



**VIETNAM NATIONAL UNIVERSITY – HO CHI MINH CITY  
INTERNATIONAL UNIVERSITY  
SCHOOL OF CIVIL ENGINEERING AND MANAGEMENT**

# **MODULE HANDBOOK**

**December, 2024**

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# I. GENERAL KNOWLEDGE

## I.1. POLITICAL EDUCATION

### 1. Philosophy Marx - Lenin (PE015IU)

<i>Module designation</i>	The course equips students with basic knowledge of Marxist-Leninist philosophy.
<i>Semester(s) in which the module is taught</i>	Summer Semester (1 <sup>st</sup> year)
<i>Person responsible for the module</i>	Lecturers at School of Political and Administration Sciences, VNU-HCM
<i>Language</i>	<i>Vietnamese</i>
<i>Relation to curriculum</i>	<i>Compulsory</i>
<i>Teaching methods</i>	<i>Lecture, group discussion, presentation</i>
<i>Workload (incl. contact hours, self-study hours)</i>	<i>(Estimated) Total workload:127.5 Contact hours (lecture, exercise, laboratory session, etc.): 37.5 Private study including examination preparation, specified in hours<sup>1</sup>: 90</i>
<i>Credit points</i>	<i>03 credits/4.64ECTS</i>
<i>Required and recommended prerequisites</i>	<i>None</i>
<i>Module objectives</i>	<ul style="list-style-type: none"><li>- The course equips students with the basic contents of the worldview and the Marxist-Leninist philosophical methodology.</li><li>- Help students to apply knowledge about worldview, Marxist-Leninist philosophical methodology creatively in cognitive and practical activities, in order to solve problems of social life of country and time.</li></ul>
<i>Tentative learning outcomes</i>	<b>I. Knowledge</b> <ul style="list-style-type: none"><li>1. Philosophy and its role in social life<ul style="list-style-type: none"><li>1.1. Conceptualize philosophy and some basic concepts</li><li>1.2. Recognize the opposition between materialism and idealism in solving the fundamental problem of philosophy</li><li>1.3. Understanding dialectical materialism - the highest developed form of it</li><li>1.4. Understand the birth, objects, functions and roles of Marxist-Leninist philosophy</li></ul></li><li>2. Dialectical materialism<ul style="list-style-type: none"><li>2.1. Understanding matter from the point of view of dialectical materialism</li><li>2.2. Understanding consciousness from the point of view of dialectical materialism</li><li>2.3. Resolving the relationship between matter and consciousness from the point of view of dialectical materialism</li><li>2.4. Understand dialectics and materialistic dialectics</li><li>2.5. Understand the two basic principles of materialist dialectic and derive the</li></ul></li></ul>

	<p>methodological significance of each</p> <p>2.6. Understand the pairs of basic categories of the material dialectic and derive the methodological meaning of each pair of categories</p> <p>2.7. Understand the fundamental rules of the materialist dialectic and derive the methodological meaning of each one</p> <p>2.8. Understand practice, perception, the role of practice in perception and truth</p> <p>3. Historical materialism</p> <p>3.1. Understand the role of production and its methods in the existence and development of society</p> <p>3.2. Understand the dialectical relationship between forces of production and relations of production</p> <p>3.3. Understand the dialectical relationship between infrastructure and market economy; the natural development of socio-economic forms</p> <p>3.4. Understand class, class struggle; ethnicity and the relationship among class, nation and humanity</p> <p>3.5. Understanding the state and social networks</p> <p>3.6. Understand the dialectical relationship between social existence and social consciousness</p> <p>3.7. Understand the nature of human being; the phenomenon of alienation and liberation of man from the relationship between the individual and society, and from the role of the masses.</p>															
	<p><b>II. Skills</b></p> <p>Demonstrate the ability to generalize, think, debate, critique, and groupwork</p> <p>1. Have the skill of generalizing to pick out keywords for each content and think systematically</p> <p>2. Have skills in presenting, explaining, criticizing, debating and eloquent about theories being studied and researched based on practice</p> <p>3. Have skills in social communication, cooperation and teamwork, sharing knowledge and experience, ability to run a group</p> <p><b>III. Attitudes</b></p> <p>Express consciousness and awareness during and after learning</p> <p>1. Have a sense of responsibility to protect the science, revolution and humanity of Marxism-Leninism</p> <p>2. Have a sense of personal responsibility towards the community</p> <p>3. Have awareness of the need for lifelong learning and research and applying practically.</p>															
<i>Content</i>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: period (1 period = 50 minutes)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Philosophy and its role in social life</td> <td>15</td> <td>T, U</td> </tr> <tr> <td>Dialectical materialism</td> <td>15</td> <td>T, U</td> </tr> <tr> <td>Historical materialism</td> <td>14</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction	1	I, T	Philosophy and its role in social life	15	T, U	Dialectical materialism	15	T, U	Historical materialism	14	T, U
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<i>Examination forms</i>	<p>Class discussion; Group presentations and reports; Mid-term exam: essay (opened-book); Final exam: essay (closed-book)</p>															

<p><i>Study and examination regulations</i></p>	<p>1. Regulations for group presentations</p> <ul style="list-style-type: none"> <li>- Forming a group: 5 students/group. The deadline for group topic registration on the forum is session 2 or directly submit it to the lecturer at the exam.</li> <li>- Week 4 (4th session) begin to present in order. Note that the presenting groups need to fully show up and bring along all relevant documents.</li> <li>- Submission form: submit files and minutes of group work via email to the lecturer</li> </ul> <p>2. Regulations on time, attendance and discipline in the course: attend class on time and at least 80% of the sessions (only to be absent for a maximum of 20%). Exam ban is applied to those who miss more than the regulated number of sessions. Students must have all test scores, lively discussions, constructive and serious statements in class.</p>
<p><i>Materials</i></p>	<ol style="list-style-type: none"> <li>1. Ministry of Education and Training (2019), <i>Giáo trình Triết học Mác - Lênin</i>, National Political Publishing House, Hanoi.</li> <li>2. Ministry of Education and Training (2012), <i>Giáo trình Những Nguyên lý cơ bản của chủ nghĩa Mác - Lênin</i>, National Political Publishing House, Hanoi.</li> <li>3. Governing Body (2008), <i>Giáo trình Triết học Mác-Lênin</i>, National Political Publishing House, Hanoi.</li> </ol>



## 2. Ho Chi Minh's Thoughts (PE019IU)

<i>Module designation</i>	The course equips students with basic knowledge about subjects, research methods and meaning of Ho Chi Minh's ideologies; origin of Ho Chi Minh's ideologies; national independence and socialism; Communist Party of Viet Nam and the Vietnamese State; great national unity and international solidarity; culture, morality and human.
<i>Semester(s) in which the module is taught</i>	Semester 1 (3 <sup>rd</sup> year)
<i>Person responsible for the module</i>	Lecturers at School of Political and Administration Sciences, VNU-HCM
<i>Language</i>	<i>Vietnamese</i>
<i>Relation to curriculum</i>	<i>Compulsory</i>
<i>Teaching methods</i>	<i>Lecture, group discussion, presentation</i>
<i>Workload (incl. contact hours, self-study hours)</i>	<i>(Estimated) Total workload:85 Contact hours (lecture, exercise, laboratory session, etc.): 25 Private study including examination preparation, specified in hours<sup>2</sup>: 60</i>
<i>Credit points</i>	<b>02 credits/3.09 ECTS</b>
<i>Required and recommended prerequisites</i>	1. Marxist-Leninist philosophy 2. Marxist-Leninist political economy 3. Scientific socialism
<i>Module objectives</i>	<b>Knowledge:</b> Equip students with basic knowledge about the concept, origin, process of formation and development of Ho Chi Minh's thoughts; the basic contents of Ho Chi Minh's thoughts; the application of the Communist Party of Vietnam in the national-democratic and socialist revolution in the current national renewal process. <b>Skills:</b> Form the skills of independent thinking, analyzing, evaluating and applying Ho Chi Minh's thought creatively to solve problems in life, study and work. <b>Attitudes:</b> Help students improve their political bravery, patriotism, loyalty to the goals and ideals of national independence associated with socialism; aware of the role and value of Ho Chi Minh's thoughts for the Vietnamese Party and nation; aware their responsibility in studying and training to contribute to the construction and defense of the Fatherland.
<i>Tentative learning outcomes</i>	<b>I. Knowledge</b> <b>1. Concept, subject, research methodology and meaning of Ho Chi Minh ideology module</b> 1.1. Understand the concept of Ho Chi Minh's thoughts 1.2. Understand the research object 1.3. Grasp some basic requirements on learning and research methods of Ho Chi Minh's ideology

	<p>1.4. Understand the meaning of learning ideological course</p> <p><b>2. <i>The foundation, formation and development of Ho Chi Minh ideology</i></b></p> <p>2.1. Understand the practical basis, theoretical premise and subjective factors forming Ho Chi Minh's thoughts</p> <p>2.2. Understand the process of formation and development of Ho Chi Minh's thoughts</p> <p>2.3. Grasp the value of Ho Chi Minh's thoughts for the Vietnamese revolution and the progressive development of mankind</p> <p><b>3. <i>Ho Chi Minh ideology on national independence and socialism</i></b></p> <p>3.1. Aware of the scientific, revolutionary and creative nature of Ho Chi Minh's thoughts on national independence and liberation revolution</p> <p>3.2. Grasp Ho Chi Minh's view on the necessity of socialism, building socialism and the transition period to socialism in Vietnam</p> <p>3.3. Understand Ho Chi Minh's view on the relationship between national independence and socialism</p> <p>3.4. Apply Ho Chi Minh's thoughts on national independence associated with socialism in the current revolution</p>
	<p><b>4. <i>Ho Chi Minh ideology on the Communist Party of Vietnam of the people, by the people and for the people</i></b></p> <p>4.1. Understand the basic contents of Ho Chi Minh's thoughts on the Communist Party of Vietnam</p> <p>4.2. Understand the basic contents of Ho Chi Minh's thoughts on the state of the people, by the people, for the people</p> <p>4.3. Apply Ho Chi Minh's thoughts to the construction of the Party and the State</p> <p><b>5. <i>Ho Chi Minh ideology on national great unity and international solidarity</i></b></p> <p>5.1. Understand the basic views of Ho Chi Minh's thoughts on great national unity</p> <p>5.2. Understand the basic views of Ho Chi Minh's thoughts on international solidarity</p> <p>5.3. Apply Ho Chi Minh's thoughts on great national unity and international solidarity in the current period</p> <p><b>6. <i>Ho Chi Minh ideology on culture, morality and human</i></b></p> <p>6.1. Grasp basic knowledge of Ho Chi Minh's thoughts on culture</p> <p>6.2. Grasp basic knowledge of Ho Chi Minh's thoughts on new morality (revolutionary morality)</p> <p>6.3. Grasp the basic knowledge of Ho Chi Minh's thoughts on culture</p> <p>6.4. Apply Ho Chi Minh's thoughts on culture, morality and people in building the current Vietnamese culture, morality and human</p> <p><b>II. Skills</b></p> <p>Demonstrate the ability to generalize, think, debate, critique, and groupwork</p> <p>1. Have skills in thinking, analyzing and evaluating Ho Chi Minh's thoughts.</p> <p>2. Have skills in presenting, explaining, criticizing, debating and eloquent about theoretical knowledge being studied and researched based on practice.</p> <p>3. Have skills in creatively applying Ho Chi Minh's thoughts to solving practical problems in life, study and work.</p> <p><b>III. Attitudes</b></p> <p>1. Recognize the role and value of Ho Chi Minh's thoughts for the Party and nation of Vietnam</p> <p>2. Have political bravery, patriotism, loyalty to the goals and ideals of national independence associated with socialism</p> <p>3. Recognize responsibility in studying, researching and applying knowledge in life</p>

	to contribute to national construction and defense																								
<i>Content</i>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: period (1 period = 50 minutes)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th><b>Topic</b></th> <th><b>Weight</b></th> <th><b>Level</b></th> </tr> </thead> <tbody> <tr> <td>Giới thiệu về môn học</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Concept, subject, research methodology and meaning of Ho Chi Minh ideology module</td> <td>2</td> <td>T</td> </tr> <tr> <td>The foundation, formation and development of Ho Chi Minh ideology</td> <td>3</td> <td>T</td> </tr> <tr> <td>Ho Chi Minh ideology on national independence and socialism</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Ho Chi Minh ideology on the Communist Party of Vietnam of the people, by the people and for the people</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Ho Chi Minh ideology on national great unity and international solidarity</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Ho Chi Minh ideology on culture, morality and human</td> <td>3</td> <td>I, T</td> </tr> </tbody> </table>	<b>Topic</b>	<b>Weight</b>	<b>Level</b>	Giới thiệu về môn học	1	I, T	Concept, subject, research methodology and meaning of Ho Chi Minh ideology module	2	T	The foundation, formation and development of Ho Chi Minh ideology	3	T	Ho Chi Minh ideology on national independence and socialism	3	T, U	Ho Chi Minh ideology on the Communist Party of Vietnam of the people, by the people and for the people	3	T, U	Ho Chi Minh ideology on national great unity and international solidarity	3	T, U	Ho Chi Minh ideology on culture, morality and human	3	I, T
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<i>Examination forms</i>	Class discussion; Group presentations and reports; Mid-term exam: Multiple choice (closed-book) or essay (opened-book); Final exam: Essay (opened-book)																								
<i>Study and examination regulations</i>	<ul style="list-style-type: none"> <li>- Regulations on assessment: according to the Regulations on the teaching and learning of Political Theory subjects of the School of Political and Administration Sciences.</li> <li>- Regulations on group presentation: Forming a group: 5 students/group.</li> <li>+ The deadline for group topic registration on the forum is session 2.</li> <li>+ Week 4 (4th session) begin to present in order. Note that the presenting groups need to fully show up and bring along all relevant documents.</li> <li>+ Submission form: submit files and minutes of group work via email to the lecturer.</li> </ul>																								
<i>Materials</i>	<ol style="list-style-type: none"> <li>1. Ministry of Education and Training (2019). <i>Giáo trình Tư tưởng Hồ Chí Minh</i>, National Political Publishing House, Hanoi.</li> <li>2. School of Political and Administration Sciences VNU-HCM. <i>Tài liệu hướng dẫn học tập Tư tưởng Hồ Chí Minh</i>.</li> <li>3. <i>Ho Chi Minh</i> (2011). Full volume, National Political Publishing House, Hanoi.</li> <li>4. <i>Biography of Ho Chi Minh</i> (2016). National Political Publishing House, Hanoi.</li> </ol>																								

### 3. Marxist - Leninist Political Economy (PE016IU)

<i>Module designation</i>	The program consists of 6 chapters, in which Chapter 1 discusses the Objects, research methods and functions of Marxist-Leninist political economy; the remain chapters present the core content of Marxist-Leninist Political Economy according to the module's objectives. Specifically, the content includes commodities, markets and the role of stakeholders; producing surplus value; competition and monopoly; socialist-oriented market economy and economic interest relations in Vietnam; and industrialization, modernization, and international economic integration in Vietnam.
<i>Semester(s) in which the module is taught</i>	Summer Semester (1 <sup>st</sup> year)
<i>Lecturer</i>	Lecturers at School of Political and Administration Sciences, VNU-HCM
<i>Language</i>	<i>Vietnamese</i>
<i>Relation to curriculum</i>	<i>Compulsory</i>
<i>Teaching methods</i>	<i>Lecture, group discussion, presentation</i>
<i>Workload (incl. contact hours, self-study hours)</i>	<i>(Estimated) Total workload: 85 Contact hours (lecture, exercise, laboratory session, etc.): 25 Private study including examination preparation, specified in hours<sup>3</sup>: 60</i>
<i>Credit points</i>	<b>02 credits/3.09 ECTS</b>
<i>Required and recommended prerequisites</i>	Marxist-Leninist philosophy
<i>Module objectives</i>	<p>Firstly, to equip students with fundamental knowledge of Marxist-Leninist political economy in the context of economic development of the country and the world today; to ensure the basic, systematic, scientific, and up-to-date knowledge associated with practice, creativity, skills, thinking, and traits of students, as well as to enhance the interdisciplinary and non-overlapping interoperability, also reduce the amount of academic or outdated material for college and university non-theoretical students.</p> <p>Secondly, on that basis, to form the mindset, skills of analysis, evaluation, and identification of the nature of economic benefit relations in the country's socio-economic development, contributing to helping students build appropriate social responsibility in the job position and life after graduation.</p> <p>Thirdly, to contribute to building the stance and ideology of Marxism-Leninism towards students.</p>
<i>Tentative learning outcomes</i>	<p><b>II. Knowledge</b></p> <p><b>1. Objects, research methods and functions of Marxist-Leninist political economy</b></p> <p>1.1. Understanding the formation and development of Marxist-Leninist political economy</p> <p>1.2. Identify the research object of Marxist-Leninist political economy</p>

