	- Boyle's law - Charles's law - Gay-Lussac's law - The combined gas law - Avogadro's law - Ideal gas law - Partial pressure (Dalton's law) - Effusion (Graham's law)	
12	**Chapter 13: SOLUTIONS AND THEIR PROPERTIES** - The concepts of solutions - Classification of solutions - The nature of solute in solutions - Energy changes and the solution process - Units of concentration - Factors affecting solubility - Henry's law - Physical behavior of solutions: colligative properties - Raoult's law - Osmosis and osmotic pressure	Lecture
13	**Chapter 14: ELECTROCHEMISTRY** - The concepts of electrochemistry - Oxidation number - Balancing redox equations - Galvanic cell - Standard reduction potentials - Nernst equation - Batteries - Corrosion - Rusting of iron - Electrolysis	
14	**Chapter 15: INTERMOLECULAR FORCES** - The concepts of intermolecular forces - Dipole-dipole forces	Lecture/Homework

Class	Content	Activities
	- Hydrogen bonding - Ion-dipole forces - Induced dipole forces - Ion-induced dipole forces - Dipole-induced dipole forces - Induced dipole- induced dipole forces - Intermolecular forces and physical properties - Solid and types of solid - Crystal structure and the unit cell - Unit cells and coordination number - Metals and alloys - Conductor, semiconductor and Insulator	
15	**Chapter 16: NUCLEAR CHEMISTRY** - The concepts of radioactivity - Types of nuclear reactions - Types of radiation - Energy of nuclear reactions - Fission and fusion - Effect of radiation on matter - Detecting radiation - Radiation exposure and contamination - Rate of nuclear reactions - Radiocarbon dating - Radiation units	Lecture/Homework
Final Examination		

8. Course Assessment Policy

► Mid-term exam:	30%
► Assignments:	30%
► Final Exam:	40%
Total:	100%

9. Course general requirements

Students are expected to spend at least **8 hours** per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code

IS004IU

COURSE NAME

ENGINEERING PROBABILITY AND STATISTICS

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Engineering Probability and Statistics

Course Code: IS004IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Phan Nguyen Ky Phuc**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Xác suất thống kê cho kỹ sư
+ English: Engineering Probability and Statistics
- Course ID: IS004IU
- Course type

General	Fundamental
☒ Specialization	Others: ……
Skills	Project/ Internship/ Thesis

- Number of credits: 4
  + Lecture: 4
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Probability problems in engineering, conditional probability, discrete and continuous distributions, sampling distribution, interval estimates, hypothesis testing, analysis of variance, regression models and non-parametric testing.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Sheldon M. Ross (2004), Introduction to Probability and Statistics for Engineers and Scientists. 3rd edition. Elsevier Academic Press.

References:

[2] Sheldon M. Ross (2010), *A First Course of Probability. 8th edition.* Pearson Education.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Able to understand, calculate, and present basic statistics for a given dataset including numerical and visualization	1	1.2	Understand
G2	Able to understand calculate probability and other attributes of discrete and continuous random	6,7	1.2	Apply

	variables			
G3	Able to conduct the proper hypothesis testing	1,6	3.1	Apply
G4	Able to conduct the simple data exploration	1,6	1.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1	Draw the Boxplot, Histogram and Cumulative Histogram	**T**
G2	Calculate Binomial Distribution, Hyper geometric, Uniform Distribution, Random normal distribution,	**U**
G3	Conduct the one population and 2 populations hypothesis testing	**U**
G4	Conduct the ANOVA test and Linear Regression	**U**

6. Course Assessment

Assessment component (1)	Assessment form (A.x.x) (2)	Percentage % (3)
A1. Process assessment	A1.1: G1.1,G1.2,G1.3,G1.4,G1.5	10%
	A1.2: G2.1	10%
	A1.3: G2.2, G2.3,G3.1,G3.2,G3.3	10%
A2. Midterm assessment	A2.1: G1.2, G1.3, G1.4,G1.5	30%
A3. Final assessment	A3.1 G2.1, G2.2, G2.3, G3.1, G3.2, G3.3	40%

7. Course Content

Theory

Week	Content	Learning outcome	Teaching and learning activities	Student Activities	Assessment
1	Introduction to Probability and Statistic	G1	-Lecture -Class discussion	Class discussion	A1.1, A2.1
2	Counting Process and Bayesian Theorem	G1	-Lecture - Class discussion	Class discussion	A1.1, A2.1
3	Binomial Distribution	G1	- Lecture - Class discussion	Class discussion	A1.1, A2.1
4	Hypergeometric Distribution	G1	- Lecture - Class discussion	Class discussion	A1.1, A2.1
5	Poisson Distribution + Exponential Distribution	G1	- Lecture - Class discussion	Class discussion	A1.1, A2.1
6	Sampling Process	G2	- Lecture - Class discussion	Class discussion	A1.2, A2.1
7	Review	G2	- Lecture - Class discussion	Class discussion	A1.2, A2.1
Midterm exam					

8	Normal Distribution	G3	- Lecture - Class discussion	Class discussion	A1.3, A3.1
9	Central Theorem	G3	- Lecture - Class discussion	Class discussion	A1.3, A3.1
10	Chi square and F distribution	G3	- Lecture - Class discussion	Class discussion	A1.3, A3.1
11	One population hypothesis testing	G3	- Lecture - Class discussion	Class discussion	A1.3, A3.1
12	Two population2 hypothesis testing	G4	- Lecture - Class discussion	Class discussion	A1.3, A3.1
13	ANOVA	G4	- Lecture - Class discussion	Class discussion	A3.1
14	Linear Regression	G4	- Lecture - Class discussion	Class discussion	A3.1
15	Review		- Lecture -Class discussion	Class discussion	
FINAL EXAMINATION					**Written exam**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and

comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Phan Nguyen Ky Phuc
Email	pnkphuc@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS016IU

COURSE NAME
ENGINEERING MECHANICS - DYNAMICS

Tháng Bảy 2022

VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Engineering Mechanics - Dynamics

Course Code: IS016IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Dao Vu Truong Son**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Cơ kỹ thuật – Động học
+ English: Engineering mechanics - Dynamics
- Course ID: IS016IU
- Course type

General ☒Fundamental
Specialization Others: ……
Skills Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Students learn about kinematics of particles to rigid bodies, rotation of a rigid body, plane motion of a rigid body, relative motion, the principles of work and energy, impulse and momentum, impact.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] J.L. Meriam and L.G. Kraige, Engineering Mechanics Vol.2-Dynamics, 3rd ed., Wiley, 1992

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Students understand a basic background and facility with elementary dynamics of particles and rigid bodies.	*1,2*	1.2	Understand

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by*

applying principles of engineering, science, and mathematics

2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Students can understand kinetics principles.	**I, T**
G1.2	Students can understand kinematics principles.	**I, T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1.Process assessment	A1.1 Project	G1.1, G1.2	30
A2.Midterm assessment	A2.1 Midterm Exam	G1.1	30
A3.Final assessement	A3.1 Final Exam	G1.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	

1&2	Kinematics of a particle;	G1.1	- Lecture presentation	- Group forming. - Textbook, Slides	- Class discussion **A1.1**
3&4	Kinetics of a particle;	G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
5&6&7	Dynamics of particle systems; center of mass, equations of motion, work and energy, impulse and momentum.	G1.1,G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
Midterm exam					**A2**
8&9&10	Kinematics of rigid bodies; plane motion, relative velocity, instantaneous center, relative acceleration.	G1.1 G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
11&12&13	Kinetics of rigid bodies; angular momentum, equations of motion, work and energy, impulse and momentum	G1.1 G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
14	Introduction to elementary vibrations; free vibrations of single d.o.f. systems.	G1.1 G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
15	Review for Final Exam		- Problems solving		- Class discussion **A1.1**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	

1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.504 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Dao Vu Truong Son
Email	dvtson@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS085IU

COURSE NAME
CAD/CAM/CNC

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: CAD/CAM/CNC

Course Code: IS085IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Chung**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: CAD/CAM/CNC
+ English: CAD/CAM/CNC
- Course ID: IS085IU
- Course type

General — Fundamental
☒ Specialization — Others: ……
Skills — Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 2
  + Laboratory: 1
- Prerequisites: Engineering Drawingl
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course aims to help students to design parts or mechanical products by CAD/CAM software. The students are studied geometric transformations, geometric modeling, mathematical representations of curves, Wire frame modeling, surface and solid modeling. Numerical control systems and machine tools. Manual part programming, computerized part programming, CAD/CAM/CNC systems integration.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Ibrahim Zeid, "CAD/CAM Theory and Practice", 2nd ed., Mc Graw Hill, 2009.

[2] Tien-Chien Chang, Richard A. Wysk, Hsu-Pin Wang, Computer-Aided Manufacturing, 3rd edition, Prentice Hall, 2005.

References:

[3] Mikell P. Groover, Automation, Production Systems, and Computer-Integrated Manufacturing, 3rd edition, Prentice Hall, 2007

Software:

Software: SolidWork/SolidCam.

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Understand the fundamental and advanced concepts in computer graphics and computer-aided-design. Know the functions of a geometric solid modeler and modeling an	*1,2,6*	1.1, 1.2 1.3	Understand

	object.			
G2	Use commercial CAD/CAM software for engineering design . Understand CAD/CAM/CNC can be used in the different stages of design and manufacture of a product .	*3,4,5,6,7*	1.3, 2.1 2.2, 2.3 3.1, 4.1, 4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the fundamental and advanced concepts in computer graphics and computer-aided-design.	**I, T**
G1.2	Know the functions of a geometric solid modeler and modeling an object.	**I, T**
G2.1	Use commercial CAD/CAM software for engineering design .	**U**
G2.2	Understand CAD/CAM/CNC can be used in the different stages of design and manufacture of a product.	**U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz, Homeworks	G1.1, G1.2, G2.1, G2.2	15
	A1.2 Lab	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: **Introduction CADCAMCNC**	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz **A1.1**
2	Lecture 2: **Fundamentals of Computer Aided Design**	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz **A1.1** - Homework **A1.2**
3	Lecture 3: **Geometric Transformations and Modeling**	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
4	Lecture 4: **Mathematical Representations of curves**	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
5	Lecture 5: **Mathematical Representations of Surfaces**.	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
6	Lecture 6: **Mathematical Representations of Solids**	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
7	Lecture **7: CAD/CAM Data Exchange**	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
Midterm exam					**A2**

8	Lecture 8: **Numerical Control Systems and machine tools**	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.2** **A3.1**
9	Lecture 9: **NC Part Programming**	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.2** **A3.1**
10	Lecture 10: **Computerized part programming**	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.2** **A3.1**
11	Lecture 11: **Computer-Aided Process Planning**	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.2** **A3.1**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1	**CAD/CAM/CNC lab**: Introduction to Software and practice	G2.1 G2.2	presentation	Practice	**A1.2**
2	**CAD/CAM/CNC lab**: Part design	G2.1 G2.2	presentation	Practice	**A1.2**
3	**CAD/CAM/CNC lab**: Simulation, CNC program generation	G2.1 G2.2	presentation	Practice	**A1.2**
4	**CAD/CAM/CNC lab**: Programming for CNC machines through CAD/CAM, and machining	G2.1 G2.2	presentation	Practice	**A1.2**

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS054IU

COURSE NAME
ENGINEERING DRAWING

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Engineering Drawing

Course Code: IS054IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Chung**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
  + Vietnamese: Vẽ Kỹ Thuật
  + English: Engineering Drawing
- Course ID: IS054IU
- Course type

General	☒ Fundamental
Specialization	Others: ……
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course provides students skills to present and interpret spatial models on planar models, present engineering drawings according to international standards (ISO). Methods of presenting models: orthogonal projection, isometric projection, oblique projection… Apply the projections to present objects in the drawings.

3. Textbooks and Other Required Materials

Textbooks:

[1] Basant Agrawal, Tata, Engineering Drawing, McGraw-Hill Education, 2008.

References:

[2] Singhal, Saxena & Gupta, A Text Book of Engineering Drawing, Asian.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Analyzing, interpreting, and presenting engineering drawings	1, 2, 6	1.1, 1.2 2.1, 2.2	Understand
G2	Applying appropriate drawing techniques for a practical application.	4, 5, 6	1.2, 2.1, 2.2, 3.1	Apply
G3	Problem resolution on drawings. Systematically analyze the problem and apply the appropriate technique to solve the problem	3, 4, 5, 6, 7	1.2, 2.1, 2.2, 3.1 3.2	Apply

ABET_Student Outcomes
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Analyzing, interpreting engineering drawings.	**I, T**
G1.2	Presenting engineering drawings	**T**
G2.1	Applying appropriate drawing techniques for a practical application.	**T**
G3.1	Problem resolution on drawings.	**U**
G3.2	Systematically analyze the problem and apply the appropriate technique to solve the problem	**U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2	15
	A1.2 Assigment	G2.1, G3.1, G3.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G2.1, G3.1, G3.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction	G1.1	- Lecture presentation	- Read book	
2 & 3	Lecture 2: Drawing standards and specifications	G1.1	- Lecture presentation	- Read book	- Quiz /HW **A1.1**
4 & 5	Lecture 3: Descriptive Geometry	G1.1 G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** - Assignment **A1.2**
6 & 7	Lecture 4: Displaying drawings	G1.1 Part section	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** - Assignment **A1.2**
Midterm exam					**A2**
8 & 9	Lecture 5: Sections and sectional views	G2.1 G3.1 G3.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** - Assignment **A1.2**
10&11	Lecture 6: Part section	G2.1 G3.1 G3.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** - Assignment **A1.2**
12 & 13	Lecture 7: Axonometric projection	G2.1 G3.1 G3.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** - Assignment **A1.2**
14	Review for Final Exam	G2.1 G3.1 G3.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

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9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, / /2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS089IU

COURSE NAME
NUMERICAL METHODS

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Numerical Methods

Course Code: IS089IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Hop**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Các phương pháp số học
+ English: Numerical Methods
- Course ID: IS089IU
- Course type

General — Fundamental
☒ Specialization — Others: ……
Skills — Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Calculus II
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Error analysis, matrices, system of linear equations, approximation theory, numerical solution of nonlinear systems of equations, interpolation, numerical differentiation and integration,numerical solution of differential equations, finding sum of series, introduction to random numer generation and simulation, introduction to linear programming. Programming and application projects will be emphasized.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] [Cheney W., and Kincaid D., (1994). *Numerical Mathematics and Computing*. 3rd Edition, Brooks/Cole Publishing Company, California.

[2] Burden R.L., and Faires J.D., (1993). *Numerical Analysis*. 5th Edition, PWS Publishing Company, Boston

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Give an introduction to modern approximation techniques	1,6	1.1, 1.2, 1.3	Apply
G2	Give students an opportinity to hone their skills in programming and problem solving	1,6	1.1, 1.2, 1.3	Apply
G3	Help students arrive at an understanding of the important subject of errors that inevitably accompany scientific compution and to arm them with methods for detecting, predicting, and controlling these errors	1,6	1.1, 1.2, 1.3	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CĐR (X,x) (1)	Mô tả CĐR (2)	Mức độ giảng dạy (I, T, U) (3)
G1.1	Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.	I
G1.2	Apply numerical methods to obtain approximate solutions to mathematical problems.	T
G2.1	Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations	T
G2.2	Analyse and evaluate the accuracy of common numerical methods.	T
G3.1	Implement numerical methods in Matlab	T
G3.2	Write efficient, well-documented Matlab code and present numerical results in an informative way.	T

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz, Homeworks	G1.1, G1.2, G2.1, G2.2	15
	A1.2 Project	G2.1, G2.2, G3.1, G3.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1,	20
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	50

7. Course Content

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Introduction, Programming suggestion Numerical Representation and Errors: Representation of numbers in different	G1.1	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1:	

	bases, floating point representation, loss of significance			1.1, 2.1, 2.2, 2.3 Chapters in Book 2: 1.2, 1.3, 1.4	
2	Solutions of Equations in One Variable: Bisection Method,Newton-Raphson Method, Secant Method	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 3.1, 3.2,3.3, Chapters in Book 2: 2.3	Homework **A1.1**
3	Matrices:matrices, factorization:LU and QR factorizations. Eigenvalues and eigenvectors, Eigenproblems: the power method, the QR-method.	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 6.3, 6.4 Chapters in Book 2: 7.1,7.2, 9.2, 9.4, lecture notes	Homework **A1.1**
4	System of Linear Equations:Matrix inversion method, Naive Gaussian elimination, Gaussian elimination with scaled partial pivoting	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 6.1,6.2 Chapters in Book 2:6.3	Quiz/ Homework **A1.1, A1.2**
5	System of Linear Equations:Tridiagonal and Banded system, LU factorization	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 6.3, 6.4	- Quiz /HW **A1.1, A1.2**
6	Theory of Approximation: least squares: linear least square fitting, orthogonal systems and Chebyshev polynomials.	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 10.1, 10.2 Chapters in Book 2: 8.1, 8.2, 8.3	Homework **A1.1**

7	Numerical Solution of Nonlinear systems of Equations:Newton's Method, Quasi-newton methods, steepest Descent techniques	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 2: 10.2, 10.3,10.4	Homework **A1.1**
Midterm exam					**A2**
8	Interpolation: polynomial interpolation, errors in polynomial interpolation.	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 4.1, 4.2	Homework **A1.1**
9	Approximation by spline functions: cubic spline interpolation, B spline, Hermite interpolation	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 7.2, 7.3 Chapters in Book 2: 3.3, 3.4	Homework **A1.1**
10	Numerical differentiation and integration: differentiation, Richardson's extrapolation, Definite integral, Adaptive quadrature methods, Gaussian quadrature	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 4.3, 5.1, 5.4, 5.5 Chapters in Book 2: 4.1, 4.2,4.5, 4.7	Homework **A1.1**
11	Interpolation: polynomial interpolation, errors in polynomial interpolation.	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 8.1,8.2,8.3 Chapters in Book 2: 5.3,5.4,.5.5	- Quiz /HW **A1.2** **A3.1**
12	System of ordinary differential equations: Method of first order systems, Higher order equations and systems, Adam-Moulton methods	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 9.1, 9.2, 9.3	Homework **A1.1**

13	Random numer generation and simulation: random numbers, Estimation of areas and volumes by Monte Carlo techniques, simulation	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book - Chapters in Book 1: 11.1, 11.2, 11.3	Homework **A1.1**
14	Project Presentations				Project **A1.2**
15	Review				
FINAL EXAMINATION					**A3**

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Hop
Email	nvhop@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS086IU

COURSE NAME
INTRODUCTION TO COMPUTING –MATLAB APPLICATION

Tháng Bảy 2022

VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: INTRODUCTION TO COMPUTING –MATLAB APPLICATION

Course Code: IS086IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name			
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title

+ Vietnamese: Giới thiệu về Máy tính - Ứng dụng Matlab
+ English: Introduction to computing – Matlab application

- Course ID: IS086IU
- Course type

General ☒ Fundamental
Specialization Others: ……
Skills Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture:
  + Laboratory:
- Prerequisites: Nil
- Parallel Course: NIl
- Previous course: Nil

2. Course Description

Introduction to programming in C++. Operators and C++ system; fundamental data types; flow of control; functions; arrays, and strings
Introduction to programming with C#. Use the basic concepts of object oriented programming to create C# applications; use variables, arrays, strings, flow control statements and files; design, build, execute and debug; create graphical user interfaces.