- 1.3. Understand the research method of Marxist-Leninist political economy
- 1.4. Understand the functions of Marxist-Leninist political economy course
- 2. *Commodities, markets, and the role of stakeholders***
  - 2.1. Understand the definition and the conditions for the production of goods
  - 2.2. Understanding the commodity, its two attributes, and the relationship between them
  - 2.3. Understand the relationship between the duality of commodity-producing labor and the two attributes of commodities
  - 2.4. Understand the quality and quantity of the good's value and the affecting factors
  - 2.5. Understand the origin, nature and function of money
  - 2.6. Understanding the market, the role of the market, the market mechanism and the market economy
  - 2.7. Understand some key patterns of the market economy
  - 2.8. Understand the role of stakeholders
- 3. *Surplus value in a market economy***
  - 3.1. Understand the concept, the general formula and contradiction of capital
  - 3.2. Understand what the commodity labor is and why need to study it
  - 3.3. Understand what surplus value is
  - 3.4. Understanding the nature of capital accumulation
  - 3.5. Understand the concepts: production cost, profit, profit margin, average profit, commercial profit, factors affecting profit rate
  - 3.6. Understand what income is
  - 3.7. Understanding capitalist rents, their types and land prices
- 4. *Competition and monopoly in the market economy***
  - 4.1. Understand the relationship between competition and monopoly in a market economy
  - 4.2. Understand the causes of monopoly formation in the market economy
  - 4.3. Understanding the basic economic features of monopoly in capitalism from Lenin's viewpoint
  - 4.4. Understand the causes of formation and development of state monopoly capitalism
  - 4.5. Understand the nature and the main manifestations of state monopoly in capitalism
  - 4.6. Understand the historical role of capitalism
- 5. *Socialist-oriented market economy and economic interest relations in Vietnam***
  - 5.1. Understand the concept of a socialist-oriented market economy in Vietnam
  - 5.2. Understand the objective necessity of developing a socialist-oriented market economy in Vietnam
  - 5.3. Understanding the characteristics of the socialist-oriented market economy in Vietnam
  - 5.4. Understand what the socialist-oriented market economy institution is and the need to improve it
  - 5.5. Grasp the basic contents of improving the socialist-oriented market economy institution in Vietnam
  - 5.6. Understand the concept and the relationship of economic benefits
  - 5.7. Understand the role of the state in ensuring the harmonization of relations of interest
- 6. *Vietnam's industrialization, modernization and international economic integration***
  - 6.1. Understand what the industrial revolution is and be able to generalize the historical revolutions
  - 6.2. Understand the role of the industrial revolution for development
  - 6.3. Understand the concept and typical models of industrialization in the world
  - 6.4. Understand the objective necessity of industrialization and modernization in

	<p>Vietnam</p> <p>6.5. Understand the contents of industrialization and modernization in Vietnam</p> <p>6.6. Understand industrialization and modernization in Vietnam in the context of the 4.0 industrial revolution.</p> <p>6.7. Understand the concept and the reason why international economic integration an objective necessity</p> <p>6.8. Understand the contents and positive and negative impacts of international economic integration</p> <p>6.9. Grasp the direction of improving the efficiency of international economic integration in Vietnam's development</p>																					
	<p><b>II. Skills</b></p> <p><b><i>Demonstrate the ability to generalize, think, debate, critique, and groupwork</i></b></p> <p>1. Have the skill of generalizing to pick out keywords for each content and think systematically</p> <p>2. Have skills in presenting, explaining, criticizing, debating and eloquent about theories being studied and researched based on practice</p> <p>3. Have skills in social communication, cooperation and teamwork, sharing knowledge and experience, ability to run a group</p> <p><b>III. Attitudes</b></p> <p><b><i>Express consciousness and awareness during and after learning</i></b></p> <p>1. Have a sense of responsibility to protect the science, revolution and humanity of Marxism-Leninism</p> <p>2. Have a sense of personal responsibility towards the community</p> <p>3. Have awareness of the need for lifelong learning and research and applying practically.</p>																					
<i>Content</i>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: period (1 period = 50 minutes)</p> <p>Teaching levels: I (introduce); T (teach); U (utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction</td> <td>1</td> <td>I</td> </tr> <tr> <td>Objects, research methods and functions of Marxist-Leninist political economy</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Commodities, markets and the role of stakeholders</td> <td>6</td> <td>T</td> </tr> <tr> <td>Surplus value in a market economy</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Socialist-oriented market economy and economic interest relations in Vietnam</td> <td>5</td> <td>T, U</td> </tr> <tr> <td>Vietnam's industrialization, modernization and international economic integration</td> <td>5</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction	1	I	Objects, research methods and functions of Marxist-Leninist political economy	2	I, T	Commodities, markets and the role of stakeholders	6	T	Surplus value in a market economy	6	T, U	Socialist-oriented market economy and economic interest relations in Vietnam	5	T, U	Vietnam's industrialization, modernization and international economic integration	5	T, U
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<i>Examination forms</i>	Class discussion; Group presentations and reports; Mid-term exam: essay (opened-book); Final exam: essay (closed-book)																					
<i>Study and examination regulations</i>	<p>1. Regulations for group presentations</p> <ul style="list-style-type: none"> <li>- Forming a group: 5 students/group. The deadline for group topic registration on the forum is session 2 or directly submit it to the lecturer at the exam.</li> <li>- Week 4 (4th session) begin to present in order. Note that the presenting groups need to fully show up and bring along all relevant documents.</li> <li>- Submission form: submit files and minutes of group work via email to the lecturer</li> </ul> <p>2. Regulations on time, attendance, and discipline in the course: attend class on time</p>																					

	and at least 80% of the sessions (only to be absent for a maximum of 20%). Exam ban is applied to those who miss more than the regulated number of sessions. Students must have all test scores, lively discussions, constructive and serious statements in class.
<i>Materials</i>	<p>1. Mandatory document: Marxist-Leninist political economy textbook for non-specialized undergraduates.</p> <p>2. Referential materials:</p> <p>a) Robert, J.R. &amp; Robert, F. H. (2003), <i>History of economic theory and method (in Vietnamese)</i>, Statistical Publishing House.</p> <p>b) Politic Economy Institute, Ho Chi Minh National Academy of Politics (2018), <i>Giáo trình Kinh tế chính trị Mác - Lê nin</i>, Political Theory House.</p> <p>c) K. Marx and F.Engels, Full Volume (vol. 20, 23, 25), National Political Publishing House, 1994.</p> <p>d) V.I. Lenin, Full Volume, Progress Press, Moscow, 1976.</p> <p>e) Davig Begg, Stanley Fisher, Rudiger Dornbusch, <i>Kinh tế học</i>, Hanoi Education Publishing House, 1992.</p>
	<p>f) Communist Party of Vietnam (2016), Document of the 12th National People's Congress, National Political Publishing House, Hanoi.</p> <p>g) Communist Party of Vietnam (2016), Report summarizing some theoretical and practical problems through thirty years of renovation (1986 - 2016), National Political Publishing House, Hanoi.</p> <p>h) Communist Party of Vietnam (2017), Resolution No. 11-NQ/TW dated June 3, 2017 on: "Improving the socialist-oriented market economy institution"</p> <p>i) Directive No. 16/CT-TTg (2017) "on strengthening access to the 4.0 industrial revolution".</p> <p>j) Jeremy Rifkin (2014), <i>The third industrial revolution (in Vietnamese)</i>, Labor and Social Publisher Co. Ltd.</p> <p>k) Manfred B. Steger (2011), <i>Globalization - A Very Short Introduction</i>, Knowledge Publishing House.</p> <p>l) Klaus Schwab (2015), <i>The fourth industrial revolution</i>, National Political Publishing House, 2018.</p>

#### 4. Scientific Socialism (PE017IU)

<i>Module designation</i>	The course equips students with basic knowledge of scientific socialism.
<i>Semester(s) in which the module is taught</i>	Semester 1 (2 <sup>nd</sup> year)
<i>Person responsible for the module</i>	Lecturers at School of Political and Administration Sciences, VNU-HCM
<i>Language</i>	<i>Vietnamese</i>
<i>Relation to curriculum</i>	<i>Compulsory</i>
<i>Teaching methods</i>	<i>Lecture, group discussion, presentation</i>
<i>Workload (incl. contact hours, self-study hours)</i>	<i>(Estimated) Total workload: 85 Contact hours (lecture, exercise, laboratory session, etc.): 25 Private study including examination preparation, specified in hours<sup>4</sup>: 60</i>
<i>Credit points</i>	<i>02 credits/3.09 ECTS</i>
<i>Required and recommended prerequisites</i>	1. Marxist-Leninist political economy 2. Marxist-Leninist philosophy
<i>Module objectives</i>	- The subject equips students with the basic contents of scientific socialism (one of the three constituent parts of Marxism-Leninism). - Help students to apply knowledge about scientific socialism creatively in cognitive and practical activities, in order to solve problems of social life of country and time.
<i>Tentative learning outcomes</i>	<b>III. Knowledge</b> <b>1. Introduction to Scientific Socialism</b> 1.1. Generalize the birth of Scientific Socialism, the historical background and the role of Karl Marx and Friedrich Engels 1.2. Recognize the basic development stages of Scientific Socialism shown in the works 1.3. Understand the object, method and significance of the study of Scientific Socialism <b>2. The historical mission of the working class</b> 2.1. Understand the concept of the working class and its characteristics 2.2. Understand the content and characteristics of the historical mission of the working class 2.3. Explain the conditions that determine the historical mission of the working class



2.4. Analyze the similarities and differences of the working class and the implementation of the mission of the them in the world today

2.5. Understand the basic characteristics of the Vietnamese working class and the content of the historical mission of them today

2.6. Present the direction and some key solutions to build the working class in Vietnam today

### ***3. Socialism and the transition to socialism***

3.1. Understanding Socialism is the first stage of the socialist-economic form of communism

3.2. Describe the basic features of socialism

3.3. Explain the objective necessity of the transition to socialism and the basic features of it

3.4. Understand the characteristics of the transition period and socialism in Vietnam, present the directions to build socialism in Vietnam today

### ***4. Democracy and the socialist state***

4.1. Explain the concept of democracy and the birth and development of democracy in the history of human society

4.2. Understand the birth process and nature of socialist democracy

4.3. Understand the birth, nature and function of the socialist state as well as the relationship between democracy and the state

4.4. Understand the birth, development and nature of socialist democracy in Vietnam

4.5. Present the basic characteristics and solutions to build a legal socialist state in Vietnam today

### ***5. Social structure - classes and alliances of classes and classes in the transition to socialism***

5.1. Present the concept of social structure - generalization and the change of class social structure during the transition to socialism

5.2. Explain the inevitability of class alliances during the transition to socialism

5.3. Understand the social-class structure in Vietnam during the transitional period and present basic solutions to build and develop class alliances and social classes in Vietnam

### ***6. Ethnic and religious issues in the transition to socialism***

6.1. Understand the basic concepts and characteristics of the nation and the Marxist-Leninist point of view on the national issue

6.2. Present the basic characteristics of the nation in Vietnam and the viewpoints on ethnic policies of the Party and State of Vietnam.

6.3. Understanding the nature, origin, features of religion and basic principles of solving religious problems in the transition to socialism

	<p>6.4. Explain the characteristics of religion in Vietnam and the policies of the Party and State of Vietnam towards religious beliefs today</p> <p>6.5. Understand the characteristics of ethnic and religious relations in Vietnam and present basic orientations to solve the relationship between ethnicity and religion in Vietnam today</p> <p><b>7. Family problems in the transition to socialism</b></p> <p>7.1. Outline the position, function and role of the family in society</p> <p>7.2. Identify the bases for building a family during the transition to socialism</p> <p>7.3. Explain the change of the Vietnamese family and present the basic directions for building and developing the Vietnamese family during the transition to socialism</p>																											
	<p><b>II. Skills</b></p> <p><b><i>Demonstrate the ability to generalize, think, debate, critique, and groupwork</i></b></p> <p>1. Have the skill of generalizing to pick out keywords for each content and think systematically</p> <p>2. Have skills in presenting, explaining, criticizing, debating and eloquent about theories being studied and researched based on practice</p> <p>3. Have skills in social communication, cooperation and teamwork, sharing knowledge and experience, ability to run a group</p> <p><b>III. Attitudes</b></p> <p><b><i>Express consciousness and awareness during and after learning</i></b></p> <p>1. Have a sense of responsibility to protect the scientific and revolutionary nature of Marxist-Leninist theories on socialism and the transition to socialism in Vietnam</p> <p>2. Have a sense of personal responsibility towards the community</p> <p>3. Have awareness of the need for lifelong learning and research and applying practically</p>																											
<i>Content</i>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: period (1 period = 50 minutes)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Introduction to Scientific Socialism</td> <td>4</td> <td>I, T</td> </tr> <tr> <td>The historical mission of the working class</td> <td>4</td> <td>T</td> </tr> <tr> <td>Socialism and the transition to socialism</td> <td>4</td> <td>I, T</td> </tr> <tr> <td>Democracy and the socialist state</td> <td>4</td> <td>T, U</td> </tr> <tr> <td>Social structure - classes and alliances of classes and classes in the transition to socialism</td> <td>4</td> <td>I, T</td> </tr> <tr> <td>Ethnic and religious issues in the transition to socialism</td> <td>4</td> <td>T, U</td> </tr> <tr> <td>Family problems in the transition to socialism</td> <td>5</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction	1	I, T	Introduction to Scientific Socialism	4	I, T	The historical mission of the working class	4	T	Socialism and the transition to socialism	4	I, T	Democracy and the socialist state	4	T, U	Social structure - classes and alliances of classes and classes in the transition to socialism	4	I, T	Ethnic and religious issues in the transition to socialism	4	T, U	Family problems in the transition to socialism	5	T, U
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<i>Examination forms</i>	Class discussion; Group presentations and reports; Practices; Mid-term exam; Final exam																											

<i>Study and examination regulations</i>	<p>1. Regulations for group presentations</p> <ul style="list-style-type: none"> <li>- Forming a group: 5 students/group. The deadline for group topic registration on the forum is session 2 or directly submit it to the lecturer at the exam.</li> <li>- Week 4 (4th session) begin to present in order. Note that the presenting groups need to fully show up and bring along all relevant documents.</li> <li>- Submission form: submit files and minutes of group work via email to the lecturer</li> </ul> <p>2. Regulations on time, attendance, and discipline in the course: attend class on time and at least 80% of the sessions (only to be absent for a maximum of 20%). An exam ban is applied to those who miss more than the regulated number of sessions. Students must have all test scores, lively discussions, constructive and serious statements in class.</p>
<i>Materials</i>	<p>4. Ministry of Education and Training. (2019). <i>Giáo trình Chủ nghĩa xã hội khoa học</i>, National Political Publishing House, Hanoi.</p> <p>5. Ministry of Education and Training. (2012). <i>Giáo trình Những Nguyên lý cơ bản của chủ nghĩa Mác - Lênin</i>, National Political Publishing House, Hanoi.</p> <p>6. Governing Body. (2008). <i>Giáo trình Chủ nghĩa xã hội khoa học</i>, National Political Publishing House, Hanoi.</p>

## 5. History of Vietnamese Communist Party (PE018IU)

<i>Module designation</i>	The course equips students with basic knowledge about the History of the Communist Party of Vietnam
<i>Semester(s) in which the module is taught</i>	Semester 1 (3 <sup>rd</sup> year)
<i>Person responsible for the module</i>	Lecturers at School of Political and Administration Sciences, VNU-HCM
<i>Language</i>	<i>Vietnamese</i>
<i>Relation to curriculum</i>	<i>Compulsory</i>
<i>Teaching methods</i>	<i>Lecture, group discussion, presentation</i>
<i>Workload (incl. contact hours, self-study hours)</i>	<p><i>(Estimated) Total workload: 85</i></p> <p><i>Contact hours (lecture, exercise, laboratory session, etc.): 25</i></p> <p><i>Private study including examination preparation, specified in hours<sup>5</sup>: 60</i></p>
<i>Credit points</i>	<b>02 credits/3.09 ECTS</b>
<i>Required and recommended prerequisites</i>	<ol style="list-style-type: none"> <li>1. Marxist-Leninist philosophy</li> <li>2. Marxist-Leninist political economy</li> <li>3. Scientific socialism</li> </ol>

<sup>5</sup> When calculating contact time, each contact hour is counted as a full hour. Because of the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

*Module objectives*

**1. Knowledge:** providing systematic and basic knowledge about the birth of the Communist Party of Vietnam (1920-1930), the Party's leadership over the Vietnamese revolution during the struggle for power (1930-1945), the two resistance wars against French and US colonialism (1945-1975), and national construction and defense during the period of the country's transition to socialism and carrying out the renovation work (1975-2018).