Introduction how to use Arduino and Raspberry PI, connect Arduino, Raspberry PI to control LED, Servo, Stepper motor …

3. Textbooks and Other Required Materials

Textbooks:

[1] Kelley, Al and Pohl, Ira, *A Book on C: Programming in C*, 4th Edition, Addison-Wesley, 1998.

[2] Jason Price, Mike Gundertoy, Mastering Visual C#.NET, SYBEX, 2002

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	The objective of this course is to introduce students to the basics of C++/C# programming as a tool for	1, 2	1.3, 2.1	Understand

	solving industrial engineering problems.			
G2	The second part of the course concentrates on C# for writing programs with applications from industrial engineering such as connecting Adriano, Raspberry PI with LED, Button, Servo	3,4,5,6	1.3, 2.1, 2.2, 3.1, 3.2	Apply

ABET_Student Outcomes
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	an ability to apply knowledge of mathematics, science and engineering	**I, T**
G1.2	an ability to design and conduct experiments, as well as to analyze and interpret data	**T**
G2.1	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	**T**

6. Course Assessment

Assessment types	Assessment	Course learning	Percentage

	component	outcomes (CLOs) (Gx.x)	%
A1. Process assessment	A1.1 Group assignment	G1.1, G1.2	30
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1	40

Assignements :

1. Develop a program to manage GPA of students including adding, modifying, deleting students information, scores , …
2. Add more features to Assignment 1 for searching, I/O file, …

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Course Overview, Orientation Introduction to Computers and Programming	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book	- Assignment **A1.1**
2	Introduction to C++	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- Assignment **A1.1**
3&4	Expressions and Interactivity	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- Assignment **A1.1**
5	Making Decisions	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- Assignment **A1.1**
6&7	Looping	G1.1 G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Assignment **A1.1**
8	Review for Midterm	G1.1 G1.2 G2.1	- Problems solving	- Class discussion	- Assignment **A1.1**
Midterm exam					**A2**
9	Introduction to Visual Programming Introduction and C#.NET	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Assignment **A1.1**
10	Decision Making	G1.2 G2.1	- Lecture presentation	- Class discussion	- Assignment

				- Read book.	**A1.1**
11	Procedure				- Assignment **A1.1**
12	Elementary Data Structures	G2.1	- Lecture presentation	- Class discussion	- Assignment **A1.1**
14	Introduction to Object-Oriented Programming	G2.1	- Problems solving	Practice	- Assignment **A1.1**
15	File Processing Review for final	G1.2 G2.1	- Problems solving	Practice	- Assignment **A1.1**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Student is expected that you will spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problem, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	
Email	

Ho Chi Minh City, 04/03/2020

Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS001U

COURSE NAME
INTRODUCTION TO INDUSTRIAL ENGINEERING

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Introduction to Industrial Engineering

Course Code: IS001IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Hop**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title

+ Vietnamnese: Giới thiệu về Kỹ thuật Công nghiệp
+ English: Introduction to Industrial Engineering

- Course ID: IS001IU
- Course type

General
Specialization
Skills
Fundamental
Others: ……
Project/ Internship/ Thesis

- Number of credits: 1
  - Lecture: 0
  - Laboratory: 1
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication, and department-specific material. Case studies are presented and analyzed. Students will work on interdisciplinary projects which corresponding to the building of physical models in the fields of Production, Transportation, Warehouse, and other industrial engineering related fields.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:
References:
Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Understand the basis and importance of Industrial and Systems Engineering	*1, 2, 4*	1.1, 1.2 1.3, 2.1 3.1, 3.2, 4.1, 4.2	Understand
G2	Develop knowledge, techniques and skills which enhance student's life-long leaning ability.	*1, 2, 3, 7*		Apply
G3	Provide students opportunities to work in interdisciplinary projects which are closed to industry	*2, 3, 4, 6*		Apply
G4	To develop life-long learning attitude.	*7*		Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Design Industrial Engineering and Management systems	**I, T**
G1.2	Redesin Industrial Engineering and Management systems	**I, T**
G1.3	Support to decision making in Industrial Engineering and Management systems	**I, T**
G2.1	Political and health qualities and soft skills Industrial Engineering and Management systems	**I, T**
G3.1	Well-disciplined and efficient teamwork skills	**I, T**
G3.2	Well-disciplined and professional communication skills	**I,T,U**
G4.1	Operate Industrial Engineering and Management systems	**I,T,U**
G4.2	Improve Industrial Engineering and Management systems	**I,T,U**

6. Course Assessment

Assessment types	**Assessment component**	**Course learning outcomes (CLOs) (Gx.x)**	**Percentage %**
A1. Process assessment	A1.1 Lab	G1.1, G1.2, G2.1, G2.2	15
	A1.2 Teamwork	G2.1, G2.2	15
A3. Final presentation and demo	A3.1 Final demo	G1.2, G2.1, G2.2	70

Assessment of Report

Criteria	Weight	Exemplary 4 Yes	Accomplished 3 Yes, but	Developing 2 No, but	Beginning 1 No
Topic	10 %	Directly relevant	Somewhat relevant	Remotely related	Totally unrelated
Organization	10 %	Good organization; points are logically ordered; sharp sense of beginning and end	Organized; points are somewhat jumpy; sense of beginning and ending	Some organization; points jump around; beginning and ending are unclear	Poorly organized; no logical progression; beginning and ending are vague
Quality of Information	25 %	Supporting details specific to subject	Some details are non-supportin g to the subject	Details are somewhat sketchy. Do not support topic	Unable to find specific details
Grammar, Usage, Mechanics, Spelling	25 %	No errors	Only one or two errors	More than two errors	Numerous errors distract from understanding
Timeliness	10 %	Report on time	Report one class period late	Report two class periods late	Report more than one week late

Assessment of presentation

Criteria	Weight	Exemplary 4 Yes	Accomplished 3 Yes, but	Developing 2 No, but	Beginning 1 No
Subject knowledge	30%	Student demonstrates full knowledge by answering all class questions with explanations and elaboration.	Student is at ease with expected answers to all questions, without elaboration.	Student is uncomfortable with information and is able to answer only rudimentary questions.	Student does not have grasp of information; student cannot answer questions about subject.
Organization	30%	Student presents information in logical, interesting sequence which audience can follow.	Student presents information in logical sequence which audience can follow.	Audience has difficulty following presentation because student jumps around.	Audience cannot understand presentation because there is no sequence of information.
Mechanics	20%	Presentation has no misspellings or grammatical errors.	Presentation has no more than two misspellings and/or grammatical errors.	Presentation has three misspellings and/or grammatical errors.	Student's presentation has four or more spelling and/or grammatical errors.
Presentation skill (nonverbal, verbal)	20%	Holds attention of entire audience using eye contact, body language, having clear voice and pronunciation, seldom looking at notes	less eye contact, body language, having clear voice and pronunciation, still return to notes	less eye contact, body language, mostly refer to the notes	No eye contact, body language, entirely reading from note, mumbling

7. Course Content

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: **Introduction to Industrial and Systems Engineering**	G1.1	- Lecture advice	- Self-study	- Lab & teamwork A1.1, A1.2
2	Lecture 2: **Introduction to Electrical and Automation Engineering**	G1.1, G1.2	- Lecture advice	- Self-study	- Lab & teamwork A1.1, A1.2
3-14	**Students do the project at Laboratory**	G1.1, G1.2	- Lecture advice	- Self-study	- Lab & teamwork A1.1, A1.2
15	**Group project presentation and demonstration**	G1.1, G1.2	- Lecture advice	- Self-study	- Lab & teamwork A1.1, A1.2

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
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Phone number	
Instructor 's name	Nguyen Van Hop
Email	nvhop@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS019IU

COURSE NAME
PRODUCTION MANAGEMENT

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Production Management

Course Code: IS019IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Luu van Thanh**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Quản lý Sản xuất
+ English: Production Management
- Course ID: IS019IU
- Course type

General	☒ Fundamental
Specialization	Others: ……
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Operations Research 1: Deterministic Models
- Previous course: Nil

2. Course Description

Introduction to production systems. Production planning and control in decision making. Forecasting. Aggregate production planning. Capacity planning. Materials requirement planning. Advanced techniques and approaches in modern production planning and control for designing production systems.

3. Textbooks and Other Required Materials

Textbooks:

[1] Russell & Taylor, *Operations Management, Along the Supply Chain*. 7th ed., John Wiley & Son, Inc.

References:

[2] W. J. Hopp and M. L. Spearman (2008), *Factory Physics: The Foundations of Manufacturing Management*, 3rd ed., Irwin/McGraw-Hill.

[3] D. Sipper and R. L. Bulfin, (1997), *Production: Planning, Control, and Integration,* McGraw Hill.

[4] Edward A. Silver, David F. Pyke and Rein Peterson, *Inventory Management and Production Planning and Scheduling*, 3rd ed., John Wiley & Sons.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	To understand the adequate knowledge and analysis for decision making in production systems; understand the	1, 5	1.3, 3.1	Understand

	approaches and techniques in production and inventory			
G2	Respond to the needs of community and insdustrial sectors; combining the techniques to improve the practical cases.	2,5,6	1.3, 2.4, 3.1, 4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the adequate knowledge and analysis for decision making in modern production systems, such as forecasting, inventory, aggregate planning.	**I, T**
G1.2	Understand the approaches and techniques in MPS/MRP, facility layout and location, and production scheduling & sequencing.	**T**
G2.1	Respond to the needs of community and insdustrial sectors.	**T**
G2.2	Combining the techniques to improve the practical cases.	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2	15
	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction to Production Management	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture 2.	- Quiz/Homework **A1.1**
2	Lecture 2: Forecasting	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW **A1.1**
3 & 4	Lecture 3: Inventory Management	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1.2**
5	Lecture 4: Aggregate Planning	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Quiz /HW **A1.1**
6 & 7	Lecture 5: Modern Production System.	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1**
8	Review for Midterm	G1.1, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1**
Midterm exam					**A2**
9 & 10	Lecture 6: Material Requirement Planning (MRP)	G1.2	- Lecture presentation	- Class discussion - Read book & lecture7.	- Quiz /HW **A1.1** -Project progress **A1.2**
11&12	Lecture 7: Facility layout and Location	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book &	- Quiz /HW **A1.1** -Project progress

				lecture 8.	**A1.2**
13	Lecture 8: Scheduling & Sequencing	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
14	Project Presentation	G1.2 G2.2	- Lecture presentation	- Presentation - Class discussion	**A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

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Phone number	
Instructor 's name	Luu Van Thanh
Email	lvthanh@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020

Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS017IU

COURSE NAME
WORK DESIGN & ERGONOMICS

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Work Design & Ergonomics

Course Code: IS017IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Chung**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Đo lường lao động và Thiết kế công việc
+ English: Work Design & Ergonomics
- Course ID: IS017IU
- Course type

General ☒ Fundamental
☒ Specialization Others: ……
Skills Project/ Internship/ Thesis

- Number of credits: 4
  + Lecture: 3
  + Laboratory: 1
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Problem solving tools (recording and analysis tools, activity charts, line balancing). Operation analysis, manual work design (principles of motion economy, motion study). Time study (performance rating and allowances). Work sampling, predetermined time systems. Work environment design.

3. Textbooks and Other Required Materials

Textbooks:

[1] Mikell P. Groover, *Work Systems and the Methods, Measurement, and Management of Work*, Prentice-Hall, 2007.

References:

[2] A. Freivalds and B. Niebel, *Niebel's Methods, Standards, and Work Design*, McGraw-Hill, 2009.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Recognize and understand basic concepts of work design and ergonomics	1, 2, 6	1.1, 1.2 1.3, 2.1, 2.2	Understand
G2	Understand different methods of engineering and operations analysis, motion study, work design and work sampling techniques. Understand alternative solution methodologies available in time	4, 5, 6	1.3, 2.2, 2.3, 3.1, 3.2	Understand

	study, learning curves, ergonomics and human factors.			
G3	Apply knowledge in work design and ergonomics to increase productivity, machine/ equipment utilization, and to reduce human efforts, and to motivate and product employees' health	3, 5, 6, 7	2.2, 2.3, 3.1, 3.2, 3.3	Apply

ABET_Student Outcomes
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G 1.1	Recognize and understand basic concepts of work design and ergonomics	**I, T**
G 1.2	understand basic concepts of Ergonomics	**I, T**
G 2.1	Understand different methods of engineering and operations analysis, motion study, work design and work sampling techniques.	**T, U**
G 2.2	Understand alternative solution methodologies available in time study, learning curves, ergonomics and human factors.	**T**

G 3.1	Apply knowledge in work design and ergonomics to increase productivity, machine/ equipment utilization	**U**
G 3.2	to reduce human efforts, and to motivate and product employees' health	**U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.2, G2.1, G2.2, G3.1	15
	A1.2 Lab	G2.1, G2.2, G3.1, G3.2	15
A2.Midterm assessment	A2 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3 Final Exam	G2.2, G3.1, G3.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Scope of the IE profession, career opportunities, history of work systems and methods engineering	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book	**A1.1**
2	Lecture 2: Methods Engineering and Operations Analysis. Graphical tools for Operations Analysis	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- HW **A1.1**
3	Lecture 3: Motion/Methods Study and Work Design	G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1.**
4&5	Lecture 4: New	G2.1	- Lecture	- Class discussion	- Quiz /HW

	Approaches to Process Improvement		presentation	- Read book	**A1.1**
6	Lecture 5: Work Sampling.	G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**
7	Review for Midterm	G1.1, G1.2 G2.1	- Problems solving	- Class discussion	**A1.1** **A1.2**
Midterm exam					**A2**
8	Lecture 6: Introduction to Time Study	G2.2 G3.1	- Lecture presentation	- Class discussion - Read book	- HW **A1.1** -Project progress **A1.2**
9	Lecture 7: Direct Time Study	G2.2 G3.1 G3.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** -Project progress **A1.2**
10	Lecture 8: Predetermined Motion Time Systems	G2.2 G3.1 G3.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
11	Manual Assembly Lines	G2.2 G3.1	- Lecture presentation	- Presentation - Class discussion	- Quiz /HW **A1.2**
12	Learning Curves	G2.2 G3.1	- Lecture presentation	Presentation - Class discussion	- Quiz /HW **A1.2**
13	Ergonomics and Human Factors	G2.2 G3.1	- Lecture presentation	Presentation - Class discussion	**A1.2**
14	Review for Final Exam	G2.2 G3.1 G3.2	- Problems solving	- Class discussion	**A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1	Orientation (Lab Policy, Lab Safety, Lab Procedure, Lab content)		- Lecture presentation	- Class discussion	**A1.2**
2	Grip Strength Test		- Lecture presentation	- Class discussion - Practice	**A1.2**

3	Check working environment of official room		- Lecture presentation	- Class discussion - Practice	**A1.2**
4	Introduction to NEXGEN (software)		- Lecture presentation	- Class discussion	**A1.2**
5	Work Motion Study (watch video) Watch video, break work study motions and estimate the time for process each part		- Lecture presentation	- Class discussion - Estimate	**A1.2**
6	Motion study Product Assembly / Disassembly		- Lecture presentation	- Class discussion - Practice	**A1.2**
7	Work Design		- Lecture presentation	- Class discussion - Practice	**A1.2**
8	Design Layout		- Lecture presentation	- Class discussion - Practice	**A1.2**

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, / /2020

Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code

IS081IU

COURSE NAME

DETERMINISTIC MODELS IN OPERATION RESEARCH

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Deterministic Model in Operation Research

Course Code: IS081IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Phan Nguyen Ky Phuc**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title

+ Vietnamese: Vận trù học 1

+ English: Deterministic Model in Operation Reserach

- Course ID: IS081IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 4
  - Lecture: 4
  - Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

On completion of this course, the student will be able to develop linear programming and integer programming formulations for engineering and economic systems, determine optimal solutions to a variety of mathematical programming problems, and present managerial recommendations based on optimal solutions and sensitivity analysis.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Hillier,Lieberman:Introduction to Operation Research 7ed. McGrawHill

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Nắm được các khái niệm cơ bản của quy hoạch tuyến tính	1	1.2	Understand
G2	Identify basic algorithms and procedures to use in different shop configurations.	6,7	1.2	Apply

G3	Nắm được các bài toán khác về network Nắm được các khái niệm cơ bản của quy hoạch tuyến tính	1,6	3.1	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Hiểu được về phương pháp đồ thị trong quy hoạch tuyến tính	Introduction
G1.2	Nắm được phương pháp simplex	Teaching
G1.3	Nắm được phương pháp BigM và 2-phase trong quy hoạch tuyến tính	Teaching
G1.4	Thực hiện được phân tích shadow price và bài toán đối ngẫu	Teaching
G1.5	Nắm được bài toán quy hoạch nguyên phương pháp branch and bound	Teaching
G2.1	Nắm được nền tảng của quy hoạch động	Teaching
G2.2	Nắm được bài toán knapsack và shortest path	Teaching
G2.3	Nắm được giải thuật Floy và Dijkstra	
G3.1	Nắm được bài toán assignment & minimum	Teaching

	spanning tree	
G3.2	Nắm được bài toán vận tải	Teaching
G3.3	Nắm được bài toán tối đa dòng chảy	Teaching

6. Course Assessment

Assessment component (1)	Assessment form (A.x.x) (2)	Percentage % (3)
A1. Process assessment	A1.1: G1.1,G1.2,G1.3,G1.4,G1.5	10%
	A1.2: G2.1	10%
	A1.3: G2.2, G2.3,G3.1,G3.2,G3.3	10%
A2. Midterm assessment	A2.1: G1.2, G1.3, G1.4,G1.5	30%
A3. Final assessment	A3.1 G2.1, G2.2, G2.3, G3.1, G3.2, G3.3	40%

7. Course Content

Theory

Tuần/Buổi học (1)	Nội dung (2)	CĐR môn học (3)	Hoạt động dạy và học (4)	Hoạt động học (5)	Bài đánh giá (5)
1	Introduction to optimization and reviews of linear algebra	G1.1	LT:3 BT: 3 TH: 0	Class discussion	A1.1
2	Introduction to linear programming	G1.1	LT:3 BT: 3 TH: 0	Class discussion	A1.1
3	Simplex method	G1.2	LT:3 BT: 3 TH: 0	Class discussion+ Programming	A1.1, A2.1
4	Big M method	G1.3	LT:3 BT: 3 TH: 0	Class discussion	A1.1, A2.1
5	Two phased method	G1.3	LT:3 BT: 3 TH: 0	Class discussion	A1.1, A2.1
6	Shadow price and duality	G1.4	LT:3 BT: 3 TH: 0	Class discussion	A1.1, A2.1
7	Integer programming	G1.5	LT:3 BT: 3 TH: 0	Class discussion	A1.1, A2.1
8	Dynamic	G2.1	LT:3	Class	A1.2, A3.1

	programming		BT: 3 TH: 0	discussion	
9	Knapsack problem	G2.2	LT:3 BT: 3 TH: 0	Class discussion	A1.3, A3.1
10	Dijkstra & Floy algorithms	G2.3	LT:3 BT: 3 TH: 0	Class discussion	A1.3, A3.1
11	Assignment Problem	G3.1	LT:3 BT: 3 TH: 0	Class discussion	A1.3, A3.1
12	Minimum spanning trees problem	G3.1	LT:3 BT: 3 TH: 0	Class discussion	A1.3, A3.1
13	Transportation problem	G3.2	LT:3 BT: 3 TH: 0	Class discussion	A1.3, A3.1
14	Maximum flow problem	G3.3	LT:3 BT: 3 TH: 0	Class discussion	A1.3, A3.1

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC

Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Phan Nguyen Ky Phuc
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Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS034IU

COURSE NAME
PRODUCT DESIGN & DEVELOPMENT

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Product Design & Development

Course Code: IS034IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Chung**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Thiết kế và phát triển sản phẩm
+ English: Product design & Development
- Course ID: IS034IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Product Design and Development course introduces to the students the role of multiple functions in creating a new product (*e.g.* marketing, finance, industrial design, engineering, production) as well as tools and methods for product design and development. Highlight of the course is the project in which the students will design a new product and produce a prototype version of it. Project ideas come from the students in the class and project teams are formed based on expressed student preferences. Throughout the project, the students will apply their learned principles and methods of product development in a realistic context. The course also enables the students to coordinate interdisciplinary tasks in order to achieve a common objective.

3. Textbooks and Other Required Materials

Textbooks:

[1] Karl T. Ulrich & Steven D. Eppinger, Product design & development – 5th Edition, McGraw-Hill, 2012.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understanding the role of multiple functions in creating a new product (*e.g.* marketing, finance, industrial design, engineering, and production) as well as tools and	1, 2, 6	1.1, 1.2 1.3, 2.1, 2.2, 3.1	Understand

	methods for product design and development			
G2	Applying in design a new product and produce a prototype version of it. Being learn principles and methods of product development in a realistic context.	4, 5, 6	1.2 1.3, 2.1, 2.2, 2.3, 3.1, 3.2	Apply
G3	Coordinate interdisciplinary tasks in order to achieve a common objective.	3, 5, 6, 7	3.2, 3.3	Apply

ABET_Student Outcomes
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understanding the role of multiple functions in creating a new product (*e.g.* marketing, finance, industrial design, engineering, and production)	**I, T**
G1.2	Understanding the role of tools and methods for product design and development	**I, T**
G2.1	Applying in design a new product and	**T, U**

	produce a prototype version of it.	
G2.2	Being apply principles and methods of product development in a realistic context	**U**
G3.1	Coordinate interdisciplinary tasks in order to achieve a common objective..	**U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2, G2.1, G2.1	15
	A1.2 Group Project	G2.1, G2.2, G3.1	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2, G3.1	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction to Product design & Development	G1.1	- Lecture presentation	- Project Group forming. - Read book	**A1.1**
2	Lecture 2: Identify Customer needs	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**
3	Lecture 3: Project selection Product planning	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
4	Lecture 4: Product specifications	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
5	Lecture 5: Product architecture.	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
6	Lecture 6: Concept	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**

	generation				**A1.2**
7	Lecture 7: Concept Selection	G1.2, G2.1	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1** **A1.2**
Midterm exam					**A2**
8	Lecture 8: Peer concept review	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** -Project progress **A1.2**
9	Lecture 9: Concept Testing	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** -Project progress **A1.2**
10	Lecture 10: Prototyping	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
11	Lecture 11: Industrial design/Design for Manufacturing	G1.2 G2.2	- Lecture presentation	- Presentation - Class discussion	- Quiz /HW **A1.1** -Project progress **A1.2**
12	Lecture 12: IProduct development economics		- Lecture presentation	- Presentation - Class discussion	- Quiz /HW **A1.1, A1.2**
13	Project Presentation	G1.2 G2.1 G2.2 G3.1		- Presentation - Class discussion	**A1.2, A2.1, A2.2 A3.1**
14	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, 04/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS040IU

COURSE NAME
MANAGEMENT INFORMATION SYSTEM

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Management Information Systems

Course Code: IS040IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Dao Vu Truong Son**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Quản lý hệ thống thông tin
+ English: Management Information Systems
- Course ID: IS040IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Integrates topics of management and organization theory, information and communication theory, and systems theory relevant to managing an organization's information resources. Includes computer hardware and software, telecommunications, and database concepts and emphasizes the e-commerce and Internet based business models to get a competitiveness of global based business environments. This course meets the requirements for a Technology Intensive course

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] James A. O'Brien, George M. Marakas, Introduction to Information Systems, 14th edition, McGraw-Hill, 2011.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Understand major principles and concepts of artificial intelligence.	*1,2*	1.3	Understand
G2	Apply artificial intelligence techniques into a practical case study.	*4,5,6,7*	1.3, 3.1, 4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the concepts of systems and information to business	**I, T**
G1.2	Address business needs for internet/electronic commerce	**T**
G2.1	Apply development tools to business information system.	**T**
G2.2	Discuss issues surrounding ethics, security, and global management as they relate to computer based information systems	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz	G1.1, G1.2	15
	A1.2 Homeworks	G1.1,G1.2,G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	**Student**	
1	MANAGEMENT INFORMATION SYSTEM (MIS):	G1.1	- Lecture presentation	- Group forming. - Class discussion - Read book	- Quiz **A1.1**
2 & 3	MANAGEMENT INFORMATION SYSTEM (MIS): (cont)	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz **A1.1** - Homework **A1.2**
4	KINDS OF INFORMATION SYSTEMS:	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
5	System Analysis and Development and Models	G1.1	- Lecture presentation	- Class discussion - Read book	- Homework **A1.2**
6 & 7	System Development Models:	G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
8	Review for Midterm	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
Midterm exam					**A2**
9 & 10	Manufacturing and Service Systems:	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
11&12	Enterprise System:	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
13&14	Choice of IT in MIS:	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1, A1.2**
15	Review	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	**Student**	
1					

2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.504 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Dao Vu Truong Son
Email	dvtson@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code

IS024IU

COURSE NAME

PROBABILITY MODEL IN OR

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: PROBABILITY MODEL IN OR

Course Code: IS024IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Phan Nguyen Ky Phuc**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Các môn hình bất định trong nghiên cứu vận hành
+ English: Probabilistic Models in OR
- Course ID: IS024IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course is to introduce the fundamental probabilistic models in operation research field. The course shows how a probabilistic system can be analyzed and come up with formulas. Topics to be covered include: random variable, discrete distribution, continuous distribution, joint distribution, expectation, Markov Chain, Poisson Process, queueing model, and reliability.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Sheldon M. Ross, Introduction to Probability Models, 2014, 11th edition.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Able to differentiate several discrete and continuous distributions. Compute the joint distributions.	1	1.2	Understand
G2	Able to formulate a system by using Discrete Markov Chain	6,7	1.2	Apply
G3	Able to formulate a system continuous Markov Chain	6,7	1.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1	Model and calculate joint distributions of discrete and continuous system	**T**
G2	Build the Markov Chain, find state space, and stability of the system	**U**
G3	Build the Markov Chain for the poison process, queuing models	**U**

6. Course Assessment

Thành phần đánh giá (1)	Bài đánh giá (Ax.x) (2)	CĐR môn học (G.x.x) (3)	Tỷ lệ % (4)
A1. Process assessment	A1.1: G1		10%
	A1.2: G2		10%
	A1.3: G3,		10%
A2. Midterm assessment	A2.1: G1, G2		30%
A3. Final assessment	A3.1 G3,		40%

7. Course Content

Theory

Week	Content	Learning outcome	Teaching and learning activities	Student Activities	Assessment
1	Introduction to discrete random variables	G1	-Lecture -Class discussion	-Class discussion	A1.1, A2.1
2	Most common discrete distribution and their applications	G1	-Lecture - Class discussion	-Class discussion	A1.1, A2.1
3	Most common continuous distribution and their applications	G1	- Lecture - Class discussion	-Class discussion	A1.1, A2.1
4	Joint distribution for discrete variable	G1	- Lecture - Class discussion	-Class discussion	A1.1, A2.1
5	Joint distribution for continuous variable.	G1	- Lecture - Class discussion	-Class discussion	A1.1, A2.1
6	Markov Chain	G2	- Lecture - Class discussion	-Class discussion	A1.2, A2.1
7	Markov Chain (cont)	G2	- Lecture - Class discussion	-Class discussion	A1.2, A2.1
Midterm exam					**Written exam**
8	Exponential Distribution	G3	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
9	Exponential Distribution (cont.)	G3	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
10	Poisson Process	G3	- Lecture	-Class	A1.3, A3.1

			- Class discussion	discussion	
11	Introduction to queuing model: M/M/1	G3	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
12	Queuing models: M/M/K, shoes side shop	G3	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
13	Reliability	G3	- Lecture - Class discussion	-Class discussion	A3.1
14	Reliability (cont.)	G3	- Lecture - Class discussion	-Class discussion	A3.1
15	Review		- Lecture -Class discussion	-Class discussion	
FINAL EXAMINATION					**Written exam**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Phan Nguyen Ky Phuc
Email	pnkphuc@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS079IU

COURSE NAME
SCIENTIFIC WRITING

Tháng Bảy 2022

VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Scientific Writing

Course Code: IS079IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Dao Vu Truong Son**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Tiếng Anh Học Thuật
+ English: Scientific Writing
- Course ID: IS079IU
- Course type

General ☒Fundamental
Specialization Others: ……
Skills Project/ Internship/ Thesis

- Number of credits: 2
  + Lecture: 2
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course is offered for undergraduate students at ISE Department, IU. It aims to improve students' academic and scientific writing in English, and helps them successfully complete course reports, thesis, dissertations, and articles for publication as well as doing a proper presentation, etc. Upon completion of the course, we hope our students become more effective, more efficient, and more confident writers.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

Science Research Writing_ A Guide for Non-Native Speakers of English, Glassman, Imperial College Press, 2010

References:

Engineering your report – from start to finish, L.A. Krishnan, R. Jong, S. Kathpalia and T.M. Kim, Prentice Hall, 2003.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Students write course reports, thesis, dissertations, and articles for publication.	*3*	3.1,3.2	Understand

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Students write course reports, thesis, dissertations, and articles for publication.	**I, T**
G1.2	Students can understand other people's papers.	**I, T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1.Process assessment	A1.1 Project	G1.1, G1.2	30
A2.Midterm assessment	A2.1 Midterm Exam	G1.1	30
A3.Final assessement	A3.1 Final Exam	G1.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1&2	Introduction	G1.1	- Lecture presentation	- Group forming. - Textbook, Slides	- Class discussion **A1.1**
3&4	Literature review	G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
5&6&7	Describing methods, materials and processes	G1.1, G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
Midterm exam					**A2**
8&9&10	Presenting results and other visualization techniques	G1.1 G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
10&11	Writing abstract and conclusion				
12&13	Poster and oral presentation	G1.1 G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
14	Final presentation	G1.1 G1.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
15	Review for Final Exam		- Problems solving		- Class discussion **A1.1**
FINAL EXAMINATION					**A3**

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be

tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.504 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Dao Vu Truong Son
Email	dvtson@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS041IU
COURSE NAME
LEAN PRODUCTION

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Lean Production

Course Code: IS041IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Tran Van Ly**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Hệ thống sản xuất tinh gọn
+ English: Lean Production
- Course ID: IS041IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course will help students to understand the concepts and philosophies of lean, get familiar with lean tools/techniques, especially the concepts behind the tools/techniques used, and develop analytical, problem solving skills. Therefore, the students will be able to join well in most of foreign-invested enterprises or large organizations in Vietnam after graduation. Ultimately, they will be able to apply lean philosophy creatively in each unique practical situation.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Toyota Production System: An Integrated Approach to Just-In-Time, 4th Edition, Yasuhiro Monden.