**2. Ideology:** Through historical events and experiences to build a sense of respect for objective truths, raise pride and confidence in the Party's leadership.

**3. Skills:** Equip with scientific thinking methods on history, skills in choosing research materials and studying subjects; and the ability to apply historical awareness to practical work and critical thinking toward false claims about the history of the Party.

<p><i>Tentative learning outcomes</i></p>	<p><b>IV. Knowledge</b></p> <p><b><i>1. Objects, functions, tasks, contents and methods of research and study History of the Communist Party of Vietnam</i></b></p> <p>Understand the objects, purposes of study and research and some basic requirements on learning and research methods</p> <p><b><i>2. The Communist Party of Vietnam was born and led the struggle for power (1930-1945)</i></b></p> <p>2.1. Understanding the historical context that influenced the birth of the Communist Party of Vietnam</p> <p>2.2. Understand the process of preparing the conditions for the establishment of the Party of Nguyen Ai Quoc</p> <p>2.3. Understand the contents of the Party's founding conference and the Party's first political platform</p> <p>2.4. Understand the historical significance of the establishment of the Communist Party of Vietnam</p> <p>2.5. Understanding the revolutionary movements of 1930-1935 and the policies of restoring the movement in 1932-1935</p> <p>2.6. Understanding the democracy movement in 1936-1939</p> <p>2.7. Understanding the national liberation movement in 1939-1945</p> <p>2.8. Understanding the nature, meaning and experience of the August Revolution in 1945</p> <p><b><i>3. The Party led two resistance wars, completed the national liberation and reunification (1945-1975)</i></b></p> <p>3.1. Understand the policy of building and defending the revolutionary government in 1945-1946</p> <p>3.2. Understand the line of national resistance against the French colonialists and the process of organizing its implementation from 1946 to 1950</p> <p>3.3. Understand the policy of promoting the resistance against the French colonialists and the implementation process from 1946 to 1950</p> <p>3.4. Understand the historical significance and experience of the Party in leading the resistance war against French colonialism and US intervention</p> <p>3.5. Understanding the Party's process of leading the two regions' revolutions in the 1954-1965 period</p> <p>3.6. Mastering the Party's revolutionary leadership in the 1965-1975 period</p> <p>3.7. Understand the meaning and experience of the Party's leadership in the resistance war against the US in 1954-1975</p>
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	<p><b>4. The Party led the country in the transition to socialism and carried out the Doi moi (1975-2018)</b></p> <p>4.1. Understand the policy of building socialism and defending the Fatherland 1975-1981</p> <p>4.2. Understanding the contents of the 5th National Congress of the Party and the breakthroughs to continue economic renovation 1982-1986</p> <p>4.3. Understanding the Party's point of view of comprehensive renovation, bringing the country out of the 1986-1996 socio-economic crisis</p> <p>4.4. Understand the achievements and experiences of the innovation process</p> <p>4.5. Understand the great victories of the Vietnamese revolution under the leadership of the Party</p> <p>4.6. Understanding the great lessons of the Party's leadership from 1930 to 2018</p> <p><b>II. Skills</b>  <b><i>Demonstrate the ability to generalize, think, debate, critique, and groupwork</i></b></p> <p>1. Exercise independent thinking capacity in researching the Party's revolutionary lines, strategies and tactics</p> <p>2. Have critical thinking, analytical, synthesis and evaluation skills related to the subject; and from there, apply the learned knowledge to actively and actively perceive political, economic, cultural and social issues according to the guidelines, policies and laws of the Party and State.</p> <p>3. Have writing skills, individual working skills, teamwork skills, and presenting research results</p> <p><b>III. Attitudes</b>  <b><i>Express consciousness and awareness during and after learning</i></b></p> <p>1. Believe in the Party's leadership for the Vietnamese revolution</p> <p>2. Determine to strive for the implementation of the Party's revolutionary line</p> <p>3. Have a serious attitude in learning, scientific research, awareness of life and society, self-training to become a person of solid political quality, bravery, ethics, and good level of expertise; form affection and belief in the revolutionary path that our nation has chosen</p>																		
<p><i>Content</i></p>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: period (1 period = 50 minutes)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Objects, functions, tasks, contents and methods of research and study History of the Communist Party of Vietnam</td> <td>4</td> <td>I, T</td> </tr> <tr> <td>The Communist Party of Vietnam was born and led the struggle for power (1930-1945)</td> <td>5</td> <td>T</td> </tr> <tr> <td>The Party led two resistance wars, completed the national liberation and reunification (1945-1975)</td> <td>5</td> <td>I, T</td> </tr> <tr> <td>The Party led the country in the transition to socialism and carried out the Doi moi (1975-2018)</td> <td>5</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction	1	I, T	Objects, functions, tasks, contents and methods of research and study History of the Communist Party of Vietnam	4	I, T	The Communist Party of Vietnam was born and led the struggle for power (1930-1945)	5	T	The Party led two resistance wars, completed the national liberation and reunification (1945-1975)	5	I, T	The Party led the country in the transition to socialism and carried out the Doi moi (1975-2018)	5	T, U
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<i>Examination forms</i>	Class discussion; Group presentations and reports; Mid-term exam; Final exam
<i>Study and examination regulations</i>	<p>1. Regulations for group presentations</p> <ul style="list-style-type: none"> <li>- Forming a group: 5 students/group. The deadline for group topic registration on the forum is session 2 or directly submit it to the lecturer at the exam.</li> <li>- Week 4 (4th session) begin to present in order. Note that the presenting groups need to fully show up and bring along all relevant documents.</li> <li>- Submission form: submit files and minutes of group work via email to the lecturer</li> </ul> <p>2. Regulations on time, attendance and discipline in the course: attend class on time and at least 80% of the sessions (only to be absent for a maximum of 20%). Exam ban is applied to those who miss more than the regulated number of sessions. Students must have all test scores, lively discussions, constructive and serious statements in class.</p>
Materials	<p>1. Ministry of Education and Training. (2019). <i>Chương trình môn học Lịch sử Đảng Cộng sản Việt Nam</i>.</p> <p>2. Governing Body directed the compilation of national textbooks of Marxist-Leninist sciences, Ho Chi Minh's Thoughts. (2018). <i>Giáo trình Lịch sử Đảng Cộng sản Việt Nam (revised and supplemented edition)</i>. National Political Publishing House, Hanoi.</p>

## 6. Engineering Ethics and Professional Skills (PE020IU)

Module designation	<b>PE020IU – Engineering Ethics and Professional Skills</b> This course is designed to introduce engineering students to the concepts, theory and practice of engineering ethics. It will allow students to explore the relationship between ethics and engineering, and apply classical moral theory and decision making for engineering issues encountered in academic and professional careers. This course also provides students with the professional skills: sharing ideas and concepts, team working, and presentation skills.
Semester(s) in which the module is taught	3
Person responsible for the module	Dr. Nguyen, Hoai Nghia, Dr. Huynh, Vo Trung Dung
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, presentation, and assignments.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (lecture, exercise, laboratory session, etc.): 37.5 Private study including examination preparation, specified in hours <sup>6</sup> : 90
Credit points	<b>3 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	<b>Overall objectives</b> are to equip IU students with knowledge about the philosophies of ethics, professional practice, and world culture. Students who complete the course will be able to perform the following tasks:  <ul style="list-style-type: none"> <li>(1) Having knowledge of the definition of engineering ethics, codes of ethics, ethic philosophies, intellectual property, copyright, and fair use of copyrighted materials and research data.</li> <li>(2) Using different problem-solving techniques to solve ethical dilemmas.</li> <li>(3) Analyzing social, environmental, legal aspects, safety and sustainability issues of engineering activities.</li> </ul>
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (teach); U (Utilize)



	Topic	Weight	Level
	Introduction to engineering professionalism and ethics	1	I
	Engineers in Society	1	T, U
	Moral choices and codes of ethics	1	T, U
	Philosophical ethics	2	I, T, U
	Ethical problem-solving techniques	1	T, U
	Engineers at the Workplaces - Leadership	2	T, U
	Truth in actions and words Academic and Research Ethics	1	T
	Commitment to Safety	1	T, U
	Internet ethics, Privacy Issues and Intellectual Property Rights	1	T, U
	Environmental ethics Sustainable engineering	1	T
	Review	1	T
Examination forms	Constructed-response test		
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</p>		
Reading list	<p>Textbook:</p> <p>[1] M. W. Martin and R. Schinzinger (2010). <i>Introduction to engineering ethics</i> McGraw-Hill Education 2<sup>nd</sup> edition</p> <p>[2] C. B. Fleddermann. (2011). <i>Engineering Ethics</i>, Pearson 4th edition</p>		

## 7. General Law (PE021IU)

<b>Department</b>	Office of Academic Affairs	
<b>Course classification</b>	Foundation course	
<b>Course designation</b>	Face to face	
<b>Semester(s) in which the course is taught</b>	All semesters in each academic year	
<b>Person responsible for the course</b>	Dr. Vo Tuong Huan LLM. Bui Doan Danh Thao	
<b>Language</b>	English	
<b>Relation to curriculum</b>	Compulsory	
<b>Teaching methods</b>	Student-centred approach	
<b>Workload (incl. contact hours, self-study hours)</b>	(Estimated) Total workload: 127.5 hours Contact hours (lecture, in class discussions): 37.5 hours (=45 periods) Private study including examination preparation, specified in hours <sup>1</sup> : 90 hours	
<b>Credit points</b>	3	
<b>Required and recommended prerequisites for joining the course</b>	N/A	
<b>Course objectives</b>	<p>The overarching aims of this course are to:</p> <ul style="list-style-type: none"> <li>• Provide essential knowledge of Vietnamese legal system through integrated technology and real cases for social and cultural sustainability.</li> <li>• Raise awareness of responsibility toward others and how to stand for ending all types of legal violations, <b>especially corruption in various social contexts</b>.</li> <li>• Practice necessary skills to act as an ambassador to ensure social fairness and global equitable rights.</li> <li>• Use integrated online legal resources and communication tools to help the community to identify issues and develop countermeasures.</li> </ul>	
<b>Course learning outcomes</b>	Upon the successful completion of this course, students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowlee	<p>CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in <b>various social contexts</b> for a fair sustainable lifelong being.</p> <p>CLO1.1. Apply general knowledge on state and law to solve legal issues in <b>various social contexts</b> for a fair sustainable lifelong being.</p> <p>CLO1.2. Apply principle legal norms in some law branches such as constitution, civil, criminal, labor and administrative law to solve legal issues in <b>various social contexts</b> for a fair sustainable lifelong being.</p>

	<p>Skill</p> <p>CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves.</p> <p>CLO3. Integrate ICTs to solve legal issues in <b>various social contexts</b>.</p>
	<p>Attitude</p> <p>CLO4. Detect the responsibility to ensure social and cultural fairness, <b>including ending corruption</b>, in <b>various social contexts</b> through understanding importance of law in social contexts.</p> <p>CLO5. Respond to the base for coexistence in <b>various social contexts</b>.</p>
<b>Content</b>	The course will introduce students to Vietnamese legal systems. In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice, <b>including ending corruption</b> , in society.
<b>Examination forms</b>	Multiple choice questions Case-based exams Essay exams Oral exams

## Reading list

Please note that it is very important to gain familiarity with the subject matter in the readings and cases available on Blackboard and the internet *before* attendance in classes.

### Required Course Texts and Materials

#### Legal Texts:

1. Constitution of Vietnam - 2013
2. Civil Code of Vietnam - 2015
3. Criminal Code of Vietnam – 2015 (amended in 2017)
4. Law on Law on Handling of Administrative Violations 2012
5. Law on Enterprises – 2020
6. Labour Code 2019
7. Law on anti-corruption 2018

Available at <https://luatvietnam.vn/> or Blackboard

#### Books:

- PGS.TS. Phan Trung Hien, *Giáo trình Pháp Luật Đại cương*, NXB Chính Trị Quốc Gia Sự Thật 2022.
- Mai Hong Quy (Chief Editor) (2<sup>nd</sup> 2017), *Introduction to Vietnamese Law*, Hong Duc Publishing House.

#### Additional materials provided in Blackboard

The lecturer will attempt to make lecture notes and additional reading available on Blackboard. However, this is not an automatic entitlement for students doing this subject. Note that this is not a distance learning course, and you are expected to attend lectures and take notes. This way, you will get the added benefit of class interaction and demonstration.