References:

- Lean thinking: Banish waste and create wealth in your corporation, James Womack & Daniel Johns, Free Press, 2003
- The Toyota way, Jeffrey Liker, McGraw-Hill, 2004
- The machine that changed the world, James Womack, Daniel Johns and Daniel Roos, Rawson Associates, 1990
- Lean production simplified, Pascal Dennis
- Seeing the whole, Dan John, Jim Womark
- Learning to see, Dan John, Jim Womark
- Total Productive Maintenance, Steven Borris, McGraw-Hill, 2006

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand different kinds of production and the background and philosophies of lean production, analyzing existing systems and identify different kinds of waste	*1,2,5*	*1.3, 3.1*	Understand
G2	Apply approaches used in implementing lean production such as 5S, stability, pull production, cellular arrangement and layout improvement, quick change, total productive maintenance, mistake reduction, standards, leveling, visual management to real-life problems	*4,5,6,7*	*1.3, 2.4, 3.1, 4.2*	Apply

* ***ABET_Student Outcomes***
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand different kinds of production and the background and philosophies of lean production	**I, T**
G1.2	Understand method to analyze existing systems and identify different kinds of waste.	**T**
G2.1	Apply approaches used in implementing lean production such as 5S, stability, pull production, cellular arrangement and layout improvement, quick change	**T**
G2.2	Apply for total productive maintenance, mistake reduction, standards, leveling, visual management to real-life problems	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homework	G1.1, G1.2	15
	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: The birth of Lean production, house of Lean production, Muda	G1.1	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	- Quiz **A1.1**
2	Lecture 2: Value stream mapping	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz **A1.1** - Homework **A1.2**

3	Lecture 3: Process stability – 5S, Toyota Productive Maintenance	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
4	Lecture 4: Standardized work – takt time/ cycle time, work sequence, in-process stock – auditing standardized work	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
5	Lecture 5: Production smoothing	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Homework **A1.2**
6	Lecture 6: Cellular manufacturing	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
7	Lecture 7: Adaptable Kanban system maintains JIT production	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
8	Review for Midterm	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
Midterm exam					**A2**
9	Lecture 8: Determining the number of Kanban	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture7.	- Quiz /HW **A1.1, A1.2**
10	Lecture 9: How Toyota shortened production lead time	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
11	Lecture 10: Autonomous defects control (Pokayoke)	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
12	Lecture 11: Numerical analysis for productivity improvement	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
	Lecture 12:	G1.2	- Lecture	- Class discussion	- Quiz /HW

	Implementing the TPS Case study presentation	G2.2	presentation	- Read book & lecture 9.	**A1.1, A1.2**
14	Fieldtrip or review	G1.2 G2.2	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
Final Examination					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
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Instructor's name	**Tran Van Ly**
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Ho Chi Minh City, 04/03/2020

Dean of Shool

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS083IU

COURSE NAME
CAPSTONE DESIGN

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Capstone Design

Course Code: IS083IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name			
Position			
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
  + Vietnamese: Đồ án môn học
  + English: Capstone Design
- Course ID: IS083IU
- Course type

General	Fundamental
Specialization	Others: ……
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Calculus II
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Capstone project is a semester-long course taken at the senior year. Students engage in a research project focused on economic, social and environmental problems to study a current system, identify the possible problem, and explore in literature published research achievements in a research field that students have already agreed upon with potential thesis advisors in order to support and develop in thesis later. This research is individual work. Students and advisors meet to discuss together as much as needed. In the result, students have to develop a prototype module or system with the basic level requirements that it can improve and develop in the thesis.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:
Depending on specific problems
References:
Published scientific articles and technical documents
Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Be able to apply their knowledge and experiences acquired in previous courses to their research.	1, 2, 4	1.1, 1.2, 4.1	Apply
G2	Be able to analyze a practical problem and conduct literature review.	1, 6	1.1, 1.2, 2.1	Apply
G3	Apply to develop and design a prototype module or system	1, 2, 6	2.2, 4.1,	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CĐR (X,x) (1)	Description (2)	Teaching Methods (I, T, U) (3)
G1.1	Know how to study a current system	T
G1.2	Know how to identify a specific problem that related to the economic, social and environmental consideration.	T
G2.1	Be able to conduct literature review related to the specific topic, collect sources information	U
G2.2	Be able to develop a prototype module or system	U
G3.1	Be able to report and defend their research in both writing and speaking format	U
G4.1	Know how to identify a specific problem that related to the economic, social and environmental consideration.	T

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Final report	A1.1 Study a current system	G1.1, G1.2, G4.1	20
	A1.2 Identify the problems	G1.1, G1.2, G4.1	20
	A1.3 Conduct the literature review	G2.1	20
	A1.4 Develop a prototype system	G2.1, G4.1	20
A2. Final assessement	A2.1 Final Presentation	G3.1	20

7. Course Content

It depends on the individual work between students and advisors, including main contents:

1. Select the research topics and find out the specific problem.
2. Identify the specific problem in each situation and proposed methods.
3. Search the related papers in research field and make literature review.
4. Test the proposed system with small size problem.
5. Write a final report and make presentation.

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.602 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	All advisor
Email	

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

International University

Department of Biotechnology

COURSE SYLLABUS

1. **Name of course: ENVIRONMENTALSCIENCE**
2. **Course code:** PE014IU
3. **Course type:**

   Specialization

   Core

   Requirement

   Elective
4. **Number of credits:** 3 credits
   - Theory: 3 credits
   - Practice: 0 credit
5. **Prerequisite:** None
6. **Parallel teaching in the course:** none
7. **Course Description**: Currently, environment is the most concerned issue, especially in Vietnam. It is importance to improve knowledge and awareness of people on the significance of environment and its effect on human. This course provides the basic knowledge of environmental science that includes general issues, ecology, and the impact of human activities to natural resources and environment and sustainable development. The course provide information about all general current issues; ecology;all facts of environmental science; knowledge how human activities impact on environment and its feedback; and suggest some sustainable solution to solve the issues.
8. **Course objectives:**This course provides student with the basic knowledge of environmental science that includes general issues, ecology and sustainability. It aims at increasing awareness of the students about possible impacts of human activities on the environment and natural resources in order to justify relevant economic practices; and developing ability to suggest simple sustainable strategies to mitigate the impact of human activities on the environment and natural resource.

9. Textbooks and references:

Recommended books:

- Miller T.G. and Spoolman S.E. (2010), *Environmental Science,* 13th edition, Cengage Learning Publisher, USA. ISBN: 0495560173.

10. Learningoutcomes:

	Course Learning outcomes	Program Learning outcome
Knowledge	An understanding of: – Environmental and environmental science terminology and concepts; – Integration of environment and development; – Population growth, natural resources utilization and exploitation; environmental implications and mitigation measure. – Climate change: causes, impacts and adaptation measures; – Environmental economic and Sustainable development.	c, h, j
Skill	- Ability to explain natural phenomenon and environmental problems caused by human activities - Ability to predict population growth, natural resource demands, waste generations in future - Ability to convince people to protect environment by simple activities. - Ability to suggest simple sustainable strategies to mitigate the impact of human activities on the environment and natural resource. **- Ability to work in group (group project)**	a, g
Attitude	Improve awaremess of environmental protection	f

11. Course implementation:

Time: 15 weeks for theory (3 periods per week)

Teaching and learning activities

- Classroom activities: Lectures, discussions, presentations

- Self-learning: Reading
- Team-work: Group report

12. Course outline:

Week	Topics
1	**Chapter 1: Environmental problems, their causes and sustainability**
2& 3	**Chapter 2: Ecosystems**
4	**Chapter 3: Evolution and biodiversity**
5	**Chapter 4: Community ecology: population and species interaction**
6	**Chapter 5: Human population**
7	**Chapter 6: Food and Soil management**
8	**Chapter 7: Water and water pollution**
9	**Chapter 8: Nonrenewable minerals**
10	**Chapter 9: Energy**
11 &12	**Chapter 10: Air pollution, climate change and ozone loss**
13	**Chapter 11: Environmental Economics and Polictics**
14	**Presentation : Group project**
15	**Presentation : Group project**

13. Course Assessment:

13.1. Grading:

Activity	Percentage
In-class quizzes, group project	30%
Mid-term exam	30%
Final exam	40%

13.2. Assessment Plan:

No	Assessment tasks	Assessment criteria	Level of cognitive Domain												Weight (%)
			Applying			Analyzing			Evaluating			Creating			
			MCQ	WQ	P	MCQ	WQ	P	MCQ	WQ	P	MCQ	WQ	P	
1	In class quiz Midterm Final exam	An understanding of: – Environmental	x			x			x						20

		and environmental science terminology and concepts; – Integration of environment and development; – Population growth, natural resources utilization and exploitation; environmental implications and mitigation measures – Climate change: causes, impacts and adaptation measures; – Environmental economic and Sustainable development.														
2	In class quiz Midterm Final exam	Ability to explain natural phenomenon and environmental problems caused by human activities				x	x		x							20
3	In class quiz Midterm Final exam	Ability to predict population growth, natural resource demands, waste generations in future				x		x			x					15
4	Group project	Ability to convince people to protect environment by simple activities.			x			x			x				x	20
5	In class quiz Midterm Final exam	Ability to suggest simple sustainable strategies to mitigate the impact of human activities on the environment and natural						x			x				x	25

		resource.													
	Total														100

Note: MCQ: Multiple choice questions ; **WQ**: Writing questions; **P**: Presentation; **L**: Labwork

14. Student responsibility & Policies:

- *Student responsibility:* Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on group project.
- *Attendance:* Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- *Missed tests:* In-class quiz will be random. Student who missed it with out permission, will got 0, Students are not allowed to miss any of the tests (midterm and final test). There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students re-take the tests.)

Developed by:	**Last updated:** April, 17th 2017
MSc. Bùi Xuân Anh Đào	
Department of Aquatic Resource Management, School of BT	
Email: *bxadao@hcmiu.edu.vn*	

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS032IU

COURSE NAME
FACILITY LAYOUT

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Facility Layout

Course Code: IS032IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Luu van Thanh**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Thiết kế mặt bằng hệ thống công nghiệp
+ English: Facility Layout
- Course ID: IS032IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course focuses on the fundamentals of the design, layout, and location of industrial and nonmanufacturing facilities. Selection of machines and material handling equipment and their efficient arrangement. Emphasis on quantitative methods. Warehouse layout. Facility location theory

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3. Textbooks and Other Required Materials

Textbooks:

[1] Tompkins, J.A., White, J.A., et al., (2002), Facilities Planning, 3rd Edition, John Wiley and Sons.

References:

[2] R.L., Francis, L. F., McGinnis, J.A., White, (1992), Facility Layout and Location: an Analytical Approach, 2nd edition, Prentice-Hall, Inc., Englewood Cliffs, N.J.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand the fundamentals of the design, layout, and location of industrial and nonmanufacturing facilities; Identify different requirements regarding facilities design such as process, product, schedule, flow systems, space and relationship, personnel, and material handling system.	1, 5	1.1, 1.2, 1.3, 3.1	Understand

G2	Apply alternative solution methodologies available in solving facility layout and location problems; Formulate facility layout and location problems under mathematical programming techniques and solve them in LINGO, CPLEX, Python software.	2,5,6,7	1.3, 2.1, 2.4, 3.1, 4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the fundamentals of the design, layout, and location of industrial and nonmanufacturing facilities.	**I, T**
G1.2	Identify different requirements regarding facilities design such as process, product, schedule, flow systems, space and relationship, personnel, and material handling system.	**T**
G2.1	Apply alternative solution methodologies available in solving facility layout and location problems.	**T**

G2.2	Formulate facility layout and location problems under mathematical programming techniques and solve them in LINGO, CPLEX, Python software.	**T, U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2	15
	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction to Facilities Planning.	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture 2.	- Quiz/Homework **A1.1**
2&3	Lecture 2: Product and Process Design.	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW **A1.1**
4&5	Lecture 3: Flow systems, activity relationships, and space requirement	G1.2	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1**
6&7	Lecture 4: Plant Layout, Inspection Systems in Design	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Quiz /HW **A1.1**
8	Review for Midterm	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1**
Midterm exam					**A2**
9 & 10	Lecture 5: Manufacturing & warehouse	G1.2	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1** -Project progress **A1.2**

	operations and material handling systems				
11	Lecture 6: Single & Multi-Facility Location models	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 7.	- Quiz /HW **A1.1** -Project progress **A1.2**
12	Lecture 7: Machine Layout Models	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1** -Project progress **A1.2**
13	Lecture 8: Warehouse and Order Picking Systems	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1** -Project progress **A1.2**
14	Project Presentation	G2.1 G2.2	- Lecture presentation	- Presentation - Class discussion	**A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Luu Van Thanh
Email	lvthanh@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS026IU
COURSE NAME
PROJECT MANAGEMENT

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Project Management

Course Code: IS026IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Duong Vo Nhi Anh**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
  + Vietnamese: Quản lý dự án
  + English: Project Management
- Course ID: IS026IU
- Course type
  General
  ☒ Specialization
  Skills
  Fundamental
  Others: ……
  Project/ Internship/ Thesis
- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

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.
In addition, this course also provides a computer aid for project management by introducing the application of Microsoft Project and project scheduling.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] A Guide to the project management body of knowledge (PMBOK® Guide). **4th Edition, Newtown Square, Pa. : Project Management Institute, Inc., c2008.**

References:

- Project management : a managerial approach / Jack R. Meredith, Samuel J. Mantel. **7th edition, Hoboken, N.J. : Wiley ; Chichester : John Wiley [distributor], 2009.**

- The project management life cycle/ Jason West land. Kogan Page Limited, 2006

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	

G1	Understand different kinds of production and the background and philosophies of	*1,2,5*	*1.3, 3.1*	Understand
G2	Apply approaches used in implementing lean production such as	*4,5,6,7*	*1.3, 2.4*	Apply

* ***ABET_Student Outcomes***
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Provide the foundation knowledge for student on project management which strengthens their competence on competitive labour market	**I, T**
G1.2	Ability constructing the network: AON & AOA + Gannt chart + Solving the network	**I, T**
G2.1	- Project cost management	**I, T**
G2.2	Apply this knowledge into job in future	**I, T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1.Process assessment	A1.1 Quiz/Homework	G1.1, G1.2	15
	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	+ Course introduction + Introduction of Project management + The project life cycle and organization	G1.1	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	- Quiz **A1.1**
2	- Project management processes for a project + Common project management process interactions. + Project management process groups. + Initiating process group + Planning process group	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz **A1.1** - Homework **A1.2**
3	- Work breakdown structure (WBS)	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
4	Project scheduling.	G1.1	- Lecture presentation	- Class discussion - Read book &	- Quiz /HW **A1.1, A1.2**

	+ Constructing the network: AON & AOA + Gannt chart + Solving the network + Using Microsoft Project software			lecture 4.	
5	- Resource allocation + Critical path method – Crashing a project + Resource allocation problem + Resource loading + Resource leveling + Constrained resource scheduling	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Homework **A1.2**
6	Logical Framework Approach (LFA) (part 1)	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
7	- Logical Framework Approach (LFA) (part 2) - Review	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
8	- Project cost management Project budgeting & Cost estimation + Top-Down budgeting + Bottom-Up budgeting + Improving the process of cost estimation	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
Midterm exam					**A2**
9	- Risk management. + Risk management	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture7.	- Quiz /HW **A1.1, A1.2**

	planning + Risk identification + Risk analysis + Risk monitoring and control + Using Crystal Ball software				
10	- Project quality management + Plan quality + Perform quality assurance + Perform quality control)	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
11	- Project human resource management + Develop human resource plan + Acquire project team + Develop project team + Manage project team	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
12	- Project procurement management + Plan procurements + Conduct procurements + Administer procurements + Close procurements	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
13	- Project executing. - Project monitoring & control.	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 9.	- Quiz /HW **A1.1, A1.2**
14	- Project closing - Presentation of term project (part 1)	G1.2 G2.2	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
15	- Presentation of term project (part	G1.2 G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**

	2) - Review	G2.2			
Final Examination					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.504 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	(028) 37244270
Instructor's name	
Email	

Ho Chi Minh City, 04/03/2020

Dean of Shool

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS025IU
COURSE NAME
QUALITY MANAGEMENT

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Quality Management

Course Code: IS025IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Duong Vo Nhi Anh**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Quản lý chất lượng
+ English: Quality Management
- Course ID: IS025IU
- Course type

General — Fundamental
☒ Specialization — Others: ……
Skills — Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Introduction to the principles of quality management, with an emphasis on cross-functional problem solving. This course will provide a basic understanding of the philosophy, conceptual frameworks and the tools of the Total Quality Management.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] D.L. Goetsch and Stanley B. Davis, Quality Management- 5th edition, Prentice Hall, 2006.
[2] Howard S. Gitlow et. al., Quality Management - 3rd edition, McGraw Hill, 2005

References:

- Evans, Managing for quality and performance excellence -7th edition, Cengage Learning.
- Winston, Operations Research – 4th edition, Cengage Learning.
- Barry Render, Quantitative analysis for management - 9th edition, Prentice Hall, 2006.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand different kinds of quality tools, PDCA, …	*1,2,5*	*1.3, 3.1*	Understand
	Apply quality tools in problem	*4,5,6,7*		Apply