### Optional Course Texts and Materials

#### Recommended Internet sites

[UNCTAD](#) (United Nations Conference on Trade and Development)

[WTO](#) (World Trade Organization)

[MOIT - Vietnam](#) (Official website of Ministry of Industry and Trade)

[MPI - Vietnam](#) (Official website of Ministry of Planning and Investment)

## I.2. ENGLISH PROFICIENCY

### 8. Writing AE1 (Academic Writing) (EN007IU)

Course designation	<i>This course provides students with comprehensive instructions and practice in essay writing, including transforming ideas into different functions of writing such as process, cause-effect, comparison-contrast, and argumentative essays.</i>							
Semester(s) in which the course is taught	1, 2, 3							
Person responsible for the course	Lecturers of Department of English							
Language	English							
Relation to curriculum	Compulsory							
Teaching methods	Lecture, lesson, project							
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (lecture, exercise): 25 Private study including examination preparation, specified in hours <sup>7</sup> : 60							
Credit points	<b>2 credits/3.09 ECTS</b>							
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: <ul style="list-style-type: none"> <li>• hold TOEFL iBT certificate with score <math>\geq 61</math></li> <li>• hold IELTS certificate with score <math>\geq 5.5</math></li> <li>• have completed IE2 course</li> </ul>							
Course objectives	Throughout the whole course, students are required to read university-level texts to develop the ability to read critically and to respond accurately, coherently and academically in writing. Through providing them with crucial writing skills such as brainstorming, paraphrasing, idea developing, revising, and editing, this course prepares the students for research paper writing in the next level of AE2 writing.							
Course learning outcomes	Upon the successful completion of this course, students will be able to: <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1. Understand and follow different steps in the writing process to produce a complete essay CLO2. Employ different methods to improve their writing such as peer feedback and teacher comments</td> </tr> <tr> <td>Skill</td> <td>CLO3. Read critically, analyze and annotate an academic text CLO4. Use different functions of writing to successfully communicate their purposes to the audience (describe a process, discuss the causes and effects, compare and contrast, make arguments, paraphrase and summarize)</td> </tr> </tbody> </table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand and follow different steps in the writing process to produce a complete essay CLO2. Employ different methods to improve their writing such as peer feedback and teacher comments	Skill	CLO3. Read critically, analyze and annotate an academic text CLO4. Use different functions of writing to successfully communicate their purposes to the audience (describe a process, discuss the causes and effects, compare and contrast, make arguments, paraphrase and summarize)
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	Attitude	CLO5. Reason around ethical issues in writing academic essays and avoid committing plagiarism	
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (2 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p>		
	<b>Topic</b>	<b>Weight</b>	<b>Level</b>
	The process of Academic Writing	1	I, T, U
	Using Outside Sources	3	T, U
	From Paragraph to Essay	4	T, U
	Process Essays	4	T, U
	Cause/Effect Essays	4	T, U
	Comparison/ Contrast Essays	4	T, U
	Argumentative Essays	6	T, U
	Summarizing	2	U
Review & Correction	2	U	
Examination forms	Essay writing		
Study and examination requirements	<p><i>Attendance</i></p> <p>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.</p> <p><i>Missed Tests</i></p> <p>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 re-take the examination.</p> <p><i>Class Behaviors</i></p> <p>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:</p> <ul style="list-style-type: none"> <li>- Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.</li> <li>- Participate fully and constructively in all course activities and discussions (if any).</li> <li>- Display appropriate courtesy to all involved in the class.</li> <li>- Provide constructive feedback to faculty members regarding their performance.</li> </ul> <p><i>Plagiarism</i></p> <p>Students are warned not to copy from other books or from their peers for all</p>		

	<p>assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination.</p> <p><i>Writing Center (Room 509)</i></p> <p>Students are encouraged to visit the Writing Center to schedule an appointment for additional help with essay writing.</p>
Reading list	<p>[1] Oshima, A., &amp; Hogue, A. (2017). <i>Longman Academic Writing Series, Level 4: Essays</i> (5<sup>th</sup> ed.). New Jersey, NJ: Pearson Longman.</p> <p>[2] Oshima, A., &amp; Hogue, A. (2006). <i>Longman Academic Writing Series, Level 4: Essays</i> (4<sup>th</sup> ed.). New Jersey, NJ: Pearson Longman.</p>

## 9. Listening AE1 (Listening & Note-Taking) (EN008IU)

Course designation	<i>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.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (lecture, exercise): 25 Private study including examination preparation, specified in hours <sup>8</sup> : 60
Credit points	<b>2 credits/3.09 ECTS</b>
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: <ul style="list-style-type: none"> <li>• hold TOEFL iBT certificate with score <math>\geq 61</math></li> <li>• hold IELTS certificate with score <math>\geq 5.5</math></li> <li>• complete IE2 course</li> </ul>
Course objectives	<p>There are a number of objectives embedded in various teaching activities in Listening AE1 course:</p> <p>Pre-listening 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 (this can be done before class meetings), discussing and reviewing what they have learned from the reading.</p> <p>While-listening and post-listening activities: aim to enable students to put their newly activated knowledge and 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.</p> <p>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.</p>



Course learning outcomes	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures</td> </tr> <tr> <td>Skill</td> <td>CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors.</td> </tr> <tr> <td>Attitude</td> <td>CLO5. Respond to academic lectures with confidence</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures	Skill	CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors.	Attitude	CLO5. Respond to academic lectures with confidence																															
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Examination forms	Paper and pen tests: Correct the mistakes, Fill in the blanks, Write short answers, Write a summary paragraph.																																							

<p>Study and examination requirements</p>	<p><i>Attendance</i> Regular on-time attendance in this course is expected. It is compulsory that students attend atleast 80% of the course to be eligible for the final examination.</p> <p><i>Missed tests</i> 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 re-take the tests.)</p> <p><i>Class behavior</i> Students are supposed to: prepare thoroughly for each class in accordance with the syllabus and complete all assignments upon the instructor's request participate fully and constructively in all class activities (and discussions if any) display appropriate courtesy to all involved in the class provide constructive feedback to faculty members regarding their performance</p>
<p>Reading list</p>	<p>[1] Frazie, L., &amp; Leeming, S. (2013). <i>Lecture ready 3</i>. Oxford: Oxford University Press. References:</p> <p>[2] Frazie, L., &amp; Leeming, S. (2013). <i>Lecture ready 1, 2</i>. Oxford: Oxford University Press.</p>

## 10. Writing AE2 (Research Paper Writing) (EN011IU)

Course designation	<i>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.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (lecture, exercise): 25 Private study including examination preparation, specified in hours <sup>9</sup> : 60
Credit points	<b>2 credits/3.09 ECTS</b>
Required and recommended prerequisites for joining the course	Students must complete Writing AE1 course
Course objectives	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.

Course learning outcomes	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1. Understand the structure of a research paper and employ appropriate academic language in writing a research paper</td> </tr> <tr> <td>Skill</td> <td>CLO2. Read critically, analyze, and annotate academic articles and journals CLO3. Employ the research writing skills obtained to work on their own paper in their major study.</td> </tr> <tr> <td>Attitude</td> <td>CLO4. Reason around ethical issues in writing research paper and avoid committing plagiarism</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand the structure of a research paper and employ appropriate academic language in writing a research paper	Skill	CLO2. Read critically, analyze, and annotate academic articles and journals CLO3. Employ the research writing skills obtained to work on their own paper in their major study.	Attitude	CLO4. Reason around ethical issues in writing research paper and avoid committing plagiarism																												
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Examination forms	Essay writing																																				

Study and examination 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.

*Assignment (Literature review)*

Purpose: Students will use the knowledge of paraphrasing, summarising, developing arguments, and APA styles to write a 1,000-word literature review on a research scope of their choice.

Task:

- Follow guidelines on how to write a literature review.
- Use relevant academic writing skills such as paraphrasing, summarising, developing arguments, and APA 7th Style Guidelines – see <https://www.apastyle.org/>
- Develop arguments in relation to the research scope and identify the research gap

**Notes:** All papers should be typed, double-spaced, in 13-pt font, and with 1-inch margins. All papers must be original for this class. Criterion-referenced grading is used in this course.

*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 re-take 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 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*

All forms of plagiarism and unauthorised collusion are seriously regarded and could result in penalties.

Plagiarism occurs when students copy or reproduce people's words or ideas and then present them as students' own work without proper acknowledgement, including when students copy the work of their fellow students.

Plagiarism in student submissions can be detected by:

- some web-based programs such as SafeAssign or Turnitin, or
- examiner's judgments with evidence of originals

The rater will review the paper to check if citations or references are

	<p>provided properly. Penalties due to improper citations or references include:</p> <table border="1"> <thead> <tr> <th>Degree of magnitude</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Below 15%</td> <td>Marked as it is.</td> </tr> <tr> <td>15% - 25%</td> <td>The score is deducted by <b>25%</b>.</td> </tr> <tr> <td>25% - 40%</td> <td>The score is deducted by <b>50%</b></td> </tr> <tr> <td>Over 40%</td> <td>The score is <b>0</b>.</td> </tr> </tbody> </table> <p>Notes: Part of the test is marked as it is if no plagiarism is detected. Students who plagiarize over 40% <u>twice</u> will be prohibited from sitting the final examination.</p> <p><i>Writing Center (Room 509)</i></p> <p>Students are encouraged to visit the Writing Center or to schedule an appointment for additional help.</p>	Degree of magnitude	Description	Below 15%	Marked as it is.	15% - 25%	The score is deducted by <b>25%</b> .	25% - 40%	The score is deducted by <b>50%</b>	Over 40%	The score is <b>0</b> .
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Reading list	<p>[1] Hamp-Lyons, L., &amp; Heasley, B. (2006). <i>Study Writing</i>. Cambridge, UK: Cambridge University Press</p> <p>[2] Articles and Essays taken from <i>The Allyn and Bacon Guide to Writing</i> by Ramage et al (2009), Pearson Longman.</p> <p>[3] Cormack, J. &amp; Slaught, J. (2009). <i>English for academic study: Extended writing and research skills</i>. Cambridge: Cambridge University Press. Garnet Education</p> <p>[4] Folse, K. S. &amp; Pugh, T. (2010). <i>Great writing 5: Greater essays</i>. Boston: Heinle, Cengage Learning.</p> <p>[5] Keezer, S. (Ed.) (2003). <i>Write your research report: A real-time guide</i>. New Jersey: Pearson Learning Group.</p> <p>[6] Kumar, R. (2019). <i>Research methodology: A step-by-step guide for beginners</i>. Sage Publications</p>										

## 11. Speaking AE2 (Effective Presentations) (EN012IU)

Course designation	<i>Giving presentations today becomes a vital skill for students to succeed not only in university but also at work in the future. Speaking AE2, therefore, provides students with the knowledge and skills needed to deliver effective presentations (informative and persuasive presentations).</i>	
Semester(s) in which the course is taught	1, 2, 3	
Person responsible for the course	Lecturers of Department of English	
Language	English	
Relation to curriculum	Compulsory	
Teaching methods	Lecture, lesson, mini presentations	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (lecture, exercise): 25 Private study including examination preparation, specified in hours <sup>10</sup> : 60	
Credit points	<b>2 credits/3.09 ECTS</b>	
Required and recommended prerequisites for joining the course	Students must complete AE1 courses	
Course objectives	Speaking AE2 aims at introducing an training students many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language, and so on.	
Course learning outcomes	Upon the successful completion of this course, students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1. Understand many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language
	Skill	CLO2. Prepare and deliver effective, formal, structured presentations that are appropriate to the specific environment and audience.
Attitude	CLO3. Deliver both informative and persuasive speech with confidence	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (2 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Orientation &amp; Introduction Needs analysis</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Building up confidence</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>The first few minutes</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Organizing what you want to say</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Summarizing and concluding</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Using equipment</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Delivery techniques: Putting it all together</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Group presentations for the instructor's evaluation and advice</td> <td>2</td> <td>U</td> </tr> <tr> <td>Introduction to persuasive speeches</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Methods of persuasion</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Maintaining interest</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Dealing with problems and questions</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Body language</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Individual presentations for the instructor's evaluation and advice</td> <td>4</td> <td>U</td> </tr> </tbody> </table>	Topic	Weight	Level	Orientation & Introduction Needs analysis	2	I, T, U	Building up confidence	2	T, U	The first few minutes	2	T, U	Organizing what you want to say	2	T, U	Summarizing and concluding	2	T, U	Using equipment	2	T, U	Delivery techniques: Putting it all together	2	T, U	Group presentations for the instructor's evaluation and advice	2	U	Introduction to persuasive speeches	2	T, U	Methods of persuasion	2	T, U	Maintaining interest	2	T, U	Dealing with problems and questions	2	T, U	Body language	2	T, U	Individual presentations for the instructor's evaluation and advice	4	U
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Examination forms	Oral Presentations																																													



<p>Study and examination requirements</p>	<p><i>Attendance</i></p> <p>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.</p> <p><i>Missed Tests</i></p> <p>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 (e.g. certified paper from doctors), students may re-take the examination.</p> <p><i>Class Behaviors</i></p> <p>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:</p> <ul style="list-style-type: none"> <li>• Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.</li> <li>• Participate fully and constructively in all course activities and discussions (if any).</li> <li>• Display appropriate courtesy to all involved in the class.</li> <li>• Provide constructive feedback to faculty members regarding their performance.</li> </ul> <p><i>Plagiarism</i></p> <p>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.</p>
<p>Reading list</p>	<p>[1] Lowe, S, &amp; Pile, L. (2010). <i>Presenting</i>. Singapore: Cengage Learning</p> <p>[2] Comfort, J. (1997). <i>Effective presentations</i>. Oxford: Oxford University Press</p> <p>[3] Lucas, S. (2014). <i>The art of public speaking</i> (12<sup>th</sup> edition). New York: McGraw-Hill Education.</p> <p>[4] Harrington, D., &amp; Lebeau, C. (2009). <i>Speaking of speech</i>. Macmillan</p>

### I.3. BASIC MATHEMATICS AND SCIENCE

#### 12. Calculus 1 (MA001IU)

Course designation	This course equip students with basic concepts of calculus: limits, continuity, differentiation, and integration. Applications of these concepts are extensively discussed.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 170 Contact hours (lecture, exercise, laboratory session, etc.): 50 (lectures) Private study including examination preparation, specified in hours <sup>11</sup> : 120
Credit points	<b>4 credits/6.18 ECTS</b>
Required and recommended prerequisites for joining the course	None
Course objectives	<ol style="list-style-type: none"><li>1. To provide students with the main ideas and techniques of calculus. These include limits, continuity, differentiation, and integration.</li><li>2. To introduce practical applications of these ideas and techniques, through practical examples taken from many areas of engineering, business, and life sciences.</li><li>3. To develop skills in mathematical modelling and problem solving, ability to think logically, and adapt these skills creatively to new situations</li></ol>

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	<p>CLO1. Have basic knowledge of limits and derivatives (Program outcomes: a)</p> <p>CLO2. Have basic knowledge of definite/indefinite integrals (Program outcomes: a)</p>
	Skill	<p>CLO3. Can compute often used limits, can define and compute derivatives (Program outcomes: a, j)</p> <p>CLO4. Can compute standard types of integrals. Use integrals in practical situations (Program outcomes: a, j)</p>
Attitude	CLO5. Confident when dealing with derivatives and integrals. Comfortable with using derivatives and integrals in practical situations. (Program outcome: j, k)	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p>		
	<b>Topic</b>	<b>Weight</b>	<b>Level</b>
	Functions and Graphs, Inverse Functions, Exponential and Logarithmic Functions	1	I, T
	Parametric Curves, Limit. One-sided Limits, Laws of Limits	1	I, T
	Evaluating Limits. The Squeeze Theorem. Continuity. The Intermediate Value Theorem	1	T, U
	Tangent Lines and Velocity Problems. Rates of Change, Derivative.	1	T, U
	Higher-Order Derivatives, Rules of Differentiation. Rates of Change in the Natural and Social Sciences	1	T, U
	Implicit Differentiation, Differentiation of Inverse Functions,	1	T, U
	Logarithmic Differentiation, Linear Approximations. Differentials.	1	T, U
	Related Rates, Maxima and Minima. Critical Point, The Mean Value Theorem.	1	T, U
	The First and Second Derivative Test, Concavity. Shapes of Curves, Curve Sketching	1	T, U
	Indeterminate Forms and l'Hôpital's Rules, Maxima and Minima Problems, Newton's Method	1	T, U
	Anti-derivatives and Indefinite Integrals, The Definite Integral	1	I, T
	Properties of the Definite Integral. The Fundamental Theorem of Calculus, Integration by Substitution	1	I, T, U
	Integration by Parts, Partial Fractions, Numerical Integration,	1	T, U
Improper Integrals, Areas between Curves Areas Enclosed by Parametric Curves	1	T, U	
Volumes, Arc Length, Applications to Engineering, Economics and Science	1	T, U	
Examination forms	Written examination		
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>		
Reading list	J. Stewart, <i>Calculus</i> , Thomson Learning, 7 <sup>th</sup> edition, 2012.		