G2	solving, quality improvement to reduce cost, quality of products		*1.3, 2.4*	

* ***ABET_Student Outcomes***
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand different kinds of quality and the background and philosophies of quality	**I, T**
G1.2	Understand method to analyze existing problem and identify different kinds of solutions	**T**
G2.1	Apply approaches used in implementing quality tools	**T**
G2.2	Apply for improve standards, quality of products	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process	A1.1 Quiz/Homework	G1.1, G1.2	15

assessment	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Introduction to Quality Management Fundamentals of quality: process basics, types of quality, relationship between quality and cost and productivity.	G1.1	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	- Quiz **A1.1**
2	Why Total Quality Management Definitions and basic principles How to realize TQM: three components of TQM, quality and global competitiveness, environment of today. Why Total Quality Management in a Knowledge-Based Economy? Breaking out of the negative circle	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz **A1.1** - Homework **A1.2**
3	Introducing the Three Pillars of TQM Quality Planning: Quality parameters-needs of	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**

	customers and employees. Quality Control: Measuring and process analysis Quality Improvement & Problem Solving Method-SCRA.				
4	Behavioral Component of TQM Establishing a quality culture, conditions for a successful TQM policy, increasing the quality of cooperation processes, TQM & the strategy of change, How can the behavioral component be developed?	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
5	Management components of TQM: Role of Top Management/ Task-oriented meetings. Roadmap to business excellence	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Homework **A1.2**
6	Technical components of TQM: Quality Systems and Quality Assurance Quality tools: ISO, … .	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
7	Review	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
8	Technical components of TQM (cont) ISO and other	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**

	statistical tools. Collection and presentation of data				
Midterm exam					**A2**
9	SPC/SQC: control charts Stabilizing and improving a process with control charts. Variables and attribute control charts. How to read a control chard: 7 rules.	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture7.	- Quiz /HW **A1.1, A1.2**
10	SPC/SQC: control charts Stabilizing and improving a process with control charts. Variables and attribute control charts. How to read a control chard: 7 rules.	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
11	SPC/SQC: control charts Stabilizing and improving a process with control charts. Variables and attribute control charts. How to read a control chard: 7 rules.)	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
12	Standard Operating Procedures (SOP) Quality Function Deployment (QFD	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**

13	Standard Operating Procedures (SOP) Quality Function Deployment (QFD	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 9.	- Quiz /HW **A1.1, A1.2**
14	Group presentation	G1.2 G2.2	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
Final Examination					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
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Instructor's name	
Email	

Ho Chi Minh City, 04/03/2020

Dean of Shool

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS078IU

COURSE NAME
LOGISTICS ENGINEERING & SUPPLY CHAIN DESIGN

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Logistics Engineering & Supply Chain Design

Course Code: IS078IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Hoang Huy**		
Position	**Lecturer**		
Signature			
Date	**…/03/2020**		

1. General Information

- Course Title

+ Vietnamese: Kỹ Thuật Thiết Kế Chuỗi Cung Ứng và Logistics

+ English: Logistics Engineering & Supply Chain Design

- Course ID: IS078IU

- Course type

General	Fundamental
Specialization	Others:…
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  - + Lecture: 3
  - + Laboratory: 0
- Prerequisites: Deterministic Models in OR
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course aims to

- Develop an understanding of concepts and key points of Supply Chain Management.
- Develop an understanding of Logistics and Supply Chain structure, and how to design an effective supply chain.
- Formulate and solve problems related to logistics and supply chain with optimization techniques.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

1. Simchi-Levi, D., Kaminsky, P., and Simchi-Levi, E. (2008). Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies. Boston: McGraw-Hill/ Irwin.

References books:

2. "Chopra, S., and Meindl, P. (2012). Supply chain management: Strategy, Planning and Operation, 5th ed.. NY: Prentice Hall.

3. Mankiw NG (2011). Principles of Economics, 5th edition. South-Western Cengage Learning.

4. Simchi-Levi, D., Chen, X., Bramel, J. (2014). The Logic of Logistics Management. Springer Series in Operations Research and Financial Engineering.

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4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	

G1	Understanding of concepts and key points of Supply Chain Management.	4, 7	4.1	Apply
G2	Understanding of Logistics and Supply Chain structure, and how to design an effective supply chain	1,2	1.1, 1.2	Understand
G3	Formulate and solve problems related to logistics and supply chain with optimization techniques.	3,5	1.3, 3.1, 4.1	Analyze

* *ABET Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understanding of concepts, key points and primary challenges of Supply Chain Management.	**I, T**
G1.2	Able to distinguish different concepts and	**T**

	problems in logistics and supply chain management.	
G2.1	Know how to formulate and solve different logistics and supply chain problems by using the mathematical techniques.	**T**
G2.2	Know how to solve the models using computer-based software such as CPLEX, LINGO, Python, Matlab.	**T, U**
G3.1	Able to solve practical problems and analyze the solutions.	**T**

6. Course Assessment

Assessment types	**Assessment component**	**Course learning outcomes (CLOs) (Gx.x)**	**Percentage %**
A1.Process assessment	A1.1 Quiz	G1.1, G1.2	5
	A1.2 Homeworks	G1.1, G1.2	5
	A1.3 Project	G2.1, G2.2, G3.1	20
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1, G2.2	30
A3. Final assessement	A3.1 Final Exam	G1.1, G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1	Lecture 1: Introduction to Supply Chain Management	G1.1, G1.2	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	
2	Lecture 2: Inventory management and Risk Pooling	G1.1, G2.1, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW **A1.1, A1.2**
3	Lecture 3: Inventory management and Risk Pooling	G1.1, G2.1, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
4	Lecture 4: Inventory management and	G1.1, G2.1, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Quiz /HW **A1.1, A1.2**

	Risk Pooling				
5	Lecture 5: Network Planning	G1.1, G1.2, G 2.1, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
6	Lecture 6: Distribution strategies	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book & lecture 7.	- Quiz /HW **A1.1, A1.2**
7	Review for midterm exam	G1.1, G1.2, G2.1	-Lecture presentation -Problem solving		HW **A1.2**
Midterm exam					**A2**
10	Lecture 7: Supply contracts	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
11	Lecture 8: The value of information	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book & lecture 9.	- Quiz /HW **A1.1, A1.2**
12	Lecture 9: Aggregate Production Planning	G1.1 G2.1, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 10.	- Quiz /HW **A1.1, A1.2**
13	Lecture 10: Smart pricing & revenue management	G1.1, G1.2,	- Lecture presentation	- Class discussion - Read book & lecture 11.	- Quiz /HW **A1.1, A1.2**
14	Lecture 11: Coordinated product and supply chain design	G1.1, G2.1	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
15	Group presentation and revision for final exam	G3.1	-Oral Presentation	-Group presentation	- Project **A1.3**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.602 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Hoang Huy
Email	nhhuy@hcmiu.edu.vn

Ho Chi Minh City, …/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS027IU

COURSE NAME
PRODUCTION PLANNING & SCHEDULING

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Production Planning & Scheduling

Course Code: IS027IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Phan Nguyen Ky Phuc**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Kỹ thuật điều độ trong sản xuất và dịch vụ
+ English: Production planning & Scheduling
- Course ID: IS027IU
- Course type

General — Fundamental
☒ Specialization — Others: ……
Skills — Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course gives an introduction to scheduling problems: techniques, principles, algorithms and computerized scheduling systems.

Topics include scheduling algorithms for single machine, parallel machine, flow shop, job shop and also solution methodologies such as heuristic procedures, constructive algorithms, branch and bound approaches, and genetic algorithms.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1]M. L., Pinedo, Scheduling: Theory, Algorithms, and Systems, 3rd edition, Springer, 2008.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Recognize different shop configurations, manufacturing scheduling problems, and performance measures.	1	1.2	Understand
G2	Identify basic algorithms and procedures to use in different shop	1	1.2	Apply

	configurations.			
G3	Understand alternative solution methodologies available in solving manufacturing and service scheduling problems.	1,6	1.3	Apply
G4	Formulate scheduling and sequencing problems under Mathematical Programming techniques and solve them in LINGO, CPLEX, Python software	6,7	4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1	Student can recognize and remember the common KPI that use in scheduling	I
G2	Student can build model for common scheduling problem such as flowshop, jobshop, production planning, flexible	T

	assembly system	
G3	Student can apply heuristics algorithm such as shifting bottle neck, grouping spacing heuristic, maximum weighting of number of activities	T
G4	Student can build program for CPLEX from the mathematical model	U

6. Course Assessment

Assessment component (1)	Assessment form (A.x.x) (2)	Percentage % (3)
A1. Process assessment	A1.1 Quiz	5%
	A1.2 Homework	10%
A2. Midterm assessment	A2.1 Mid-term Exam	30%
A3. Final assessment	A3.1 Full Semester Project	15%
	A3.2 Final exam	40%

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Lecturer	Student	Assessment Activities
1	Introduction to scheduling	G1	LT: 3 BT: 3 TH: 0	Class discussion	
2	How to build constraints	G2	LT: 3 BT: 3 TH: 0	Class discussion	
3&4	Guide for using cplex	G4	LT: 6 BT: 3 TH: 0	Class discussion+ Programming	A1.2, A2.1
5	PERT Model	G2	LT: 3 BT: 3 TH: 0	Class discussion+ Programming	A1.2, A2.1
6	Single Machine Dispatching Rule Model	G2	LT: 3 BT: 3 TH: 0	Class discussion+ Programming	A1.2,A2.1
7	Scheduling with Workforce Constrain	G2,G3	LT: 3 BT: 3 TH: 0	Class discussion+ Programming	A1.2, A2.1
8	Job shop scheduling-Exact	G2	LT: 3 BT: 3	Class discussion+	A1.2, A2.1

	Math Model		TH: 0	Programming	
Review					
9	Job shop scheduling-Shifting Bottle Net	G3	LT:3 BT: 3 TH: 0	Class discussion+ Programming	A1.1, A3.1
10	Scheduling of Flexible Assembly Systems	G2, G3	LT:3 BT: 3 TH: 0	Class discussion+ Programming	A1.1, A3.2
11	Scheduling in Supply Chain	G2	LT:3 BT: 3 TH: 0	Class discussion+ Programming	A1.2, A3.2
12	Scheduling in Flexible Flowshop and Jobshop	G2,G3	LT:3 BT: 3 TH: 0	Class discussion+ Programming	A1.2, A3.1,A3.2
13	Workforce Scheduling	G3	LT:3 BT: 3 TH: 0	Class discussion+ Programming	A1.2, A3.2
Review					

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Phan Nguyen Ky Phuc
Email	pnkphuc@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS028IU
SIMULATION MODELS IN INDUSTRIAL ENGINEERING

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Simulation Models in Industrial Engineering

Course Code: IS028IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Tran Van Ly**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Mô hình hóa và mô phỏng trong kỹ thuật công nghiệp
+ English: Simulation Models in Industrial Engineering
- Course ID: IS028IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 1
- Prerequisites: Engineering Probability & Statistics
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Modeling and analysis of industrial and service systems, modeling perspectives, discrete event and continuous simulation, model building using ARENA/SIMAN, statistical aspects of simulation.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Banks, J., Carson, J. S., Nelson, B. L., and Nicol, D. M., Discrete-Event System Simulation, 4th edition, Prentice-Hall, 2005.

[2] Kelton, W. D., Sadowski, R. P., and Sturrock, D. T., Simulation with Arena, McGraw-Hill, New York (fourth edition), 2006.

References:

Software: ARENA Software version: 15.00
Licenses: Academic for students, unlimited

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand modeling and analysis of manufacturing and service systems, discrete-event and continuous simulation using various levels of ARENA/SIMAN, and statistical aspects of simulation including input analysis,	*1,2,5*	*1.3, 3.1*	Understand

	random variety generation, output analysis, and variance reduction techniques			
G2	Apply model building experience through various case studies involving simulation of industrial systems to identify problems and seek improvement throughout simulation results	*4,5,6,7*	*1.3, 2.4, 3.1, 4.2*	Apply

* ***ABET_Student Outcomes***
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand modeling and analysis of manufacturing and service systems, discrete-event and continuous simulation using various levels of ARENA/SIMAN	**I, T**
G1.2	Understand statistical aspects of simulation including input analysis, random variety generation, output analysis, and variance reduction techniques	**T**

G2.1	Apply to model and develop experience through various case studies involving simulation of industrial systems	**T**
G2.2	Apply to identify problems and seek improvement throughout simulation results	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Assignment	G1.1, G1.2	5
	A1.2 Quiz/Homework	G2.1, G2.2	5
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	20
	A2.2 Laboratory Exam	G1.2, G2.2	10
A3. Final assessement	A3.1 Full Semester Project	G1.2, G2.2	20
	A3.2 Final Exam	G1.1, G1.2, G2.2	30
	A3.3 Laboratory Exam	G1.2, G2.2	10

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Introduction	G1.1	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 1.	- Quiz **A1.1**
2&3	Introduction to performance evaluation	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 2.	- Quiz **A1.1** - Homework **A1.2**
4&5	Basics of discrete-event simulation	G1.2	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW **A1.1, A1.2**
6	Random Numbers	G2.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
7	Review		- Lecture presentation	- Class discussion - Read book & lecture 5.	- Homework **A1.2**
Midterm exam					**A2**

8&9	Input modeling	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
9&10	Verification and validation of simulation models	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 7.	- Quiz /HW **A1.1, A1.2**
11&12	Output analysis and statistical issues	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
13	Validation and Comparison	G1.2 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 9.	- Quiz /HW **A1.1, A1.2**
14	Presentation	G1.2 G2.2	- Lecture presentation	- Presentation, Q&A	- Quiz /HW **A1.1, A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
Final exam					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1	Introduction to ARENA-Examples - How to install and use simulation software - Create, dispose, process modules	G1.1	- Lecture presentation, guidance TA: Technical support	Instalation of software Practice with PC	- Quiz **A1.1**
2	Basic process of ARENA-Examples - Assign, Decide, Batch, Separate modules - Identify entity type, attributes, variables - Declare type of resources and capacity	G1.1	- Lecture presentation, checking results TA: Technical support	Input Modelling	- Quiz **A1.1** - Homework **A1.2**
3	Advanced Process of ARENA-Examples - Hold, Match modules - Seize, Delay, Release modules - *Example: Assembly Production*	G1.2	- Lecture presentation, checking results TA: Technical support	Modelling Production Lines	- Quiz /HW **A1.1, A1.2**

4	Advanced Transfer of ARENA-Examples - Route, Station, Move, Pick Station module - Assign sequence - *Example: Job-shop*	G2.1	- Lecture presentation, TA: Technical support	Modelling Supply Chain System	- Quiz /HW **A1.1, A1.2**
5	Review for Midterm	G2.1	- Problems solving	- Class discussion	- Homework **A1.2**
Midterm exam					**A2**
6	Advanced Transfer of ARENA-Examples (Cont.) - Request, Transport, Free, Conveyer modules - Declare type of transporter and capacity - *Example: Transportation, Pick-up in warehouse*	G2.1	- Lecture presentation, checking results TA: Technical support	Modelling Transportation System	- Quiz /HW **A1.1, A1.2**
7	Simulation results: - Read reports - Analyze reports	G2.2	- Lecture presentation, TA: Technical support	Output analysis Review & Conclusion	- Quiz /HW **A1.1, A1.2**
8	Review		- Problems solving	- Class discussion	- Homework **A1.2**
Final exam					**A3**

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	(028) 37244270
Instructor's name	**Tran Van Ly**
Email	tvly@hcmiu.edu.vn

Ho Chi Minh City, 04/03/2020

Dean of Shool

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS087IU

COURSE NAME
MANUFACTURING PROCESSES

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Manufacturing Processes

Course Code: IS087IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name			
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Các quá trình sản xuất
+ English: Manufacturing Processes
- Course ID: IS087IU
- Course type

General	Fundamental
Specialization	☒ Others: elective
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 2
  + Laboratory: 1
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course provides students with basic background about the manufacturing processes of products by using machining technologies such as casting, forging, welding, turning, milling, grinding, . . . These are the basic machining processes and common use; students can apply and develop in manufacturing areas for produce new products with advanced technologies.

.

3. Textbooks and Other Required Materials

Textbooks:

[1] Rajender Singh, Introduction to basic Manufacturing Processes and Workshop Technology, New Age International (P) Limited, 2006.