### 13. Calculus 2 (MA003IU)

Course designation	This course is a continuation of Calculus 1. Its aim to equip student with basis concepts of sequence, series, vector functions, functions of several variables, multiple integrals and their applications
Semester(s) in which the course is taught	1, 2
Person responsible for the course	<i>Assoc. Prof. Mai Duc Thanh, Assoc. Prof. Tran Vu Khanh, Dr. Nguyen Minh Quan, Dr. Nguyen Anh Tu, Dr. Ta Quoc Bao.</i>
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 170 Contact hours (lecture, exercise, laboratory session, etc.): 50 (lectures) Private study including examination preparation, specified in hours <sup>12</sup> : 120
Credit points	<b>4 credits/6.18 ECTS</b>
Required and recommended prerequisites for joining the course	Calculus 1
Course objectives	<ol style="list-style-type: none"> <li>1. To provide students with the main ideas and techniques of calculus. These include sequences, series, functions of several variables, optimal problems, multiple integrals, vector calculus.</li> <li>2. To introduce practical applications of these ideas and techniques, through practical examples taken from many areas of engineering, business, and life sciences.</li> <li>3. To develop skills in mathematical modelling and problem solving, ability to think logically, and adapt these skills creatively to new situations</li> </ol>

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	<p>CLO1. Have basic knowledge of series, functions of several variables, multiple integrals (Program outcomes: a)</p> <p>CLO2. Have basic knowledge of vector calculus (Program outcomes: a)</p>
	Skill	<p>CLO3. Can compute partial derivatives, multiple integral (Program outcomes: a, j)</p> <p>CLO4. Can show the convergence of a sequence and a series and use power series to simplify computation. Can show the optimal problem using partial derivatives, can find the volume of an object in higher dimension by using the multiple integrals (Program outcomes: i, h)</p>
Attitude	CLO5. Confident when dealing with partial derivatives, multiple integrals. Comfortable with using partial derivatives and multiple integrals in practical situations. (Program outcome: j, k)	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Sequences and Convergence</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Series</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Tests for Convergence</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Power series</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Representations of Functions as Power series</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Taylor and Maclaurin series</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Vector Functions and Space Curves, Limit and continuity of vector functions</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Derivatives and Integrals of vector functions, Length of space curves</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Functions of Several Variables, Limits and Continuity</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Partial Derivatives, Tangent Plane and Linear Approximations</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Chain Rules, Directional Derivatives and Gradient</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Maximum and Minimum Values of Functions of two variables</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Lagrange Multipliers and Applications</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Double Integrals in Rectangles, Iterated Integrals</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Double, Triple Integrals in General regions and Applications</td> <td>2</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Sequences and Convergence	1	I, T	Series	1	I, T	Tests for Convergence	1	T, U	Power series	1	T, U	Representations of Functions as Power series	1	T, U	Taylor and Maclaurin series	1	T, U	Vector Functions and Space Curves, Limit and continuity of vector functions	1	I, T	Derivatives and Integrals of vector functions, Length of space curves	1	T, U	Functions of Several Variables, Limits and Continuity	1	I, T	Partial Derivatives, Tangent Plane and Linear Approximations	1	T, U	Chain Rules, Directional Derivatives and Gradient	1	T, U	Maximum and Minimum Values of Functions of two variables	1	T, U	Lagrange Multipliers and Applications	1	T, U	Double Integrals in Rectangles, Iterated Integrals	1	I, T	Double, Triple Integrals in General regions and Applications	2	T, U
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Examination forms	Written examination																																																
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																																
Reading list	J. Stewart, <i>Calculus</i> , Thomson Learning, 7 <sup>th</sup> edition, 2012.																																																

## 14. Differential Equations (MA024IU)

Course designation	This course introduces fundamental mathematical methods and analysis in ordinary differential equations and their applications and a short introduction to partial differential equations.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 170 Contact hours (lecture, exercise, laboratory session, etc.): 50 (lectures) Private study including examination preparation, specified in hours <sup>13</sup> : 120
Credit points	<b>4 credits/6.18 ECTS</b>
Required and recommended prerequisites for joining the course	None
Course objectives	<ol style="list-style-type: none"> <li>1. This course introduces the theory of ordinary differential equations. Topics discussed include first-order differential equations, existence and uniqueness theorems, second-order linear equations, higher-order linear equations, systems of equations, non-linear equations.</li> <li>2. The relationship between differential equations and linear algebra is emphasized in this course.</li> <li>3. Applications of differential equations in physics, engineering, biology, and economics are presented.</li> <li>4. This course also gives a very brief introduction to partial differential equations in particular using separation variables to solve heat equation, wave equation, and Laplace equation.</li> </ol>



Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	<p>CLO1. Understand the concepts of differential equations and the methods to solve linear first/second differential equations. (Program outcomes: a)</p> <p>CLO2. Understand the method to solve linear <math>n</math>-th order differential equations. Know how to use separation of variable to solve the heat equation, wave equation and Laplace equation (Program outcomes: a)</p>
	Skill	<p>CLO3. Can solve basic first order differential equations, higher order differential equations with constant coefficients and first order systems. (Program outcomes: a, j)</p> <p>CLO4. Can use partial differential equations to model and study real phenomena (Program outcomes: a, j)</p>
Attitude	CLO5. Confident when applying differential equations to practical situations. (Program outcome: j, k)	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td> <b>Introduction</b>            Some Basic Mathematical Models; Direction Fields            Solutions of Differential Equations            Classification of Differential Equations         </td> <td>1</td> <td>I, T</td> </tr> <tr> <td> <b>First-order differential equations</b>            Linear Equations            Method of Integrating Factors            Separable Equations            Modeling with First Order Equations         </td> <td>1</td> <td>T, U</td> </tr> <tr> <td>           Differences Between Linear and Nonlinear Equations            Autonomous Equations and Population Dynamics            Exact Equations and Integrating Factors         </td> <td>1</td> <td>T, U</td> </tr> <tr> <td> <b>Linear second-order differential equations</b>            Fundamental solution set of homogeneous equations            Linear independence and Wronskian            Homogeneous linear second-order differential equations with constant coefficients         </td> <td>2</td> <td>T, U</td> </tr> <tr> <td>           Non-homogeneous equations            Method of undermined coefficients            Variation of Parameters            Mechanical and Electrical Vibrations            Forced Vibrations         </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> <b>Higher Order Linear Equations</b>            General Theory of nth Order Linear Equations            Homogeneous Equations with Constant Coefficients            Method of Undetermined Coefficients            Variation of Parameters         </td> <td>2</td> <td>T, U</td> </tr> <tr> <td>           Basic Theory of Systems of First Order Linear Equations            Homogeneous Linear Systems with Constant Coefficients         </td> <td>2</td> <td>T, U</td> </tr> <tr> <td>           Non-homogeneous systems:            Method of undetermined coefficients            Variation of parameters         </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> <b>Partial differential equations</b>            Separation of variables            Heat conduction in a bar            Wave equation, Laplace equation         </td> <td>2</td> <td></td> </tr> </tbody> </table>	Topic	Weight	Level	<b>Introduction</b> Some Basic Mathematical Models; Direction Fields Solutions of Differential Equations Classification of Differential Equations	1	I, T	<b>First-order differential equations</b> Linear Equations Method of Integrating Factors Separable Equations Modeling with First Order Equations	1	T, U	Differences Between Linear and Nonlinear Equations Autonomous Equations and Population Dynamics Exact Equations and Integrating Factors	1	T, U	<b>Linear second-order differential equations</b> Fundamental solution set of homogeneous equations Linear independence and Wronskian Homogeneous linear second-order differential equations with constant coefficients	2	T, U	Non-homogeneous equations Method of undermined coefficients Variation of Parameters Mechanical and Electrical Vibrations Forced Vibrations	2	T, U	<b>Higher Order Linear Equations</b> General Theory of nth Order Linear Equations Homogeneous Equations with Constant Coefficients Method of Undetermined Coefficients Variation of Parameters	2	T, U	Basic Theory of Systems of First Order Linear Equations Homogeneous Linear Systems with Constant Coefficients	2	T, U	Non-homogeneous systems: Method of undetermined coefficients Variation of parameters	2	T, U	<b>Partial differential equations</b> Separation of variables Heat conduction in a bar Wave equation, Laplace equation	2	
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Examination forms	Written examination																														
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																														

Reading list	<ol style="list-style-type: none"><li>1. W.E. Boyce, R.C. DiPrime, Elementary Differential Equations and Boudnary Value problems, 8<sup>th</sup> Edition, John Wiley &amp; Sons.</li><li>2. P. Hartman, Ordinary differential equations, SIAM Classics in applied mathematics 38, 2<sup>nd</sup> edition, Birkhauser, 1982</li><li>3. J.K. Hale, Ordinary differential equations, 2nd ed., Robert E. Krieger Publishing Co., Inc., Huntington, New York, 1980.</li></ol>
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### 15. Applied Linear Algebra (CE215IU)

Course name	- <i>APPLIED LINEAR ALGEBRA</i> - <i>ĐẠI SỐ TUYẾN TÍNH</i>
Course designation	<i>The course will focus on matrix and vector methods for studying systems of linear equations, with an emphasis on concrete calculations and applications.</i>  <i>Specific topics to be covered include matrices, Gaussian elimination, vector spaces, LU decomposition, orthogonality, the Gram–Schmidt process, determinants, inner products, eigenvalue problems, and applications to differential equations and Markov processes.</i>
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others: .....</i>
Semester(s) in which the course is taught	4
Person responsible for the course	Prof. Le Van Canh
Language	English
Relation to curriculum	<i>Compulsory</i>
Teaching methods	Lecture, discussion, and assignments.
Workload (incl. contact hours, self-study hours)	Total workload: 85 (Estimated) Contact hours: - lecture: 19 - Discussion: 6 Private study including examination preparation, specified in hours <sup>14</sup> : 60
Credit points	2 credits/3.09 ECTS
Number of periods	Theory: 30 Practice: 0

<sup>14</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Required and recommended prerequisites for joining the course									
Course objectives	<p>To learn important concepts of linear algebra, such as vector spaces, basis, linear transformations, projections, least squares method, eigenvalues, and eigenvectors.</p> <p>To understand the importance of linear algebra and learn its applicability to practical problems, i.e., how the linear equations and eigenvalue problems appear in some practical applications.</p> <p>To enhance your understanding of the above concepts through occasional MATLAB-based homework problems.</p>								
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> <p>CLO1. To equip the students with basic understanding of linear algebra, such as vector spaces, basis, linear transformations, projections, least squares method, eigenvalues, and eigenvectors.</p> <p>CLO2. To equip the students with applications of linear algebra in practical engineering problems.</p> </td> </tr> <tr> <td>Skill</td> <td> <p>CLO3. To enhance your understanding of the above concepts through occasional MATLAB-based homework problems.</p> </td> </tr> <tr> <td>Attitude</td> <td></td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	<p>CLO1. To equip the students with basic understanding of linear algebra, such as vector spaces, basis, linear transformations, projections, least squares method, eigenvalues, and eigenvectors.</p> <p>CLO2. To equip the students with applications of linear algebra in practical engineering problems.</p>	Skill	<p>CLO3. To enhance your understanding of the above concepts through occasional MATLAB-based homework problems.</p>	Attitude	
Competency level	Course learning outcome (CLO)								
Knowledge	<p>CLO1. To equip the students with basic understanding of linear algebra, such as vector spaces, basis, linear transformations, projections, least squares method, eigenvalues, and eigenvectors.</p> <p>CLO2. To equip the students with applications of linear algebra in practical engineering problems.</p>								
Skill	<p>CLO3. To enhance your understanding of the above concepts through occasional MATLAB-based homework problems.</p>								
Attitude									

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (teach); U (Utilize)		
	Topic	Weight	Level
	Linear Equations in Linear Algebra	2	T, U
	Matrix Algebra	2	T, U
	Determinants	2	T, U
	Vector Spaces	2	T, U
	Eigenvalues and Eigenvectors	2	T, U
Orthogonality and Least Squares	2	T, U	
			Symmetric Matrices and Quadratic Forms
Examination forms	Constructed-response test		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.		
Reading list	Textbooks: [1] David C. Lay, Stephen R. Lay and Judi J. McDonald. Linear Algebra and Its Applications, 5 <sup>th</sup> edition. Pearson, 2016. References: [2] Carl D. Meyer. Matrix Analysis and Applied Linear Algebra, SIAM, 2000.		

### 16. Computational Method for Civil Engineering (CE213IU)

Course designation	Application of computational methods to civil engineering problems. Overview of numerical methods including engineering differential equations, systems of linear and nonlinear equations, numerical differentiation, integration and interpolation. Solving differential equations by finite element method. Introduce optimization problems in civil engineering, and optimization solvers, machine learning concept and algorithms.
Semester(s) in which the course is taught	3, 4

Person responsible for the course	<i>Nguyễn Bá Quang Vinh (PhD)</i>
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, presentation, discussion, and assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 Private study including examination preparation, specified in hours <sup>15</sup> : 90
Credit points	3 credits/ <b>4.64 ECTS</b>
Required and recommended prerequisites for joining the course	Calculus, Mechanics of Material 1
Course objectives	The aim of this course is to <ul style="list-style-type: none"> <li>- Give an introduction to fundamental numerical methods and apply to solve various engineering differential equations.</li> <li>- Developing structured computer programming using Python.</li> <li>- Give an introduction to modern approximation techniques.</li> <li>- Give students an opportunity to hone their skills in programming and problem solving.</li> <li>- Analyzing and solving the problems using AI tools.</li> </ul>

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<sup>15</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>           CLO1. Show the fundamental numerical methods and apply to solve various engineering differential equations.            CLO2. Apply numerical methods to obtain approximate solutions to mathematical problems.         </td> </tr> <tr> <td>Skill</td> <td>           CLO3. Demonstrate an ability to develop structured computer programming using Python.            CLO4. Demonstrate an ability to identify, formulate, and solve CE or CM problems by means of ML.         </td> </tr> <tr> <td>Attitude</td> <td>CLO5. Work independently and professionally.</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Show the fundamental numerical methods and apply to solve various engineering differential equations. CLO2. Apply numerical methods to obtain approximate solutions to mathematical problems.	Skill	CLO3. Demonstrate an ability to develop structured computer programming using Python. CLO4. Demonstrate an ability to identify, formulate, and solve CE or CM problems by means of ML.	Attitude	CLO5. Work independently and professionally.																												
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Examination forms	Constructed-response test																																				
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have GPA more than 50/100 points overall to pass this course.</p>																																				



Reading list	<p><b><u>Textbooks:</u></b></p> <p>[1] Kiusalaas, J. (2013). <i>Numerical methods in engineering with Python 3</i>. Cambridge univ</p> <p>[2] Raschka, S., &amp; Mirjalili, V. (2017). <i>Python machine learning: Machine learning and deep learning with python. Scikit-Learn, and TensorFlow</i>. Second edition ed, 3.ersity press.</p> <p><b><u>Additional references:</u></b></p> <p>[1] S.C. Chapra, “<i>Applied Numerical Methods with Matlab for Engineers and Scientists</i>”, 3rd edition, McGraw-Hill, NY, 2012.</p>
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## 17. Probability and Statistics (CE216IU)

Module designation	<i>Probability and Statistics (Code: CE216IU)</i>
Semester(s) in which the module is taught	<i>2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Pham Nguyen Linh Khanh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, presentation, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>16</sup>: 90</i></p>
Credit points	<b>3 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• Students know how to calculate basic statistics parameters for given data set</i></li> <li><i>• Students know how to calculate probability for a given problem context</i></li> <li><i>• Students know how to solve problems regarding random variables</i></li> <li><i>• Students understand the relationship between sample and population, sampling process and sampling distribution</i></li> <li><i>• Students know how to set up statistical hypothesis testing for population mean, variance for single or multiple populations</i></li> <li><i>• Students know how to set up and analyze linear regression model for single or multiple variables</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Understand the fundamentals of probability and statistics, hypothesis, and concept of regression models</i></li> <li><i>• Conducting data analysis and visualize the results.</i></li> <li><i>• Performance probability analysis, hypothesis testis and regression models.</i></li> </ul>

Content	<i>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.</i>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Attendance 10%</i></li> <li>• <i>Assignments 20%</i></li> <li>• <i>Quizzes: 20%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm Exam: 20%</i></li> <li>• <i>Final Exam: 30%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Sheldon M. Ross (2010), A First Course of Probability. 8th edition. Pearson Education.</i></p> <p><i>[2] Kottegoda and Rosso (1998) Statistics, Probability and Reliability for Civil and Environmental Engineerings</i></p>

### 18. Physics 1 (General Mechanics) (PH013IU)

Course designation	<i>This subject will provide an introduction to mechanics including: concepts and principles of kinetics, dynamics, energetics of motion of a particle and a rigid body.</i>	
Semester(s) in which the course is taught	1, 2	
Person responsible for the course	Assos. Prof.. Phan Bảo Ngọc Dr. Phan Hiền Vũ	
Language	English	
Relation to curriculum	Compulsory	
Teaching methods	Lecture, lesson, assignment.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (lecture, exercise, laboratory session, etc.): 25 (lecture) Private study including examination preparation, specified in hours <sup>17</sup> : 60	
Credit points	<b>2 credits/3.09 ECTS</b>	
Required and recommended prerequisites for joining the course	None	
Course objectives	<p>This course will provide students with:</p> <ol style="list-style-type: none"> <li>1. The basic knowledge of general Mechanics Physics</li> <li>2. Skills to solve problems in engineering environment by applying both theoretical and experimental techniques</li> <li>3. Understanding and skills needed to use physical laws governing real process and to solve them in the engineering environment</li> <li>4. Confidence and fluency in discussing physics in English.</li> </ol>	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1. An ability to understand of basic knowledge of law of conservations and dynamics of rigid body. CLO2. An ability to analysis and design a problem in science and engineering
	Skill	CLO3. An ability in applying knowledge of physics
	Attitude	CLO4. An ability to communicate effectively in writing manner

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (2 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	<b>Topic</b>	<b>Weight</b>	<b>Level</b>
	Chapter 1: Bases of Kinematics	2	I, T,U
	Chapter 2: The Law of Motion	2	I, T,U
	Chapter 3: Work and Mechanical Energy	3	I, T,U
	Chapter 4: Linear Momentum and Collisions	2	I, T,U
	Chapter 5: Rotation of a Rigid Object About a Fixed Axis	2	I, T,U
Chapter 6: Equilibrium and Elasticity	2	I	
Chapter 7: Universal Gravitation	2	I	
Examination forms	Short-answer questions		
Study and examination requirements	Attendance: 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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Lecture Notes [2] Halliday D., Resnick R. and Walker, J. (2011) <i>Principles of Physics</i> , 9 <sup>th</sup> edition, John Willey and Sons, Inc. [3] Alonso M. and Finn E.J. (1992) <i>Physics</i> , Addison-Wesley Publishing Company. [4] Faughn/Serway (2006) <i>Serway's College Physics</i> , Thomson Brooks/Cole.		