[2] H.N. Gupta, R.C. Gupta, Arun Mittal, Manufacturing Processes, New Age International (P) Limited, Publishers 2009

References:

[3] Mikell P. Groover Fundamentals of Modern Manufacturing, John Wiley & Son, 2010.
[4] Kalpakjian and Schmid, Manufacturing Engineering and Technology, Prentice Hall, New Jersey, 2013.
[5] DeGarmo, Black, and Kohser, Materials and Processes in Manufacturing, John Wiley & Sons, Inc, New York, 2011.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Develop a fundamental and	1, 2,6	1.1, 1.2,	Understand

	advanced concepts of the manufacturing processes; understand the functions of machining technologies.		1.3	
G2	Ability to use the technologies for manufacture new products with advanced machining processes.	2,6	1.3, 3.1, 4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Develop a fundamental and advanced concepts of the manufacturing processes	**I, T**
G1.2	understand the functions of machining technologies.	**T**
G2.1	Ability to use the technologies for manufacture new products with advanced machining processes.	**T, U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs)	Percentage %

		(Gx.x)	
A1. Process assessment	A1.1 Assignment/Homeworks	G1.1, G1.2	15
	A1.2 Lab	G2.1	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	**Introduction to Manufacturing Processes:** Manufacturing processes; Classification; Manufacturing system	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/HW **A1.1**
2	**Properties of Materials:** Classification of Engineering materials; Properties; Applications; Cutting tool materials	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/HW **A1.1**
3	**Mold and Casting:** Introduction; Permanent Mold; Pressure Die Casting; Centrifugal casting	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/HW **A1.1**
4	**Forging:** Introduction; Forgeability; Effect of forging on metal characteristic; Forging Method	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/HW **A1.1**
5	**Welding:** Introduction;	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion	- Quiz/HW **A1.1**

	Welding process; Classification of welding; Gas welding process; Arc welding process			- Read book & lecture.	
6	**Sheet metal work:** Introduction; Folding terminology of sheet metal joint; Sheet metal operations	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/HW **A1.1**
7	**Lathe Operations:** Introduction; Types of lathe; Lathe machine; Lathe operations; Thread cutting; Cutting conditions Review for midterm	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/HW **A1.1**
Midterm exam					**A2**
8	**Milling Operations:** Introduction; Principle of milling; Milling method; Types of Milling machine; Milling operations	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture .	- Quiz/HW **A1.1**
9	**Shaping Operations:** Introduction; Working principle of shaper; Shaper operations	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture .	- Quiz/HW **A1.1**
10	**Grinding Operations:** Introduction; Types of	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture .	- Quiz/HW **A1.1**

	grinding machine; Grinding operations				
11	**Mechanical Advanced Machining Processes:** Ultrasonic machining; Water jet machining; Abrasive jet machining; Magnetic abrasive finishing	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture .	- Quiz/HW **A1.1**
12	Lab: Machining Operations: Turning	G1.2 G2.1	- Problems solving	LAB	Practice and assignment **A1.2**
13	Lab: Machining Operations: Drilling and hole making	G1.2 G2.1	- Problems solving	LAB	Practice and assignment **A1.2**
14	Lab: Machining Operations: Shaping	G1.2 G2.1	- Problems solving	LAB	Practice and assignment **A1.2**
15	Lab: Machining Operations: Milling	G1.2 G2.1		LAB	Practice and assignment **A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this

class, 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 at least 6 hours per week for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	
Email	

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS058IU

COURSE NAME
FORECASTING TECHNIQUES

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Forecasting Techniques

Course Code: IS058IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Luu van Thanh**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Kỹ thuật Dự báo
+ English: Forecasting Techniques
- Course ID: IS058IU
- Course type

General — Fundamental
☒ Specialization — Others: ……
Skills — Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

It provides an overview of fundamental concepts:

i. the formulation and specification of forecasting models;
ii. data collection, interpretation, organization, and analysis for building forecasting models;
iii. fundamental statistical and probability concepts used in forecasting;
iv. the existence of a hierarchy of forecasting models;
v. the use of econometric software in a lab setting.

.

3. Textbooks and Other Required Materials

Textbooks:

[1] Montgomery et al., (2012), Introduction to Time Series and Forecasting, Publisher: J. Wiley & Sons.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand basics of economic forecasting methods, and data analysis applicable to developing economic forecasts; identify and discuss features of appropriate forecasting models;	1, 5	1.3, 3.1	Understand
G2	Apply computer packages for developing the mathematical and	2,4,5,6	1.3, 2.1, 3.1, 4.2	Apply

	statistical forecasting models in practices; evaluate forecast error measures.			

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand basics of economic forecasting methods, and data analysis applicable to developing economic forecasts.	**I, T**
G1.2	Identify and discuss features of appropriate forecasting models;	**T**
G2.1	Apply computer packages for developing the mathematical and statistical forecasting models in practices.	**T, U**
G2.2	Evaluate forecast error measures.	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2	15
	A1.2 Assignment	G2.1, G2.2	15

A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction to Forecasting .	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture 2.	- Quiz/HW **A1.1**
2	Lecture 2: Review of Basic Statistical Concepts	G1.1	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW **A1.1**
3&4	Lecture 3: Data Patterns and Forecasting Techniques	G1.2	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1**
5	Lecture 4: Moving Averages and Smoothing Methods	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Quiz /HW **A1.1**
6&7	Lecture 5: Time-Series and Their Components	G1.2 G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1**
8	Review for Midterm	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1**
Midterm exam					**A2**
9 & 10	Lecture 6: Box-Jenkins (ARIMA) Type	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 7.	- Quiz /HW **A1.1** - Assignment **A1.2**
11&12	Lecture 7: Seasonal models	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1** - Assignment **A1.2**
13&14	Lecture 8: STATE-SPACE models	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1** - Assignment

					A1.2
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Luu Van Thanh
Email	lvthanh@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS080U

COURSE NAME
CREATIVE THINKING

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Creative Thinking

Course Code: IS080IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name			
Position			
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamnese: Tư duy sáng tạo
+ English: Creative Thinking
- Course ID: IS080IU
- Course type

General	Fundamental
Specialization	Others: ……
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

The art of Creative Thinking is crucial for many individuals in different fields, whether it's school, job or personal use, everyone should learn how to think creatively. This course will help you understand the role of creativity and innovation in your own work and in other disciplines. It will challenge you to move outside of your existing comfort zone and to recognize the value of that exploration. This course will help you understand the importance of diverse ideas, and to convey that understanding to others.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Berkun, S. (2010). Myths of innovation. Sebastopol, CA: O'Reilly Sawyer, K. (2013).

[2] Zig Zag: The Surprising Path to Greater Creativity. San Francisco: Jossey-Bass. Nussbaum, B. (2013).

References:

[3] Creative Intelligence: Harnessing the Power to Create, Connect and Inspire. New York: Harper.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Develop your mental flexibility	*1, 2, 4*	1.1, 1.2 1.3, 2.1 3.1, 3.2, 4.1, 4.2	Understand
G2	Think creatively using mind maps	*1, 2, 3, 7*		Apply
G3	Get through each of the different	*2, 3, 4, 6*		Apply

	steps of the creative process and reformulate the process according to your needs			
G4	Apply some of the most relevant creative techniques to generate and systematize ideas.	*7*		Apply
G5	Use the creative thinking mindset through each step of idea implementation, catalyzing innovation	*7*		Apply

[*] *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the importance of thinking skills in their everyday life.	**I, T**
G1.2	Appreciate their existing thinking habits, mental blocks and attitudes that hinder them from being creative and/or critical.	**I, T**
G1.3	Be aware of the different types of thinking, how they are different, how they can complement each other and how they can be applied to everyday situations.	**I, T**
G2.1	Become more attuned to fallacious reasoning in everyday life and know how to correct the fallacies found	**I, T**
G3.1	Become more attuned to fallacious reasoning in everyday life	**I, T**

	and know how to correct the fallacies found	
G3.2	Apply the techniques for critical thinking in evaluating solutions and arguments.	**I,T,U**
G4.1	Develop the attitude towards and techniques for creative problem solving	**I,T,U**
G4.2	Apply the basic skills for working in innovative problem solving teams.	**I,T,U**

5. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Homework	G1.1, G1.2, G1.3	15
	A1.2 Group projects	G1.3, G3.1, G3.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G4.1, G4.2	30
A3. Final assessement	A3.1 Final Exam	G1.1, G1.2, G4.1, G4.2	40

6. Course Content

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: **Introduction**		- Lecture Presentation	- Self-study - Reading Berkun chapter 1 & 2	
2	Lecture 2: **Where the Ideas Come From**	G1.1, G1.2	- Lecture Presentation	- Self-study - Reading Berkun chapter 5 & 6	- Homework A1.1
4	Lecture 3: **Creative Problem Solving**	G1.1, G1.2	- Lecture Presentation	- Self-study - Reading Berkun chapter 9 & 10	- Homework A1.1
5	Lecture 4: **After Ideation**	G1.1, G1.2	- Lecture Presentation	- Self-study - Reading Berkun chapter 3 & 4	- Homework A1.1
6	Lecture 5: **Best Practices of Creativity**	G1.1, G1.2	- Lecture Presentation	- Self-study - Reading Berkun chapter 7 & 8	- Homework A1.1
7	**Midterm examination**				**A2**
8	Lecture 6: **Creative Intelligence**	G1.1 G1.2 G1.3	- Lecture Presentation	- Self-study	- Homework A1.1
9	Lecture 7: **Design Thinking**	G1.1 G1.2 G1.3	- Lecture Presentation	- Self-study	- Homework A1.1
10-13	Lecture 8: **Introduction to Creative Process**	G1.1 G1.2 G1.3	- Lecture Presentation	- Self-study - Reading Sawyer chapter 1 to 8	- Homework A1.1
14	Lecture 9: **Putting It All Together**	G1.1 G1.2 G1.3	- Lecture Presentation	- Self-study	

15	**Project Presentations**				- Project A1.2
16	**Final Presentation**				**A3**

7. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

8. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.602 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	
Email	

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS031IU

COURSE NAME
EXPERIMENTAL DESIGN

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Experimental Design

Course Code: IS031IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Dao Vu Truong Son**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Thiết kế thực nghiệm
+ English: Experimental Design
- Course ID: IS031IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Statistical design of experiments refers to the process of planning the experiment so that appropriate data will be collected and analyzed by statistical methods, resulting in valid and objective conclusions. A well designed experiment not only reveals important information of a process or system, but is also cost efficient. This applied statistic course benefits tremendously for both engineers and researchers in many activities such as new product design, manufacturing process development and process improvement. Coverage includes factorial, fractional factorial experimental designs, blocking and confounding factors, regression modeling and response surface methodology.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] D.C. Montgomery, Design and Analysis of Experiments, 7th ed., Wiley, 2009.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Students can distinguish different types of experiments such as Block Design, Factorial Design, etc.	*1,2*	1.3	Understand
G2	Students know how to design and	*4,6*	1.3, 4.2	Apply

	conduct real-life experiments and students can interpret the experimental results			

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Students can understand Block Design, Factorial Design.	**I, T**
G1.2	Students can understand regression model.	**T**
G2.1	Apply experimental design to design and conduct real-life experiments.	**T**
G2.2	Apply techniques and methods of experimental design to interpret experimental results.	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1.Process assessment	A1.1 Project	G1.1, G1.2, G2.1,	30

		G2.2	
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3.Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Introduction to Design of Experiments	G1.1	- Lecture presentation	- Group forming. - Textbook, Slides	- Class discussion **A1.1**
2	Review of Basic Statistical Methods	G1.1	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
3 & 4	Analysis of Variance	G1.1	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
5	Experiments with Blocking Factors	G1.1	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
6 & 7	Factorial Experiments	G2.1	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
8	Two-level Factorial Designs	G1.1, G1.2, G2.1	- Problems solving	- Textbook, Slides	- Class discussion **A1.1**
Midterm exam					**A2**
9 & 10	Two-level Fractional Factorial Designs	G1.2 G2.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
11&12	Regression Modeling	G1.2 G2.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
13&14	Response Surface Methodology	G1.2 G2.2	- Lecture presentation	- Textbook, Slides	- Class discussion **A1.1**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving		- Class discussion **A1.1**
FINAL EXAMINATION					**A3**

Laboratory

Week	Content	CLOs	Teaching and	Assessment

		(Gx.x)	Learning activities		Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.504 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Dao Vu Truong Son
Email	dvtson@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS035IU

COURSE NAME
SYSTEMS ENGINEERING

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Systems Engineering

Course Code: IS035IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Chung**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Kỹ thuật hệ thống
+ English: Systems Engineering
- Course ID: IS035U
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Systems Engineering is the course of methods to developing and analyzing the systems. This course provides the knowledge and skills necessary for the engineers in the development process and systems analysis (manufacturing and services): systems engineering processes, methods of evaluation, selection and integration of system components, system simulation, and assessment of reliability, availability, and serviceability of the systems.

3. Textbooks and Other Required Materials

Textbooks:

[1] Blanchard B.S., Systems Engineering and Analysis (5ed.), Prentice Hall, 2010.

References:

[2] Hunger J.W., Engineering the System Solution, Prentice Hall, 1995.

[3] Reilly, Successful System Engineering for Engineers and Managers, Van Nostrand Reinhold, 1993.

[4] Andrew P. Sage, William B. Rouse, Handbook of Systems Engineering and Management, John Wiley & Sons Inc., 1999.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand the fundamentals and concepts of systems engineering and analysis. Analyze and evaluate existing systems	1, 2, 6	1.1, 1.2 1.3, 2.1, 2.2, 2.3, 3.1	Understand
G2	Understand and select the	3, 4, 5, 6,	1.3, 2.1,	Apply

	necessary components of a system. Understand and develop a new system (manufacturing and services).	7	2.2, 2.3, 3.1, 3.2, 3.3	

ABET_Student Outcomes
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the fundamentals and concepts of systems engineering and analysis.	**I, T**
G1.2	Analyze and evaluate existing systems.	**T, U**
G2.1	Understand and select the necessary components of a system.	**U**
G2.2	Understand and develop a new system (manufacturing and services)..	**U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2, G2.1	15

	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction to Systems Engineering	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book	**A1.1**
2	Lecture 2: Conceptual System Design	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**
3	Lecture 3: Preliminary System Design	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
4	Lecture 4: Detail Design and Development	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
5	Lecture 5: System Test, Evaluation, and Validation.	G1.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
6	Lecture 6: Alternatives and Models in Decision Making	G1.1, G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** **A1.2**
7	Review	G1.1, G1.2 G2.1	- Problems solving	- Class discussion	**A2.1**
Midterm exam					**A2**
8	Lecture 7: Models for Economic Evaluation	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture7.	- Quiz /HW **A1.1** -Project progress **A1.2**
9	Lecture 8: Control Concepts and	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1** -Project progress

	Methods				**A1.2**
10	Lecture 9: Design for Reliability	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
11	Lecture 10: Design for Maintainability	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
12	Lecture 11: Design for Producibility, Disposability, and Sustainability *(optional)*	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
11	Project Presentation	G1.2 G2.1 G2.2		- Presentation - Class discussion	**A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	**A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, 04/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS067IU
COURSE NAME
INTERNATIONAL TRANSPORTATION & LOGISTICS

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & Management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/03/2020 Total pages: 0

COURSE SYLLABUS

Course Name: International Transportation & Logistics

Course Code: IS067IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Mr. Duong Vo Nhi Anh**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title

+ Vietnamese: Vận chuyển quốc tế
+ English:International Transportation & Logistics

- Course ID: IS067IU
- Course type

General
☒ Specialization
Skills
Fundamental
Others: ……
Project/ Internship/ Thesis

- Number of credits: 3
  - Lecture: 3
  - Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This subject is intended to help students understand both the fundamental role and importance of transportation in companies and in our society, and the complex environment in which transportation service is provided today. This subject take a managerial approach to teaching transportation concepts and issues, providing students the tools to adapt to this fast-paced and rapidly changing industry. The content is organized into three parts. Part I contains two chapters, Transportation, the Supply Chain and the Economy and Transportation Regulation and Public Policy. In these two chapters the role and importance of transportation in the supply chain management and the economy are explored along with an overview of transportation regulation and public policy. Part II addresses the traditional modes of transportation including special carriers and global transportation. There are six chapters that examine the fundamental economic and operating characteristics of each mode along with special carriers and global transportation. Part III discusses transportation management from both the shipper and carrier perspective. The five chapters give attention to transportation costing and pricing, carrier strategy, information management and technology, and shipper transportation management strategy and process.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

5.1. Coyle, John J., Robert A. Novack, Brian J. Gibson, *Transportation*, 8th edition. South-Western Cengage

5.2. E. Cascetta (2009) *Transportations systems analysis: models and applications*. Springer

5.3. Gentile G. and Noekel K. (2016) *Modelling public transport passenger flows in the era of Intelligent Transport Systems*. Springer

5.4. Murphy and Wood, Contemporary Logistics Management, 10th edition,; Prentice Hall

5.5. Bowersox, Donald J., Closs, David J., Cooper M. Bixby, and Bowersox, John C, Supply Chain Logistics Management, 4th edition, McGraw-Hill/Irwin, Burr Ridge.