### 19. Physics 2 (Fluid Mechanics and Thermal Physics) (PH014IU)

Course designation	<i>This subject will provide a basic knowledge of fluid mechanics; macroscopic description of gases; heat and the first law of thermodynamics; heat engines and the second law of thermodynamics; microscopic description of gases and the kinetic theory of gases.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Assos. Prof.. Phan Bảo Ngọc Dr. Phan Hiền Vũ
Language	English

Relation to curriculum	Compulsory	
Teaching methods	Lecture, lesson, assignment.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 25 Contact hours (whether lecture, exercise, laboratory session, etc.): lecture: 25 Private study including examination preparation, specified in hours <sup>18</sup> : 60	
Credit points	<b>2 credits/3.09 ECTS</b>	
Required and recommended prerequisites for joining the course	None	
Course objectives	<p>This course will provide students with:</p> <ol style="list-style-type: none"> <li>1. The basic knowledge of Fluid Mechanics and Thermal Physics</li> <li>2. Skills to solve problems in engineering environment by applying both theoretical and experimental techniques</li> <li>3. Understanding and skills needed to use physical laws governing real process and to solve them in the engineering environment</li> <li>4. Confidence and fluency in discussing physics in English.</li> </ol>	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1. An ability to understand basic knowledge of the kinetic energy of ideal gas and the second law of thermal dynamics. CLO2. An ability to analysis and design a problem in science and engineering
	Skill	CLO3. An ability in applying knowledge of physics
Attitude	CLO4. An ability to communicate effectively in writing manner	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (2 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Chapter 1: Fluid Mechanics</td> <td>2</td> <td>I, T,U</td> </tr> <tr> <td>Chapter 2: Temperature, Heat, and the First Law of Thermodynamics</td> <td>4</td> <td>I, T,U</td> </tr> <tr> <td>Chapter 3: The Kinetic Theory of Gases</td> <td>5</td> <td>I, T,U</td> </tr> <tr> <td>Chapter 4: Entropy and the Second Law of Thermodynamics</td> <td>4</td> <td>I, T,U</td> </tr> </tbody> </table>	Topic	Weight	Level	Chapter 1: Fluid Mechanics	2	I, T,U	Chapter 2: Temperature, Heat, and the First Law of Thermodynamics	4	I, T,U	Chapter 3: The Kinetic Theory of Gases	5	I, T,U	Chapter 4: Entropy and the Second Law of Thermodynamics	4	I, T,U
Topic	Weight	Level														
Chapter 1: Fluid Mechanics	2	I, T,U														
Chapter 2: Temperature, Heat, and the First Law of Thermodynamics	4	I, T,U														
Chapter 3: The Kinetic Theory of Gases	5	I, T,U														
Chapter 4: Entropy and the Second Law of Thermodynamics	4	I, T,U														
Examination forms	Short-answer questions															
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>															
Reading list	<p>[1] Lecture Notes</p> <p>[2] Halliday D., Resnick R. and Walker, J. (2011) <i>Principles of Physics</i>, 9<sup>th</sup> edition, John Willey and Sons, Inc.</p> <p>[3] Alonso M. and Finn E.J. (1992) <i>Physics</i>, Addison-Wesley Publishing Company.</p> <p>[4] Faughn/Serway (2006) <i>Serway's College Physics</i>, Thomson Brooks/Cole.</p>															

## 20. Physics 3 (Electricity and Magnetism) (PH015IU)

Course designation	<i>This subject will provide a basic knowledge of electricity and magnetism.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Assoc. Prof. Phan Bảo Ngọc
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, assignment.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (whether lecture, exercise, laboratory session, etc.): 37.5 lecture Private study including examination preparation, specified in hours <sup>19</sup> : 90
Credit points	<b>3 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the course	Physics 1
Course objectives	This course will provide students with: <ol style="list-style-type: none"> <li>1. The basic knowledge of electricity and magnetism such as electric charge, electric potential, magnetic fields, electromagnetic waves, etc.</li> <li>2. Skills to solve problems in engineering environment by applying both theoretical and experimental techniques.</li> <li>3. Understanding and skills needed to use physical laws governing real process and to solve them in the engineering environment.</li> <li>4. Confidence and fluency in discussing physics in English.</li> </ol>



Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>           CLO1. An ability to understand basic knowledge of electricity and magnetism such as electric charge, electric potential, magnetic fields, electromagnetic waves.            CLO2. Examine problem solving in engineering environment         </td> </tr> <tr> <td>Skill</td> <td>CLO3. Understand and acquire skills needed to use physical laws governing real process and to solve them in the engineering environment</td> </tr> <tr> <td>Attitude</td> <td>CLO4. Develop confidence and fluency in discussing physics in English</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. An ability to understand basic knowledge of electricity and magnetism such as electric charge, electric potential, magnetic fields, electromagnetic waves. CLO2. Examine problem solving in engineering environment	Skill	CLO3. Understand and acquire skills needed to use physical laws governing real process and to solve them in the engineering environment	Attitude	CLO4. Develop confidence and fluency in discussing physics in English																
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Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Chapter 1: Electric Fields</td> <td>3</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 2: Electric Potential and Capacitance</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 3: Current and Resistance. Direct Current Circuits</td> <td>3</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 4: Magnetism</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 5: Electromagnetic Induction</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 6: Electromagnetic Oscillations and Alternating Current</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 7: Maxwell's Equation and Electromagnetic Waves</td> <td>1</td> <td>I, T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Chapter 1: Electric Fields	3	I, T, U	Chapter 2: Electric Potential and Capacitance	2	I, T, U	Chapter 3: Current and Resistance. Direct Current Circuits	3	I, T, U	Chapter 4: Magnetism	2	I, T, U	Chapter 5: Electromagnetic Induction	2	I, T, U	Chapter 6: Electromagnetic Oscillations and Alternating Current	2	I, T, U	Chapter 7: Maxwell's Equation and Electromagnetic Waves	1	I, T, U
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Examination forms	Short-answer questions																								
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																								
Reading list	<p>[1] Halliday D., Resnick R. and Walker, J. (2011) <i>Fundamentals of Physics</i>, 9<sup>th</sup> edition, John Willey and Sons, Inc.</p> <p>[2] Alonso M. and Finn E.J. (1992) <i>Physics</i>, Addison-Wesley Publishing Company.</p> <p>[3] Hecht, E. (2000) <i>Physics: Calculus</i>, 2<sup>nd</sup> edition, Brooks/Cole.</p> <p>[4] Faughn/Serway (2006) <i>Serway's College Physics</i>, Thomson Brooks/Cole.</p>																								

## 21. Physics 3 Laboratory (PH016IU)

Course title	PHYSICS 3 LABORATORY
Course designation	<i>This course provides students with basic knowledge of electricity and magnetism in laboratory, consists of: Ohm's law, LRC circuit, RC circuit, LR circuit, magnetic fields of coils....</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	MSc. Trịnh Thanh Thủy MSc. Lê Thị Quế
Language	English
Relation to curriculum	Compulsory
Teaching methods	Experiment, writing report
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 60 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): laboratory: 30 Private study including examination preparation, specified in hours <sup>20</sup> : 30
Credit points/ECTS	1 credits/ 2 ECTS
Required and recommended prerequisites for joining the course	Physics 3
Course objectives	This course will provide students with: <ul style="list-style-type: none"> <li>● The basic knowledge of electricity and magnetism such as electric charge, electric potential, magnetic fields, electromagnetic waves, etc.</li> <li>● Skills to do experiments related to the knowledge</li> <li>● Laboratory experiences (using devices, digital multi-meter, computer software, ...)</li> <li>● Confidence and fluency in discussing physics in English.</li> </ul>

Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <tr> <td>Competency level</td> <td>Course learning outcome (CLO)</td> </tr> <tr> <td>Knowledge</td> <td>CLO1. Understand basic knowledge of electricity and magnetism.</td> </tr> <tr> <td>Skill</td> <td>           CLO2. Approach and solve problems in electricity and magnetism experiments             CLO3. Write scientific report, have understanding the relations between theory and experiment         </td> </tr> <tr> <td>Attitude</td> <td>CLO4. Communicate effectively in writing manner.</td> </tr> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand basic knowledge of electricity and magnetism.	Skill	CLO2. Approach and solve problems in electricity and magnetism experiments  CLO3. Write scientific report, have understanding the relations between theory and experiment	Attitude	CLO4. Communicate effectively in writing manner.																			
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Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: laboratory session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Ohm's law</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>Resistances in Circuits</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>LRC Circuits</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>Kirchhoff's laws</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>RC circuit</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>LR circuit</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>Magnetic fields of coils</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>The e/m experiment</td> <td>1</td> <td>T,U</td> </tr> </tbody> </table>	Topic	Weight	Level	Ohm's law	1	T,U	Resistances in Circuits	1	T,U	LRC Circuits	1	T,U	Kirchhoff's laws	1	T,U	RC circuit	1	T,U	LR circuit	1	T,U	Magnetic fields of coils	1	T,U	The e/m experiment	1	T,U
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The e/m experiment	1	T,U																										
Examination forms	Experiment, write report																											
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																											

Reading list	<p>[1] Lab manual, PASCO Scientific</p> <p>[2] Halliday D., Resnick R. and Walker, J. (2011) Principles of Physics, 9th edition, John Willey and Sons, Inc.</p> <p>[3] Alonso M. and Finn E.J. (1992) Physics, Addison-Wesley Publishing Company.</p> <p>[4] Faughn/Serway (2006) Serway's College Physics, Thomson Brooks/Cole.</p>
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## 22. Chemistry for Engineers (CHE011IU)

Course designation	<i>This one-semester course is designed for students who are pursuing an engineering degree (e.g., information technology, biotechnology, civil, biomedical, electronic, and telecommunication engineering) and chemistry-related ones (e.g., applied chemistry and chemical engineering). The course will introduce the basic principles of chemistry and connect those principles to issues in the engineering profession. The related lab work is not included in this course.</i>
Semester(s) in which the course is taught	1, 2, and summer (optional)
Person responsible for the course	Assoc.Prof. Dr. Huynh Kim Lam Dr. Vũ Bảo Khánh Dr. Phùng Thanh Khoa
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, project, and seminar (optional).
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (lecture, exercise, laboratory session, etc.): 45 hrs for lectures Private study including examination preparation, specified in hours <sup>21</sup> : 90 hrs
Credit points	<b>3 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the course	

<p>Course objectives</p>	<p>Upon successful completion of this course, the students should be able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>● The role of chemistry for engineers</li> <li>● Measurements in chemistry</li> <li>● Matter and state of matter</li> <li>● Structure of atoms, molecules and ions</li> <li>● Periodicity</li> <li>● Chemical bonds</li> <li>● Intermolecular forces, liquid and solid</li> <li>● Gases, liquids, solids and their properties</li> <li>● Types and rates of chemical reactions</li> <li>● Chemical equilibrium</li> <li>● Electrolytes, acid-base, <i>pH</i>, buffer</li> <li>● Thermochemistry and thermodynamics</li> </ul>
<p>Course learning outcomes</p>	<p><b>CLO1:</b> Be able to apply mathematics and science knowledge to solve chemistry-related problems and explain many aspects of everyday life using chemistry concepts.</p> <p><b>CLO2:</b> Be able to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.</p> <p><b>CLO3:</b> Be able to acquire and apply new knowledge as needed, using appropriate learning strategies.</p>

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to General Chemistry for Engineers</td> <td>0.2</td> <td>I, T</td> </tr> <tr> <td>Introduction to Matter</td> <td>0.3</td> <td>I, T</td> </tr> <tr> <td>Measurements in Chemistry</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Atoms, Molecules and Ions</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Periodicity</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chemical Bonds</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Intermolecular Forces</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Gases and Their Properties</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Solutions and Their Properties</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Solids and Their Properties</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Chemical Reactions</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Chemical Kinetics</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chemical Equilibrium</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Electrolytes, Acid- Base, pH and Buffer</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Thermochemistry and Thermodynamics</td> <td>2</td> <td>I, T</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to General Chemistry for Engineers	0.2	I, T	Introduction to Matter	0.3	I, T	Measurements in Chemistry	0.5	I, T	Atoms, Molecules and Ions	1	I, T	Periodicity	1	I, T	Chemical Bonds	2	I, T	Intermolecular Forces	1	I, T	Gases and Their Properties	0.5	I, T	Solutions and Their Properties	0.5	I, T	Solids and Their Properties	0.5	I, T	Chemical Reactions	0.5	I, T	Chemical Kinetics	1	I, T	Chemical Equilibrium	1	I, T	Electrolytes, Acid- Base, pH and Buffer	2	I, T	Thermochemistry and Thermodynamics	2	I, T
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Electrolytes, Acid- Base, pH and Buffer	2	I, T																																															
Thermochemistry and Thermodynamics	2	I, T																																															
Examination forms	Multiple-choice questions, written test																																																
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																																
Reading list	<p>[1] “Chemistry: A Molecular Approach” by Nivaldo J. Tro (2<sup>nd</sup> Ed., 2008). Pearson.</p> <p>[2] “General Chemistry” by Darrell Ebbing and Steven D. Gammon (9th Ed., 2010). Brooks/Cole, USA.</p> <p>[3] “Chemistry for Engineers – An Applied Approach” by Mary Jane Shultz (2007). Houghton Mifflin.</p> <p>[4] “Chemistry, Principles and Reactions” by Masterton and Hurley (6th Ed., 2009). Cengage learning, USA.</p>																																																

### 23. Chemistry Laboratory (CHE012IU)

Course designation	This one-semester course is designed for engineering students who are pursuing a nonchemistry engineering degree such as information technology, bio-technology, civil, biomedical, electronic and telecommunication engineering. The course will introduce students to basic laboratory safety, techniques, and apparatus, and complement the information gained in lecture. Prior to each lab, students must read the lab manual about the experiment and complete a prelaboratory report. All students must complete mandatory safety training to participate in the course, which will be provided at the first day of the class. Students are expected to come to each lab on time and be prepared to carry out the day's tasks.
Semester(s) in which the course is taught	1, 2, and summer (optional)
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lab, Lecture
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 67.5 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 32.5 h for lab, 5h for lecture Private study including examination preparation, specified in hours <sup>22</sup> : 30
Credit points	<b>1 credit/2.45 ECTS</b>
Required and recommended prerequisites for joining the course	None
Course objectives	To introduce students to general chemistry laboratory and to provide students with a firm foundation in chemistry laboratory for careers in science and engineering

Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1: Applying chemical concepts to draw logical conclusions about the applicability of data to real world problems.	
	Skill	CLO2. Being able to perform lab-work: perform experiment, analyze data, answer questions, make conclusion, research assignments, report writing. CLO3: Using collected data to calculate physical or chemical quantities to the experiment being performed.	
Attitude	CLO4: Developing teamwork skills that include not only the efficient acquisition of experimental data, but also the awareness of safety in the laboratory setting.		
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (5 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Chemical Reactions	1	T, U
	pH and buffers	1	T, U
	Redox titration	1	T, U
Chemical Equilibrium	1	T, U	
Factors affecting reaction rate	1	T, U	
Final evaluation	Multiple choice questions		
Study and examination requirements	Attendance: An attendance of 100 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Lab manual for chemistry laboratory (internal use only)		



## 24. Introduction to Civil Engineering (CE100IU)

Course designation	The course provides an outline of the long history, present status and future challenges of civil engineering. Ethics and professional responsibility and a description of different fields of civil engineering are presented. The course provides an overview of different works, and relationships between different disciplines of civil engineering such as construction materials, structural engineering, water resources engineering, geotechnical engineering, surveying, transportation, environmental and urban engineering, and construction technology.... An overview of the design process of a project such as buildings, bridges, dams, roads is provided. The national strategy and great plans for developing the infrastructure system and urban development of Vietnam are presented with related important decisions of the Government.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, homework, discussion
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 67.5 Contact and work-site hours (please specify whether lecture, exercise, laboratory session, etc.): 30 The private study includes examination preparation, specified in hours <sup>23</sup> : 37.5
Credit points	1 credit/ <b>2.45 ECTS</b>
Required and recommended prerequisites for joining the course	No.
Parallel course	No.
Course objectives	<ul style="list-style-type: none"> <li>- Provides an overview of civil engineering, the construction industry, and the profession.</li> <li>- Provides an understanding of the relationship between different fields in civil engineering practice and different subjects within the curriculum of civil engineering.</li> <li>- Provides an understanding of national strategy and plans to develop infrastructure systems and urban development.</li> </ul>

<sup>23</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Course learning outcome (CLO)/ Competency</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>           CLO1. Interpret an overview of civil engineering, the construction industry, and the profession.            CLO2. Interpret the relationship between different fields in civil engineering practice and different subjects within the curriculum of civil engineering.         </td> </tr> <tr> <td>Skills</td> <td></td> </tr> <tr> <td>Attitude</td> <td>CLO3. Work independently and professionally</td> </tr> </tbody> </table>	Categories	Course learning outcome (CLO)/ Competency	Knowledge	CLO1. Interpret an overview of civil engineering, the construction industry, and the profession. CLO2. Interpret the relationship between different fields in civil engineering practice and different subjects within the curriculum of civil engineering.	Skills		Attitude	CLO3. Work independently and professionally										
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Transportation and Bridges Engineering	1	I, T, U																	
Water Resource Engineering	1	I, T, U																	
Examination forms	<p>presentation: Show information about one project of tall buildings, bridges, hydraulic structures, and so on.</p>																		
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have a GPA of more than 50/100 points overall to pass this course.</p>																		

<p>Reading list and Media employed</p>	<p><b><u>Textbooks:</u></b></p> <p>[1] C P Kaushik, S S Bhavikatti, Anubha Kaushik, "Basic Civil and Environmental Engineering", New Age International (P) Ltd., Publishers, 2010.</p> <p>[2] Pham Nhan Hoa, "Lecture Note, : STRUCTURAL ANALYSIS AND DESIGN WITH CIVIL ENGINEERING SOFTWARE", Sep 2019</p> <p>[3] R.C. Hibbeler, "Structural Analysis", 9th Edition, Pearson Prentice Hall, US</p> <p>[4] W. H. Mosley, J. H. Bungey and R. Hulse, "Reinforced concrete design to Eurocode 2", PALGRAVE MACMILLAN, 7th Edition, 2012.</p> <p>[4.1] Eurocode 2: Design of Concrete Structures - Part 1-1: General rules and rules for buildings</p> <p>[5] Trahair, NS.; Bradford MA.; Nethercot DA. and Gardner, L. "The Behavior Design of Steel Structures to EC 3", 4th Edition, Taylor and Francis, 2007.</p> <p>[5.1] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-1: Design of Steel Structures - GENERAL RULES and RULES OF BUILDINGS, British Standards Institution, London, UK.</p> <p>[5.2] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-5: General rules - PLATED STRUCTURAL ELEMENTS, British Standards Institution, London, UK.</p> <p>[5.3] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-8: Design of Steel Structures - DESIGNS OF JOINS, British Standards Institution, London, UK.</p> <p>[6] BRAJA M. DAS, KHALED SOBHAN, "Principles of Geotechnical Engineering", 9th Edition, Cengage Learning, 2018</p> <p>[7] BRAJA M. DAS, "Principles of Foundation Engineering, SI", 7th Edition, Cengage Learning, 2011.</p> <p>[8] Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <a href="http://www.deeplearningbook.org/">http://www.deeplearningbook.org/</a>)</p> <p>[9] Hands-on Machine Learning with Scikit-Learn &amp; Tensorflow, Aurelien Geron, O'Reilly, 2017.</p> <p>[10] Hands-on Machine Learning with Scikit-Learn &amp; Tensorflow, Aurelien Geron, O'Reilly, 2017</p> <p>[11] Ed. Wai-Fah Chen and Lian Duan, Bridge Engineering Handbook, Boca Raton: CRC Press, 2000.</p> <p>[12] Novak P., Moffat A.I.B., Nalluri C, and Narayanan, Hydraulic structures (4<sup>th</sup> Edition), Taylor &amp; Francis Group. 2007.</p>
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## 25. Introduction to Computer for Engineers (CE102IU)

Course designation	<i>This course is an introduction to the key principles of programming along with the use of the available math functions given in language MATLAB. This course also covers the way of establishing and solving civil engineering problems with the help of EXCEL, and VBA</i>	
Semester(s) in which the course is taught	1, 2	
Person responsible for the course	<i>Phạm Nhân Hòa (Msc)</i>	
Language	English	
Relation to curriculum	Compulsory	
Teaching methods	Lecture, presentation, discussion, and assignments	
Workload (incl. contact hours, self-study hours)	Total workload: 127.5 (Estimated) Contact hours: - lecture: 28.5 - Discussion: 9 Private study including examination preparation, specified in hours: 90	
Credit points	<b>3 credits/4.64 ECTS</b>	
Required and recommended prerequisites for joining the course	None	
Parallel course	None	
Course objectives	The aim of this course is to provide <ul style="list-style-type: none"> <li>- students' understanding of the concept Computers and Programming, apply the concept of Vectors and Arrays, Execution Control, Functions, Character Strings, Cell Arrays and Structures, and Matrices to solve engineering problems</li> <li>- problem solving skills using the software in civil engineering problems by using Microsoft-EXCEL software with standard tools and VBA in EXCEL</li> </ul>	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Categories</b>	<b>Course learning outcome (CLO)/ Competency</b>
	Knowledge	CLO1: become proficient in programming with environment MATLAB CLO2: enhance problem solving skills using the software in civil engineering problems with EXCEL and, VBA
	Attitude	CLO3: Work independently and professionally

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td><b>MATLAB</b></td> <td></td> <td></td> </tr> <tr> <td>Introduction, Vectors and Arrays in MATLAB</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Execution Control</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Functions</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Character Strings</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Cell Arrays and Structures</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Plotting</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Symbolic</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Matrix</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td><b>EXCEL AMD VBA</b></td> <td></td> <td></td> </tr> <tr> <td>Introduction EXCEL and WORKSHEET - Mathematical operations</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Functions</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Graphs - Predict and Forecast tools Goal Seek and Solver Tools</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>Curve Fitting and 1-way and 2-way Interpolation</td> <td>1</td> <td>I,T,U</td> </tr> <tr> <td>User defined Forms</td> <td>1</td> <td>I,T,U</td> </tr> </tbody> </table>	Topic	Weight	Level	<b>MATLAB</b>			Introduction, Vectors and Arrays in MATLAB	1	I,T,U	Execution Control	1	I,T,U	Functions	1	I,T,U	Character Strings	1	I,T,U	Cell Arrays and Structures	1	I,T,U	Plotting	1	I,T,U	Symbolic	1	I,T,U	Matrix	1	I,T,U	<b>EXCEL AMD VBA</b>			Introduction EXCEL and WORKSHEET - Mathematical operations	1	I,T,U	Functions	1	I,T,U	Graphs - Predict and Forecast tools Goal Seek and Solver Tools	1	I,T,U	Curve Fitting and 1-way and 2-way Interpolation	1	I,T,U	User defined Forms	1	I,T,U
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User defined Forms	1	I,T,U																																															
Examination forms	Constructed-response test																																																
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have GPA more than 50/100 points overall to pass this course.</p>																																																
Reading list and Media employed	<p><b><u>Textbooks:</u></b></p> <ol style="list-style-type: none"> <li>MATLAB Programming for Engineers (Stephen J. Chapman), Thompson Books.</li> <li>Excel 2010 Introduction: Part I and II, Stephen Moffat</li> </ol> <p><b><u>Additional references:</u></b></p> <ol style="list-style-type: none"> <li>MATLAB online help. (<a href="http://www.mathworks.com">http://www.mathworks.com</a>)</li> </ol>																																																

## II. CORE MAJOR REQUIREMENT

### 26. Engineering Mechanics – Statics (CE101IU)

Module designation	<i>Engineering Mechanics – Statics (Code: CE101IU)</i>
Semester(s) in which the module is taught	<i>1<sup>ST</sup>, 2<sup>ND</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>24</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Calculus 2 and Physics 1</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to provide</i></p> <ul style="list-style-type: none"> <li><i>• Analyze and apply how to solve equilibrium problems involving trusses, frames and machines.</i></li> <li><i>• Obtain knowledge of the laws of dry friction and apply it to solve equilibrium problems involving static friction</i></li> <li><i>• Apply properties of areas and be able to calculate centroids and inertia moments of an area.</i></li> <li><i>• Apply the concept of internal forces in members, and be able to draw shear and bending-moment diagrams for beams.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• An ability to determine the internal forces and draw diagrams for beams and trusses.</i></li> <li><i>• An ability to calculate centroids and moments of inertia of various cross sections.</i></li> <li><i>• Ability to analyze engineering problems, involving equilibrium equations</i></li> <li><i>• Work independently and professionally</i></li> </ul>

Content	<ul style="list-style-type: none"> <li>- <i>Fundamental concepts</i></li> <li>- <i>Systems of Units,</i></li> <li>- <i>Vector overview: operations, projections</i></li> <li>- <i>Forces as vectors, Two-dimensional force systems, and Three-dimensional force systems.</i></li> <li>- <i>System of forces, moment and couples</i></li> <li>- <i>Equivalent systems.</i></li> <li>- <i>Conditions for equilibrium, Free-body diagrams, and Equilibrium equations for 2D and 3D.</i></li> <li>- <i>Friction</i></li> <li>- <i>Trusses, The method of joints, and The method of sections</i></li> <li>- <i>Frames</i></li> <li>- <i>Center of gravity and mass</i></li> <li>- <i>Centroid for a body</i></li> <li>- <i>Resultant of a distributed force system</i></li> <li>- <i>Moments of inertia for areas</i></li> <li>- <i>Parallel-axis theorem</i></li> <li>- <i>Rotated-axis theorem</i></li> <li>- <i>Internal forces in beams</i></li> <li>- <i>Shear force and bending moment diagrams</i></li> </ul>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] R. C. Hibbeler, Static and Mechanics of Materials, 4th Edition, Pearson, 2014.</i></p> <p><i>Additional references:</i></p> <p><i>[2] J. L. Meriam and L.G Kraige, Engineering Mechanics—Statics, 5th edition, Wiley, 2002.</i></p>

## 27. Engineering Mechanics – Dynamics (CE203IU)

Module designation	<i>ENGINEERING MECHANICS – DYNAMICS (Code: CE203IU)</i>
Semester(s) in which the module is taught	<i>3<sup>RD</sup> , 4<sup>TH</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Engineering Mechanics – Statics</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to</i></p> <ul style="list-style-type: none"> <li><i>• a basic understanding of forces and motion of particles including Kinematics of a Particle, Kinetics of a Particle: Force and Acceleration, and Kinetics of a Particle: Work and Energy, Kinetics of a Particle: Impulse and Momentum</i></li> <li><i>• a basic understanding of forces and motion of a Rigid Body consisting of Planar Kinematics of a Rigid Body; Planar Kinetics of a Rigid Body: Force and Acceleration; Planar Kinetics of a Rigid Body: Work and Energy; and Planar Kinetics of a Rigid Body: Impulse and Momentum.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Analyzing, interpreting, and presenting the motion of a particle</i></li> <li><i>• Analyzing, interpreting, and presenting the motion of a rigid body.</i></li> <li><i>• Applying appropriate techniques for a practical application.</i></li> <li><i>• Work independently and professionally</i></li> </ul>



Content	<ul style="list-style-type: none"> <li>- <i>Kinematics of a Particle</i></li> <li>- <i>Kinetics of a Particle: Force &amp; Acceleration</i></li> <li>- <i>Kinetics of a Particle: Work &amp; Energy</i></li> <li>- <i>Kinetics of a Particle: Impulse &amp; Momentum</i></li> <li>- <i>Planar Kinematics of a Rigid Body</i></li> <li>- <i>Kinetics of a Rigid Body: Force &amp; Acceleration</i></li> <li>- <i>Kinetics of a Rigid Body: Work &amp; Energy</i></li> <li>- <i>Kinetics of a Rigid Body: Impulse &amp; Momentum</i></li> </ul>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] R.C, Hibbeler, Engineering Mechanics Vol.2 - Dynamics, 5th ed., Prentice-Hall, 2014</i></p> <p><i>Additional references:</i></p> <p><i>[2] J.L. Meriam and L.G. Kraige, Engineering Mechanics Vol.2-Dynamics, 3 ed., Wiley, 1992.</i></p>

## 28. Artificial Intelligence in Civil Engineering and Construction Management (CE217IU)

Course designation	This course introduces how we apply artificial intelligence in civil engineering (CE) and construction management (CM). Several typical problems of applied artificial intelligence in CE and CM are introduced, such as regression/classification/segmentation/abnormality detection in experimental data, monitoring data, etc. The course introduces machine learning methods frequently utilized in CE and CM, including k-nearest neighbor, neural network, decision tree, and random forest, and explains their concepts so that students can know how to formulate a problem-solving.
Semester(s) in which the course is taught	
Person responsible for the course	Dr. Pham, Nguyen Linh Khanh; Dr. Nguyen, Ba Quang Vinh; Dr. Nguyen, Van Tiep
Language	English
Relation to curriculum	<i>Compulsory</i>
Teaching methods	Lecture, discussion, and assignments.
Workload (incl. contact hours, self-study hours)	Total workload: 127.5 (Estimated) Contact hours: - lecture: 30 - Discussion: 7.5 Private study, including examination preparation, specified in hours: 90
Credit points	3 credits/ <b>4.64 ECTS</b>
Required and recommended prerequisites for joining the course	
Course objectives	The course provides students with basic definitions of machine learning and its implications in industry. The students have the ability to recognize and formulate the problems in CE and CM that AI can apply. Furthermore, some basis machine algorithms (e.g., neural network, support vector machine, decision tree) are introduced to aid the student in analyzing and solving real case problems. Also the impacts and contemporary issues of artificial intelligence in CE and CM are also discussed.