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand both the fundamental role and importance of transportation in companies and in our society, and the complex environment in which transportation service is provided today.	*1,2,5*	*1.3, 3.1*	Understand
G2	Engage lifelong learning	*4,5,6,7*	*1.3, 2.4*	Apply

* ***ABET_Student Outcomes***
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in

a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Knowing suppose the study case with factors	**I,T**
G1.2	Knowing the solution for the case	**T**
G2.1	Understand the importance of the course	**T**
G2.2	Know which fields are closely relating with this subject	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homework	G1.1, G1.2	15
	A1.2 Group Project	G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Section	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Introduction to Transportation and Logistics in Supply Chain	G1.1	- Lecture presentation	- Chapter 1-2 - Read book 1	
2	Costing and Pricing for Transportation	G1.1	- Lecture presentation	- Chapter 4 - Read book 1	- Homework **A1.1**
3	Transporation Modes	G1.1	- Lecture presentation	- Chapter 5-8 - Read book 1	- Homework **A1.1**
4	Private Transportation and Fleet Management	G1.1	- Lecture presentation	- Chapter 13 - Read book 1	- Homework **A1.1**
5	Third Party	G2.1	- Lecture	- Chapter 12	- Homework

	Logistics		presentation	- Read book 1	**A1.1**
6	Global Transportation	G1.1 G2.1	- Lecture presentation	- Chapter 10-11,14, read book 1 - Chapter 14, read book 4	- Homework **A1.1**
Midterm exam					**A2**
7	Transporation Risk Management	G1.1, G1.2, G2.1	- Lecture presentation	- Chapter 9 - Read book 1	- Quiz **A1.1**
8	Transportation Planning: Supply and Demand	G1.2, G2.1	- Lecture presentation	- Chapter 2 & 4 - Read book 2	- Homework A1.1
9	Route choice and static assignment	G2.1 G2.2	- Lecture presentation	- Chapter 5 - Read book 2	- Homework A1.1
10	Network design	G1.2 G2.1 G2.2	- Lecture presentation	- Chapter 9 - Read book 2	
Final Examination					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: Student is expected that you will spend at least **8 hours** per week studying this course. This time should be made up of reading, working on exercises and problem, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	
Phone number	
Instructor's name	
Email	

Ho Chi Minh City, 04/03/2020

Dean of Shool

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS060IU

COURSE NAME
E-LOGISTICS AND E-SUPPLY CHAIN MANAGEMENT

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: E-Logistics and E-Supply Chain Management

Course Code: IS060IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Mai Thuỳ Dung**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Thương mại điện tử trong Logistics và Chuỗi cung ứng
+ English: E-Logistics and E-Supply Chain Management
- Course ID: IS060IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course introduces supply chain management concepts, techniques and applications in the new era of e-Business. This course also shows how supply chain management and logistics have evolved in the context of increasing application of information and communication technologies (ICT).

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Chaffey D. and Hemphill T., *Digital business and E-Commerce management,* Pearson, 2019.

[2] Ross D. F., *Introduction to E-Supply Chain Management: Engaging Technology to Build Market – Winning Business Partnerships*, St.Lucie Press, 2003. (e-book, https://www.scribd.com/document/51582619/e-supply-chain-book)

[3] Wang Y. and Pettit S., *E-logistics: Managing your digital supply chains for competitive advantage*, KoganPage, 2016.

References:

[4] Simchi-Levi D., Chen X., and Bramel J., *The Logic of Logistics: Theory, Algorithms, and Applications for Logistics Management.* Springer Series in Operations Research and Financial Engineering: 2014.

Software: Matlab

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Understanding new concepts of	2, 7	1.3, 3.1	Understand

	logistics and supply chain management in e-Business			
G2	Understanding and being able to solve new problems in supply chain management in the era of e-Business	*1, 2, 6, 7*		

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understanding the needs of applying ICT into solving traditional supply chain problems, and how ICT address those problems	**I**
G1.2	Comparing the differences between traditional supply chain, and e-supply chain.	**T, U**
G2.1	Integrating knowledge from other courses to analyze and quantify the benefits that e-supply chain offers in comparison with traditional supply chain.	**T**
G2.2	Applying various algorithms to solve complex optimization problems arisen in the	**T, U**

	era of e-Business	

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quizzes and homeworks	G1.1, G1.2, G2.1	15
	A1.2 Project	G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3.1 Final Exam	G1.1, G1.2, G2.1	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction to supply chain management in e-Business	G1.1, G1.2	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	- Quiz, HW **A1.1**
2	Lecture 2: e-Business models	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz, HW **A1.1**
3 & 4	Lecture 3: e-Procurement	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1**
5 & 6	Lecture 4: e-CRM	G1.1, G1.2, G2.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Quiz /HW **A1.1**
7	Lecture 5: Manufacturing in the age of e-Business	G1.1, G1.2, G2.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1**
8	Review for Midterm	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1**
Midterm exam					**A2**
9 & 10	Lecture 6: e-Logistics	G1.1, G1.2, G2.1	- Lecture presentation	- Class discussion - Read book & lecture7.	- HW: **A1.1** - Project: **A1.2**
11&12	Lecture 7: Distribution and	G1.1, G1.2,	- Lecture presentation	- Class discussion - Read book &	- Project:

	Omni-channel retailing	G2.1		lecture 8.	**A1.2**
13	Lecture 8: e-Warehousing	G1.1, G1.2, G2.1	- Lecture presentation	- Class discussion - Read book & lecture 9.	- Project: **A1.2**
14	Project report	G2.1, G2.2	- Group presentations	- Class discussion	- Project: **A1.2**
15	Review for Final Exam	G1.1, G1.2, G2.1	- Problems solving	- Class discussion	- Quiz /HW **A1.1**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Mai Thuy Dung
Email	mtdung@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS043IU

COURSE NAME
FLEXIBLE MANUFACTURING SYSTEMS

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Flexible Manufacturing Systems

Course Code: IS043IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name			
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Hệ thống Sản xuất Linh hoạt
+ English: Flexible Manufacturing Systems
- Course ID: IS043IU
- Course type

General	Fundamental
Specialization	☒Others: Elective
Skills	Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: CAD/CAM/CNC
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course aims to help students to study, plan and control the concept and method of flexible manufacturing system planning and control. The study covers:

- flexible manufacturing system technology
- flexible manufacturing system component
- flexible manufacturing system performance evaluation: analytical model, simulation model
- flexible manufacturing system configuration planning: routing optimization, capacity optimization, tools optimization
- flexible manufacturing system production planning and control: batching, set-up planning.

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3. Textbooks and Other Required Materials

Textbooks:

[1] Mikell P. Groover, Automation, Production Systems, and Computer-Integrated Manufacturing, 3rd edition, Prentice Hall, 2007.

[2] Horst Tempelmeier, Heinrich Kuhn, Flexible Manufacturing Systems: Decision Support for Design and Operation, John Wiley & Sons, 1993.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Enable to know flexible	1, 2	1.1, 1.2,	Understand

	manufacturing concepts; define the terms of Group Technology (GT) and apply GT concepts in a flexible manufacturing environment.		1.3, 3.1	
G2	Gain insight about the state-of-the-art research areas related to FMS and real-time shop floor control; plan and control flexible manufacturing system	2,5,6	1.3, 2.1, 2.4, 3.1, 4.2	Apply

* *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Enable to know flexible manufacturing concepts	**I, T**
G1.2	define the terms of Group Technology (GT) and apply GT concepts in a flexible manufacturing environment.	**T**
G2.1	Gain insight about the state-of-the-art research areas related to FMS and	**T**

	real-time shop floor control	
G2.2	plan and control flexible manufacturing system	**T, U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Assignment/Homeworks	G1.1, G1.2	7.5
	A1.2 Group Project	G1.2, G2.1, G2.2	22.5
A2.Midterm assessment	A2 Midterm Exam	G1.1, G1.2, G2.1	30
A3. Final assessement	A3 Final Exam	G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	**Introduction:** Types of production, characteristics, applications, Flexibility in Machining systems, need for FMS, Flexible Automation, where to apply FMS technology.	G1.1	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/Homework **A1.1**
2&3	**Flexible Manufacturing Cell:** Characteristics, Flexible Machining systems, achieving flexibility in machining systems, Machine cell design, quantitative	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/Homework **A1.1**

	techniques.				
4&5	**Group Technology (GT) – Part classification and coding systems:** Part families, Parts classification and coding, Optimization system, structure, MULTICODE, differences between Optimization and MULTICODE systems, relative benefits.	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/Homework **A1.1**
6	**GT - production flow analysis:** Composite part concept, numerical problems for parts clustering, advantages of GT in manufacturing and design.	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book & lecture.	- Quiz/Homework **A1.1**
7	Group Project	G1.2, G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.2**
Midterm exam					**A2**
8&9	**Components of FMS:** FMS layout configurations, Planning the FMS, FMS's Work- stations, Material Handling	G1.2 G2.1 G.2.2	- Lecture presentation	- Class discussion - Read book & lecture.	- Quiz /HW **A1.1**

	systems, Automatic Guided vehicle systems, Automated storage and retrieval systems, and Computer control systems.				
10&11	**Implementing FMS:** FMS Layout configurations, Quantitative Analysis methods for FMS, Applications and benefits of FMS, problems in implementing FMS.	G1.2 G2.1 G.2.2	- Lecture presentation	- Class discussion - Read book & lecture.	- Quiz /HW **A1.1** -Project progress **A1.2**
12& 13	**Computer Aided Process planning:** Importance, generative and retrieval systems, advantages and disadvantages, Generation of route sheets, selection of optimal machining parameters, methods.	G1.2 G2.1 G.2.2	- Lecture presentation	- Class discussion - Read book & lecture.	- Quiz /HW **A1.1** -Project progress **A1.2**
14	Project Presentation	G1.2 G2.1 G.2.2	- Lecture presentation	- Class discussion - Read book & lecture.	**A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	- Class discussion	- Quiz /HW **A1.1, A1.2**
FINAL EXAMINATION					**A3**

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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 at least 6 hours per week for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS045IU

COURSE NAME
LEADERSHIP

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Leadership

Course Code: IS045IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Van Chung**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Kỹ năng lãnh đạo
+ English: Leadership
- Course ID: IS045IU
- Course type

General
Specialization
Skills

Fundamental
☒ Others: ……
Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

The course will offer engineering student enable to manage their valuable knowledge resources and the people on organizations. They will be taught experience and knowledge process that keeps industry in a continuous demand. This course concentrates on defines leadership theories as the following: leadership styles, Trait approach, style approach, situational approach, contingency theory, path-goal theory, transformational Leadership Description, team leadership theory, psychodynamic approach, woman and leadership and popular approaches to leadership. These are essential for leaders in their professional success.

3. Textbooks and Other Required Materials

Textbooks:

[1] Leadership Theory and Practice- Peter G. Northouse Sage Publications, Inc.

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	Understand the role of leadership and management. Know important leadership traits, styles.	1, 2, 6	1.1, 1.2 1.3, 2.1, 2.2, 2.3	Understand
G2	Understand different factors affect the leadership process and effectiveness. Apply leadership	4, 5, 6, 7	1.3, 2.1, 2.1, 2.3, 3.1, 3.2, 3.3	Apply

	models in practice			

ABET_Student Outcomes
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand the role of leadership and management	**I, T**
G1.2	Know important leadership traits, styles.	**T**
G2.1	Understand different factors affect the leadership process and effectiveness.	**T, U**
G2.2	Apply leadership models in practice.	**U**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Process assessment	A1.1 Quiz/Homeworks	G1.1, G1.2, G2.1, G2.2	15
	A1.2 Group Project	G1.2, G2.1, G2.2	15
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1	20
A3. Final assessement	A3.1 Final Exam	G1.2, G2.1, G2.2	50

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Introduction Leadership- Trait Approach	G1.1 G1.2	- Lecture presentation	- Project Group forming. - Class discussion - Read book	**A1.1**
2	Lecture 2: Style Approach	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**
3	Lecture 3: Situational Approach	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1.2**
4	Lecture 4: Contingency Theory	G1.1 G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**
5	Lecture 5: Path-Goal Theory.	G1.1 G1.2 G2.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1**
6	Review for Midterm	G1.1, G1.2 G2.1	- Problems solving	-Class discussion	
Midterm exam					**A2**
7	Lecture 6: Leader- Member Exchange Theory	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** -Project progress **A1.2**
8	Lecture 7: Transformational Leadership	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW **A1.1** -Project progress **A1.2**
9	Lecture 8: Team Leadership Theory	G1.2 G2.1 G2.2	- Lecture presentation	- Class discussion - Read book.	- Quiz /HW **A1.1** -Project progress **A1.2**
10	Lecture 9: Psychodynamic Approach	G2.1 G2.2	- Lecture presentation	-Class discussion	- Quiz /HW **A1.1** -Project progress **A1.2**
11	Lecture 10: Women and Leadership	G2.1 G2.2	- Lecture presentation	-Class discussion	- Quiz /HW **A1.1** -Project progress

					A1.2
12	Lecture 11: Popular Approaches to Leadership	G2.1 G2.2	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1** -Project progress **A1.2**
10	Project Presentation	G2.1 G2.2		- Presentation - Class discussion	**A1.2**
15	Review for Final Exam	G1.2 G2.1 G2.2	- Problems solving	-Class discussion	
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	O2.605 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Van Chung
Email	nvchung@hcmiu.edu.vn

Ho Chi Minh City, / /2020

Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code

IS023IU

COURSE NAME

INVENTORY CONTROL & MANAGEMENT

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Inventory control and Management

Course Code: IS023IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Phan Nguyen Ky Phuc**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title

+ Vietnamese: Kiểm soát và quản lý tồn kho

+ English: Inventory control and management

- Course ID: IS023IU

- Course type

General ☒ Specialization Skills

Fundamental
Others: ……
Project/ Internship/ Thesis

- Number of credits: 3
  - Lecture: 3
  - Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course gives an introduction to inventory control and management: techniques, principles, algorithms.
Topics include deterministic demand, EOQ, Whiner Whatin, Silvermeal, Stochastic Demand, Multi stage inventory control,.. .

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Edward A. Silver, David F. Pyke, Rein Peterson:Inventory Management and Production Planning and Scheduling

References:

[2] Steven M. Bragg- Inventory Accounting a comprehensive guide- Wiley(2005)
[3] Steven Axsater- Inventory Control- Springer(2015)
[4] John A. Muckstadt, Amar Sapra- Principle of Inventory Management – Springer(2010)

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Figure out the role of inventory control and management in industry	1	1.2	Understand
	Analyze and evaluate the performance of inventory system			
G2	Analyze the inventory model when	6,7	1.2	Apply

	demand rate is known and constant			
	Analyze the inventory model when demand rate is known			
G2	Analyze the inventory model when the system is complex and the demand rate is deterministic	1,6	3.1	Apply
G4	Analyze the inventory model when the demand is stochastic	1,6	1.2	Apply

[*] *ABET_Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Able to build the framework to inventory control and management system	I
G1.2	Apply the common KPI in inventory control and management system	T
G2.1	Apply common models such as EOQ, POQ	U
G2.2	Apply common models such as Wagner-Whitin, Silver Meal, Least Unit Cost	U
G3	Apply common model PO2 and network of	U

	PO2	
G4	Apply common model such as (Q,r), (S,s) and Newsvendor	U

6. Course Assessment

Assessment component (1)	Assessment form (A.x.x) (2)	Percentage % (3)
A1. Process assessment	A1.1: G2.1	10%
	A1.2: G2.2	10%
	A1.3: G3,G4	10%
A2. Midterm assessment	A2.1: G1.2, G2.1, G2.2	30%
A3. Final assessment	A3.1 G3, G4.	40%

7. Course Content

Theory

Week	Content	Learning outcome	Teaching and learning activities	Student Activities	Assessment
1	Introduction role of inventory control and management in industry	G1.1	-Lecture -Class discussion	-Class discussion	
2	Inventory control and its KPI	G1.2	-Lecture - Class discussion	-Class discussion	A2.1
3	Inventory control policy when demand rate is constant: EOQ, POQ model	G2.1	- Lecture - Class discussion	-Class discussion	A1.1, A2.1
4	Inventory control policy when demand rate is constant: backlog, discount model	G2.1	- Lecture - Class discussion	-Class discussion	A1.1, A2.1
5	Inventory control policy when demands are deterministic: Wagner-Whitin	G2.2	- Lecture - Class discussion	-Class discussion	A1.2, A2.1
6	Inventory control policy when demands are deterministic: Silver-Meal, least Unit cost,…	G2.2	- Lecture - Class discussion	-Class discussion	A1.2, A2.1

7	Aggregation Ordering Problem	G2.2	- Lecture - Class discussion	-Class discussion	A1.2, A2.1
Midterm exam					**Written exam**
8	The power of 2 policy	G3	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
9	Nested System under PO2	G3	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
10	News Vendor Problem	G4	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
11	(Q,r) approximation	G4	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
12	Base-stock policy	G4	- Lecture - Class discussion	-Class discussion	A1.3, A3.1
13	Simulation approach for optimal inventory control policy	G4	- Lecture - Class discussion	-Class discussion	A3.1
14	Simulation approach for optimal inventory control policy (cont.)	G4	- Lecture - Class discussion	-Class discussion	A3.1
15	Review		- Lecture -Class discussion	-Class discussion	
FINAL EXAMINATION					**Written exam**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Phan Nguyen Ky Phuc
Email	pnkphuc@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS082IU

COURSE NAME
RETAIL MANAGEMENT

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Retail Management

Course Code: IS082IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Nguyen Hoang Huy**		
Position	**Lecturer**		
Signature			
Date	**…/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Quản lý bán lẻ
+ English: Retail Management
- Course ID: IS082IU
- Course type

General
Specialization
Skills
Fundamental
Others:…
Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course provides the student with a comprehensive view of retailing and an application of marketing concepts in a practical retail managerial environment. As a potential marketing manager, this course will give students insight into the retailing environment of which students will be a part and allow students to make informed decisions in your interaction with retailers. The course also provides a good foundation for those interested in owning or running a small retail business or those interested in pursuing a retail career as a merchandise buyer or store manager.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

- Michael Levy, Barton Weitz - Retailing Management, 8th Edition-McGraw-Hill_Irwin (2011)

References books:

- "Retailing 7th Edition" , Dunne, Lusch and Carver, Southwestern Cengage Learning
- "Logistics and Retail Management: Emerging Issues and New Challenges in the Retail Supply Chain, 3rd Edition", John Fernie, Leigh Sparks, Kogan Page, 2009
- "Retail Management: A Strategic Approach PIE 12E", Barry Berman / Joel R. Evans

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Understand basic retailing principles and the scope of retailing	4, 7	4.1	Apply

G2	Understand current technology along with future trends in the retailing.	5	1.1, 1.2	Understand
G3	Able to build a Retail Store, will take the student from learning concepts to the application of the concepts through the creation of a retail concept and marketing plan. Industry professionals will provide students with real world experiences in this process.	2	1.3, 3.1, 4.1	Analyze

* *ABET Student Outcomes*
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes

G1.1	Understand basic retailing principles and the scope of retailing activities involved in the retail industry	**I, T**
G1.2	Apply consumer and shopper behavior concepts to store design, merchandising private label branding, loyalty programs and other customer touch points.	**T**
G2.1	Understand new and diverse retail formats	**T**
G2.2	Understand terminology, components and emerging promotional strategies in the retail environment.	**T**
G3.1	Develop these skills and knowledge through ,“Building a Retail Store” project	**T**

6. Course Assessment

Assessment types	**Assessment component**	**Course learning outcomes (CLOs) (Gx.x)**	**Percentage %**
A1.Process assessment	A1.1 Quiz	G1.1, G1.2	5
	A1.2 Homeworks	G1.1, G1.2	5
	A1.3 Project	G2.1, G2.2, G3.1	20
A2.Midterm assessment	A2.1 Midterm Exam	G1.1, G1.2, G2.1, G2.2	30
A3. Final assessement	A3.1 Final Exam	G1.1, G1.2, G2.1, G2.2	40

7. Course Content

Theory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1	Lecture 1: Introduction to the world of retailing	G1.1	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	
2	Lecture 2: Types of retailers	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW **A1.1, A1.2**
3	Lecture 3: Multichannel retailing	G1.1, G1.2	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW **A1.1, A1.2**
4	Lecture 4:	G1.1,	- Lecture	- Class discussion	- Quiz /HW

	Customer buying behavior	G2.1, G 2.2	presentation	- Read book & lecture 5.	**A1.1, A1.2**
5	Lecture 5: Customer buying behavior (Con't)	G1.1, G2.1, G3.1	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW **A1.1, A1.2**
6	Lecture 6: Retail locations	G1.1, G2.1, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 7.	- Quiz /HW **A1.1, A1.2**
7	Lecture 7: Retail site location and revision for Midterm exam	G1.1, G2.1, G2.2	-Lecture presentation -Problem solving	- Read book & lecture 8.	HW **A1.2**
Midterm exam					**A2**
10	Lecture 8: Managing the Merchandise process	G1.1 G1.2	- Lecture presentation	- Class discussion - Read book & lecture 8.	- Quiz /HW **A1.1, A1.2**
11	Lecture 9: Retail pricing	G2.1 G2.2	- Lecture presentation	- Class discussion - Read book & lecture 9.	- Quiz /HW **A1.1, A1.2**
12&13	Lecture 10: Retail communication mix	G1.1, G1.2, G2.2	- Lecture presentation	- Class discussion - Read book & lecture 10.	- Quiz /HW **A1.1, A1.2**
14	Lecture 11: Store layout and design	G2.1 G2.2	- Lecture presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
15	Group presentation and revision for final exam	G3.1	-Oral Presentation	-Group presentation	- Project **A1.3**
FINAL EXAMINATION					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.602 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Nguyen Hoang Huy
Email	nhhuy@hcmiu.edu.vn

Ho Chi Minh City, …/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code

IS033IU

COURSE NAME

MULTI CRITERIA DECISION MAKING

Tháng Bảy 2022

	VIETNAM NATIONAL UNIVERSITY HCMC **INTERNATIONAL UNIVERSITY** **School of Industrial Engineering & management**	Code: FormCS1/EV. Issued No: 1.20 Date of issued: 25/02/2020 Total pages: …

COURSE SYLLABUS

Course Name: Multi criteria Decision Making

Course Code: IS033IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Phan Nguyen Ky Phuc**		
Position	**Lecturer**		
Signature			
Date	**02/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Kỹ thuật ra quyết định đa mục tiêu
+ English: Multi criteria Decision Making
- Course ID: IS033IU
- Course type

General ☐ Fundamental
☒ Specialization ☐ Others: ……
Skills ☐ Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

Decision making is one of the important parts in operations research or management science. Decision making techniques help management choose the best alternative based on quantitative criteria. This course provides students with basic knowledge about decision model formulation, so that they can make decisions based on the results of the models. This course also provides students with specific techniques for practical applications in production and services.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

[1] Gwo-Hshiung_Tzeng,_Jih-Jeng_Huang, Multiple_Attribute Decision Making
[2] Milan Zeleny, Multiple Criteria Decision Making, McGraw-Hill, 1982..

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET *	CDIO	
G1	Understand the decision-making processes in various contexts of deterministic or stochastic, single-criterion or multi-criterion, multi-objective, and multi-attribute	1	1.2	Understand

G2	Able to understand calculate probability and other attributes of discrete and continuous random variables	6,7	1.2	Apply
G2	Understand and employ suitable decision-making techniques to different decision - making problems	1,6	3.1	Apply
G4	Able to conduct the simple data exploration	1,6	1.2	Apply

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3. *an ability to communicate effectively with a range of audiences*
4. *an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1	Student can figure out step and build survey questionnaire, synthesize the result form survey	T
G2	Student can differentiate the main ideas lie behind AHP, ANP, TOPSIC,Promethee, Electre	U

G3	Student can build program for MCDM problem to solve on CPLEX, MATLAB and Buidl GUI	U
G4	Student can differentiate the main ideas and build models based on ideas of goal programming, denovo programming, compromise programming	U

6. Course Assessment

Assessment component (1)	Assessment form (A.x.x) (2)	Percentage % (3)
A1. Process assessment	A1.1 Quiz	5%
	A1.2 Homework	10%
A2. Midterm assessment	A2.1 Mid-term Exam	30%
A3. Final assessment	A3.1 Full Semester Project	15%
	A3.2 Final exam	40%

7. Course Content

Theory

Tuần/Buổi học (1)	Nội dung (2)	CĐR môn học (3)	Hoạt động dạy và học (4)	Hoạt động học	Bài đánh giá (5)
1	Introduction to Multi-Attribute Decision Making	G1	LT:3 BT: 3 TH: 0	Class discussion	A1.2
2	Simple Addictive Weight Technique, TOPSIS	G2	LT:3 BT: 3 TH: 0	Class discussion	A1.2
3	Review Matlab 1	G3	LT:6 BT: 3 TH: 0	Class discussion	A3.1
4	AHP	G2,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2, A2.1
5	ANP	G2,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2,A2.1
6	TOPSIC	G2,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2, A2.1
7	Electre	G2,G3	LT:3	Class	A1.2, A2.1

			BT: 3 TH: 0	discussion	
8	Promethee	G2,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2, A2.1
9	Introduction to Multi-Objective Decision Making	G4	LT:3 BT: 3 TH: 0	Class discussion	A1.1
10	Simplex method review	G4, G3	LT:3 BT: 3 TH: 0	Class discussion	A3.1
11	Review Matlab 2	G3	LT:3 BT: 3 TH: 0	Class discussion	A3.1
12	Minimum Deviation and Compromise Programming	G4,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2, A3.2
13	Goal Programming	G4,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2, A3.2
14	De Novo Technique	G4,G3	LT:3 BT: 3 TH: 0	Class discussion	A1.2, A3.2

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams 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 this class, 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.513 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	
Instructor 's name	Phan Nguyen Ky Phuc
Email	pnkphuc@hcmiu.edu.vn

Ho Chi Minh City, 02/03/2020
Dean of Faculty/Department

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS052IU
COURSE NAME
INTERNSHIP 1

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Internship 1

Course Code: IS052IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Duong Vo Nhi Anh**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title

+ Vietnamese: Thực tập 1

+ English: Internship 1

Course ID: IS052IU

- Course type

General
☒ Specialization
Skills
Fundamental
Others: ……
Project/ Internship/ Thesis

- Number of credits: 2
  - + Lecture: 2
  - + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course is an internship and is designed to supplement traditional classroom-based learning with experiential learning. The internship provides students with the opportunity to practically apply knowledge gained in their courses of Industrial & Systems Engineering.

Internships can be with a variety of host organizations, including foreign companies, government agencies and private industries. A minimum of 15 working days is required (5 days visit factory, 5 days write report, 5 days to get approval from supervisor). Whether the students have arranged their internship themselves or have been assisted in arranging one by the program assistant or other lecturers, they should let the program assistant know once there is a problem with the internship. The program coordinator can either intervene appropriately or see if the students can be transferred to a different company.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

References:

Software:

4. Course goals

Goals	Descriptions	Program Learning	Level of

(Gx)		Outcomes		Competence
		ABET	CDIO	
G1	Be able to describe a production of company.	1,2	*1.3*	Understand
G2	Have ability to learn by observing the daily functioning of the work place and reflecting on how people within the organization carry out its mission.	1,2	*1.3*	Apply
G3	Have rough ideas of different career options.	2,3		

* ***ABET_Student Outcomes***
Criteria for Accrediting Engineering Programs, 2020-2021

1. *an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
2. *an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
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5. *an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
6. *an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

5. Course learning outcomes (CLOs)

Course learning outcomes are described systematically and aligned with course goals. Active verbs are used to describe CLOs and able to measure and observe in a specific context. Teaching modes: I(Introduce); T (teach); U (Utilize).

CLOs (Gx.x)	Descriptions	Teaching Modes
G1.1	Understand different kinds of production and the background and philosophies of lean production	**I, T**
G1.2	Understand method to analyze existing systems and identify different kinds of	**T**

	waste.	
G2.1	Apply approaches used in implementing lean production such as 5S, stability, pull production, cellular arrangement and layout improvement, quick change	**T**
G2.2	Apply for total productive maintenance, mistake reduction, standards, leveling, visual management to real-life problems	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Advisor Evaluation	A2.1 Report	G1.1	50
A2.Supervisor Evaluation	A2.1 Report	G1.2	50

7. Course Content

Theory

Day	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: obesrvation factory 1	G1.1	- Lecture	- Group forming.	- Quiz **A1.1**
2	Lecture 2: obesrvation factory 2	G1.1	- Lecture	- Class discussion	- Quiz **A1.1**
3	Lecture 3: obesrvation factory 3	G1.1	- Lecture	- Class discussion	- Quiz /HW **A1.1**
4	Lecture 4: obesrvation factory 4	G1.1	- Lecture	- Class discussion	- Quiz /HW **A1.1**
5	Lecture 5: obesrvation factory 5	G1.1	- Lecture	- Class discussion	- Homework **A1.2**
Final report					**A1.2**

Laboratory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities	Assessment Activities

			Lecturer	Student	
1					
2					

8. Course requirement and expectation

Class Participation: Students must complete the following forms and requirements:

- Intership Registration: register internship through Edusoft or form.
- Internship Application and Student Performance Record.
- Supervisor & Advisor Evaluations: This questionnaire helps ensure that the ISE receives a complete and fair assessment of each student's performance from the site supervisor and advisor. At the completion of the internship, students are responsible for requesting their site supervisor and advisor to complete, and send this form to their advisor and then submit to the Program Assistant.
- Final Report: In order to receive credit and a final grade for an approved internship students, must submit the final report. See below for suggested final report requirements. This report is to be completed by the student and must be submitted to the Program Assistant no later than the due date (to be defined later). 10 points will be deducted from your final grade when the final report is submitted late.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Fabrication (Falsifying or inventing any information, citation, or data) 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 this class, all reports 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.

9. Instructor information

Department/Office	School of Industrial Engineering & Management-International University, VNU-HCMC
Address	A2.504 – Quarter 6, Linh Trung Ward, Thu Duc District, HCMC
Phone number	(028) 37244270
Instructor's name	**Duong Vo Nhi Anh**
Email	dvnanh@hcmiu.edu.vn

Ho Chi Minh City, 04/03/2020

Dean of Shool

Vietnam National University – HCMC
International University
School of Industrial Engineering and Management

COURSE SYLLABUS

Course Code
IS053IU
COURSE NAME
INTERNSHIP 2

Tháng Bảy 2022

COURSE SYLLABUS

Course Name: Internship 2

Course Code: IS053IU

RECORD OF REVISIONS

No.	Place	Content of revision	Date of revision

	Prepared by	Reviewed by	Approved by
Full name	**Duong Vo Nhi Anh**		
Position	**Lecturer**		
Signature			
Date	**04/03/2020**		

1. General Information

- Course Title
+ Vietnamese: Thực tập 2
+ English: Internship 2
- Course ID: IS053IU
- Course type

General
☒ Specialization
Skills

Fundamental
Others: ……
Project/ Internship/ Thesis

- Number of credits: 3
  + Lecture: 3
  + Laboratory: 0
- Prerequisites: Nil
- Parallel Course: Nil
- Previous course: Nil

2. Course Description

This course is an internship and is designed to supplement traditional classroom-based learning with experiential learning. The internship provides students with the opportunity to practically apply knowledge gained in their courses of Industrial & Systems Engineering.

Internships can be with a variety of host organizations, including foreign companies, government agencies and private industries. A minimum of 320 working hours or 40 working days is required. Whether the students have arranged their internship themselves or have been assisted in arranging one by the program assistant or other lecturers, they should let the program assistant know once there is a problem with the internship. The program coordinator can either intervene appropriately or see if the students can be transferred to a different company.

Students should be both supported and challenged and encouraged to take initiative and develop life-long learning skills. Each intern works under a site supervisor at the host organization and an advisor from IU (ISE's lecturer). The role of the site supervisor (or advisor) is to oversee the students and provide mentorship throughout the internship. The site supervisor and advisor will complete a performance evaluation form at the conclusion of the internship. Students will discuss their experiences through weekly reports and online discussions.

3. Textbooks and Other Required Materials *(textbooks and references should be ≤ 5)*

Textbooks:

References:

Software:

4. Course goals

Goals (Gx)	Descriptions	Program Learning Outcomes		Level of Competence
		ABET	CDIO	
G1	have practical work experience under supervision and guidance	1,2	*1.3*	Understand
G2	have ability to apply theories and principles learned in academic coursework to specific situations with the internship experience	1,2	*1.3*	Apply
G3	have ability to learn by observing and analyzing the daily functioning of the work place and reflecting on how people within the organization carry out its mission.	2,3		
G4	get motivated and confident about career options after graduating.	1,2,3		

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Criteria for Accrediting Engineering Programs, 2020-2021

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7. *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

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G2.2	Apply for total productive maintenance, mistake reduction, standards, leveling, visual management to real-life problems	**T**

6. Course Assessment

Assessment types	Assessment component	Course learning outcomes (CLOs) (Gx.x)	Percentage %
A1. Advisor Evaluation	A2.1 Report	G1.1, G1.2, G2.1	50
A2.Supervisor Evaluation	A3.1 Report	G1.2, G2.1, G2.2	50

7. Course Content

Theory

Week	Content	CLOs (Gx.x)	Teaching and Learning activities		Assessment Activities
			Supervisor	Student	
1,2,3	Observation, analysis and find out problem 1	G1.2 G2.1	presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
4,5,6	Observation, analysis and find	G1.2 G2.1	presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**

	out problem 2				
7,8,9	Observation, analysis and find out problem 3	G1.2 G2.2	presentation	- Class discussion	- Quiz /HW **A1.1, A1.2**
10,11,12	Observation, analysis and find out problem 3	G1.2 G2.2	presentation	- Class discussion -	- Quiz /HW **A1.1, A1.2**
Final report					**A3**

Laboratory

Week	**Content**	**CLOs (Gx.x)**	**Teaching and Learning activities**		**Assessment Activities**
			Lecturer	**Student**	
1					
2					

8. Course requirement and expectation

Class Participation: Students must complete the following forms and requirements:

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- Internship Application and Student Performance Record.
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- Final Report: In order to receive credit and a final grade for an approved internship students, must submit the final report. See below for suggested final report requirements. This report is to be completed by the student and must be submitted to the Program Assistant no later than the due date (to be defined later). 10 points will be deducted from your final grade when the final report is submitted late.

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time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Instructor information

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Phone number	(028) 37244270
Instructor's name	**Duong Vo Nhi Anh**
Email	dvnanh@hcmiu.edu.vn

Ho Chi Minh City, 04/03/2020

Dean of Shool