Course learning outcomes	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1. Understand basic definitions of machine learning, and its implications in the industry</td> </tr> <tr> <td>Skill</td> <td>CLO2. Apply mathematics and ML algorithms to solve problems. CLO3. Design and conduct experiments, analyze and interpret CE and CM data</td> </tr> <tr> <td>Attitude</td> <td></td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand basic definitions of machine learning, and its implications in the industry	Skill	CLO2. Apply mathematics and ML algorithms to solve problems. CLO3. Design and conduct experiments, analyze and interpret CE and CM data	Attitude																				
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Attitude																												
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction</td> <td>1</td> <td>I</td> </tr> <tr> <td>Linear Algebra</td> <td>1</td> <td>T</td> </tr> <tr> <td>Data analysis</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Machine learning – Unsupervised learning algorithm</td> <td>2</td> <td>T</td> </tr> <tr> <td>Machine learning – Supervised learning algorithm</td> <td>2</td> <td>T</td> </tr> <tr> <td>Neural network</td> <td>2</td> <td>T</td> </tr> <tr> <td>Machine learning issues</td> <td>1</td> <td>I</td> </tr> <tr> <td>Case studies</td> <td>1</td> <td>I</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction	1	I	Linear Algebra	1	T	Data analysis	2	T, U	Machine learning – Unsupervised learning algorithm	2	T	Machine learning – Supervised learning algorithm	2	T	Neural network	2	T	Machine learning issues	1	I	Case studies	1	I
Topic	Weight	Level																										
Introduction	1	I																										
Linear Algebra	1	T																										
Data analysis	2	T, U																										
Machine learning – Unsupervised learning algorithm	2	T																										
Machine learning – Supervised learning algorithm	2	T																										
Neural network	2	T																										
Machine learning issues	1	I																										
Case studies	1	I																										
Examination forms	Constructed-response test																											
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: To pass this module, students must have more than 50/100 points overall.</p>																											
Reading list	<p>[1] Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <a href="http://www.deeplearningbook.org/">http://www.deeplearningbook.org/</a>)</p> <p>[2] Hands-on Machine Learning with Scikit-Learn &amp; Tensorflow, Aurelien Geron, O'Reilly, 2017.</p>																											

## 29. Mechanics of Material 1 (CE201IU)

Module designation	<i>MECHANICS OF MATERIALS 1 (Code: CE201IU)</i>
Semester(s) in which the module is taught	<i>1<sup>ST</sup>, 2<sup>ND</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 85 (Estimated)</i> <i>Contact hours:</i> <i>- lecture: 19</i> <i>- Discussion: 6</i> <i>Private study including examination preparation, specified in hours<sup>25</sup>: 60</i>
Credit points	<b><i>2 credits/3.09 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Calculus 2, Engineering Mechanics – Statics</i>
Module objectives/intended learning outcomes	<i>Module objectives:</i> <i>The aim of this course is to</i> <ul style="list-style-type: none"> <li>• <i>develop an understanding of the relationship between loads (including Axial Loads and Torsion) applied to a deformable body and the internal stress, strains and deformation.</i></li> <li>• <i>develop an understanding of the relationship between loads (including Bending and Transverse Shear) applied to a deformable body and the internal stress, strains and deformation.</i></li> </ul> <i>Learning outcomes:</i> <ul style="list-style-type: none"> <li>• <i>Showing proficiency in the mathematics and basic sciences required to solve structural engineering and mechanics problem.</i></li> <li>• <i>Demonstrating the ability to organize, approach, and solve engineering problems that are multi-step problems in which the solutions are not visible at the beginning of the process.</i></li> <li>• <i>Work independently and professionally</i></li> </ul>
Content	<ul style="list-style-type: none"> <li>- <i>Introduction</i></li> <li>- <i>Stress and Strain</i></li> <li>- <i>Mechanical Properties of Material</i></li> <li>- <i>Axial Load</i></li> <li>- <i>Torsion</i></li> <li>- <i>Bending</i></li> <li>- <i>Transverse Shear</i></li> </ul>

Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] R.C. Hibbeler, Statics and Mechanics of Materials, SI edition, Prentice Hall, 2008.</i></p> <p><i>Additional references:</i></p> <p><i>[2] James M Gere, Berry J Goodno, Mechanics of Materials, Seventh Edition, Cengage Learning, 2009</i></p>

### 30. Mechanics of Material 2 (CE208IU)

Module designation	<i>MECHANICS OF MATERIALS 2 (Code: CE208IU)</i>
Semester(s) in which the module is taught	<i>4<sup>TH</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 85 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- Lecture: 19</i></li> <li><i>- Discussion: 6</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>26</sup>: 60</i></p>
Credit points	<b><i>2 credits/3.09 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Mechanics of Materials 1</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to</i></p> <ul style="list-style-type: none"> <li><i>• Showing proficiency in the mathematics and basic sciences required to solve structural engineering and mechanics problem.</i></li> <li><i>• Demonstrating the ability to organize, approach, and solve engineering problems that are multi-step problems in which the solutions are not visible at the beginning of the process.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Showing proficiency in the mathematics and basic sciences required to solve structural engineering and mechanics problem.</i></li> <li><i>• Demonstrating the ability to organize, approach, and solve engineering problems that are multi-step problems in which the solutions are not visible at the beginning of the process.</i></li> <li><i>• Work independently and professionally</i></li> </ul>

Content	<ul style="list-style-type: none"> <li>- <i>Combined loadings</i></li> <li>- <i>Stress and strain transformation</i></li> <li>- <i>Design of beams</i></li> <li>- <i>Buckling of columns</i></li> <li>- <i>Energy Method</i></li> </ul>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] R.C. Hibbeler, Statics and Mechanics of Materials, SI edition, Prentice Hall, 2008.</i></p> <p><i>Additional references:</i></p> <p><i>[2] James M Gere, Berry J Goodno, Mechanics of Materials, Seventh Edition, Cengage Learning, 2009</i></p>

### 31. Mechanics of Material Laboratory (Code: 202IU)

Module designation	<i>Mechanics of Materials Laboratory (Code: 202IU)</i>
Semester(s) in which the module is taught	<i>1, 2</i>
Person responsible for the module	<i>Cabaltica Doliente Angeli, MSc.</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Pre-laboratory discussions and demonstrations, laboratory experiments, writing of laboratory reports</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 67.5 Contact hours (laboratory exercises):37.5 Private study including laboratory reports preparation, specified in hours: 30</i>
Credit points	<i>1 credit/2.45 ECTS</i>
Required and recommended prerequisites for joining the module	<i>CE101IU Engineering Mechanics - Statics</i>
Module objectives/intended learning outcomes	<p><b>Module Objectives.</b> <i>The objectives of this course is to equip the students with understanding of basic mechanics of materials concepts.</i></p> <p><b>Course Learning Outcomes.</b> <i>Upon the successful completion of this course students will be able to:</i></p> <ol style="list-style-type: none"> <li><i>1. use materials testing instruments;</i></li> <li><i>2. perform basic testing procedures for mechanics of materials;</i></li> <li><i>3. perform calculations from experimental data collected;</i></li> <li><i>4. interpret collected and computed data and prepare reports, and other related documents; and</i></li> <li><i>5. work professionally in a team.</i></li> </ol>
Content	<p><i>This course allows students to practice the basic mechanics of materials concepts discussed in the theory course - CE201IU Mechanics of Materials. It will also familiarize students with the different materials testing instruments.</i></p> <p><i>Basic mechanics of materials concepts: members subjected to tension, buckling, bending, torsion, indeterminate structures and stress-and-strain behaviors of materials.</i></p>
Examination forms	



Study and examination requirements	<p><i>Students are expected to attend the practice every week. Students are divided into groups of 4-5 members. Each group performs the laboratory exercises and must prepare and submit a laboratory report one week after the laboratory exercise is done.</i></p> <p><i>Students must have an overall score of at least 50/100 points to pass this course.</i></p>
Reading list	<p>[1] <i>Experimental laboratory manuals</i></p> <p><i>Textbooks:</i></p> <p>[2] <i>R.C. Hibbeler, Statics and Mechanics of Materials, SI edition, Prentice Hall, 2008.</i></p>

### 32. Structural Analysis 1 (CE209IU)

Module designation	<i>Structural Analysis 1 (Code: CE209IU)</i>
Semester(s) in which the module is taught	<i>4<sup>th</sup></i>
Person responsible for the module	<i>Prof. Le Van Canh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>27</sup>: 90</i></p>
Credit points	<i>3 credits/4.64 ECTS</i>
Required and recommended prerequisites for joining the module	<i>Mechanics of materials 1</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to</i></p> <ul style="list-style-type: none"> <li><i>● Introduces computational analysis of structures and the practice of solving structural problems.</i></li> <li><i>● Idealization of structures and loads in relation with real structures.</i></li> <li><i>● Determine the internal forces and draw diagrams for beams, frames and trusses.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>● An understanding of basic structural engineering concepts.</i></li> <li><i>● An understanding of methods for computing displacements and slopes for beams and frames using double integration, virtual work methods, and graph multiplication methods.</i></li> <li><i>● An ability to determine the internal forces and draw diagrams for determinate structure.</i></li> <li><i>● An ability to determine the internal forces and draw diagrams for indeterminate structure.</i></li> </ul>

Content	<ul style="list-style-type: none"> <li>- <i>Classification of structures</i></li> <li>- <i>Shear diagram</i></li> <li>- <i>Moment diagram</i></li> <li>- <i>Deflections</i></li> <li>- <i>Slopes</i></li> <li>- <i>Force method</i></li> <li>- <i>Displacement method</i></li> </ul>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>● <i>Homework, Attendance: 20%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>● <i>Midterm exam: 30%</i></li> <li>● <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] R. C. Hibbeler, Structural Analysis, Prentice-Hall.</i></p> <p><i>Additional references:</i></p> <p><i>[2] Jacob Fish, Teb Belytschko, A First Course in Finite Elements, Willey, 2007.</i></p> <p><i>[3] T.H.G. Megson, Structural and stress analysis, Elsevier, 2005.</i></p>

### 33. Structural Analysis 2 (CE301IU)

Module designation	<i>Structural Analysis 2 (Code: CE301IU)</i>
Semester(s) in which the module is taught	<i>5<sup>th</sup></i>
Person responsible for the module	<i>Prof. Le Van Canh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>28</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Structural Analysis 1</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• This course introduces computational analysis of structures and the practice of using programs to solve structural problems. Background in finite element analysis is developed. Plastic analysis of frames and slabs are introduced.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• An understanding of basic concept of finite element analysis.</i></li> <li><i>• An understanding of basic concept of plastic analysis of frames and slabs.</i></li> <li><i>• An ability to perform matrix analysis of trusses, beams, and frames.</i></li> <li><i>• An ability to analyse structures, use structural analysis as a design tool, and solve structural analysis problems using a FEA package.</i></li> </ul>
Content	<i>The basis concept and implementation of of finite element method in structural analysis: truss element, beam element, and frame element; plasticity of beam and frames; yield line of slabs; structural analysis using FEA package.</i>

<sup>28</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 20%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 30%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] R. C. Hibbeler, Structural Analysis, Prentice-Hall.</i></p> <p><i>[2] Jacob Fish, Teb Belytschko, A First Course in Finite Elements, Willey, 2007.</i></p> <p><i>[3] T.H.G. Megson, Structural and stress analysis, Elsevier, 2005.</i></p>

### 34. Fluid Mechanics (CE205IU)

Module designation	<i>Fluid Mechanics (Code: CE205IU)</i>
Semester(s) in which the module is taught	<i>5<sup>th</sup></i>
Person responsible for the module	<i>Assoc. Prof. Pham Ngoc</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, lesson, homework, discussion</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 85(Estimated) Contact hours: 25 Private study including examination preparation, specified in hours<sup>29</sup>: 60</i>
Credit points	<b><i>2 credits/3.09 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Calculus and physics</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>Introduce the concepts of fluid mechanics, which are more applicable for civil engineers</i></li> <li>• <i>Demonstrate how these concepts are used for solving some common problems in field of civil engineering.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>Calculate fundamental parameters of fluids</i></li> <li>• <i>Apply the principles of fluid static to analyze and estimate the hydrostatic pressure and force exerted on submerged surfaces or floating subjects</i></li> <li>• <i>Apply the fundamental of fluid dynamic to solve some problems in field of civil engineering</i></li> </ul>
Content	<i>Fluid mechanics is one of a principle subjects for civil engineers. Generally, fluid mechanics is the study of the mechanisms in which fluids, under all possible conditions (such as: gases and liquids) respond to forces, exert forces, and move from one place to another in physical view. This module will provide fundamental knowledge on physical properties of fluids and its characteristics as well. Moreover, students learn the laws and the governing equations representing different kinds of fluids at both static and motion state interacting to structures; and know how to solve these equations or compute physical parameters in practical meaning. In addition, the practices to measure fluid properties are introduced in this module.</i>

Exams and assessment formats	<p><i>Progress assessment (30%GPA):</i></p> <ul style="list-style-type: none"> <li>• <i>Attendance: 10%</i></li> <li>• <i>Homeworks/Assignments: 5%PA</i></li> <li>• <i>Quizzes in class: 15%PA</i></li> </ul> <p><i>Exams:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm Exam: 30%GPA</i></li> <li>• <i>Final Exam: 40%GPA</i></li> </ul>
Study and examination requirements	<p><i>Attendance: 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.</i></p> <p><i>Assignments/Examination: Students must have GPA more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><b><u>Textbooks:</u></b></p> <p>[1] Bruce R. Munson, Donald F. Young, Theodore H. Okiishi, <i>Fundamentals of fluid mechanics</i>, John Wiley &amp; Sons Inc. 2006.</p> <p>[2]. Donald F. Elger, Barbara C. Williams, Clayton T. Crowe, John A. Roberson. <i>Engineering of Fluid Mechanics (10 Edition)</i>. Wiley. 2014</p> <p><b><u>Additional references:</u></b></p> <p>[3] Bar Meir, Genick, <i>Basic of fluid mechanics</i>, <a href="http://www.potto.org">www.potto.org</a></p> <p>[4] Nakayama, Y., Boucher, R.F.. <i>Introduction to fluid mechanics</i>, Butterworth-Heinemann. 2000.</p> <p>[5] John K. Vennard. <i>Elementary fluid mechanics</i>, John Wiley &amp; Sons Inc. 1940</p>

### 35. Fluid Mechanics Laboratory (CE206IU)

Module designation	<i>Fluid Mechanics Laboratory (Code: CE206IU)</i>
Semester(s) in which the module is taught	<i>5<sup>th</sup></i>
Person responsible for the module	<i>Assoc. Prof. Pham Ngoc</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, practice, group homework, seminar</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 67.5 (Estimated) Contact hours: 37.5 Private study including examination preparation, specified in hours<sup>30</sup>: 30</i>
Credit points	<b><i>1 credit/2.45 ECTS</i></b>
Required and recommended prerequisites for joining the module	
Parallel course	<i>Fluid Mechanics</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>Provide practical skills to determine some properties of fluids and conduct some experiments in Lab</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>Describe and explain the mechanism of some basic flow phenomena</i></li> <li>• <i>Demonstrate five fundamental experiments, including: Discharge over a notch; Reynolds number and transitional flow; Flow measurement apparatus; Jet trajectory and flow through an orifice; Fluid friction apparatus.</i></li> <li>• <i>Analyze the experiment data</i></li> <li>• <i>Present skills of teamwork, communication, reporting and presentation</i></li> </ul>
Content	<i>This module is primarily used as an undergraduate teaching lab. The experimental exercises will be provided to student for demonstrating the theory given in class lectures. These experiments are designed to examine some properties of fluids and to conduct experiments involving principle phenomena of incompressible (water) flow, such as: flow over the weir, head losses of flow in pipe.....</i>



Exams and assessment formats	<ul style="list-style-type: none"> <li>• Attendance: 10%</li> <li>• Group reports: 80%</li> <li>• Oral presentation: 10%</li> </ul>
Study and examination requirements	<p><i>Attendance: attendance of 100 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><b><u>Textbooks:</u></b></p> <p><i>[1] Bruce R. Munson, Donald F. Young, Theodore H. Okiishi, Fundamentals of fluid mechanics, John Wiley &amp; Sons Inc. 2006.</i></p> <p><i>[2]. Donald F. Elger, Barbara C. Williams, Clayton T. Crowe, John A. Roberson. Engineering of Fluid Mechanics (10 Edition). Wiley. 2014</i></p>

### 36. Soil Mechanics (CE302IU)

Module designation	<i>Soil mechanics (Code: CE302IU)</i>
Semester(s) in which the module is taught	3 <sup>rd</sup>
Person responsible for the module	<i>Dr. Pham Nguyen Linh Khanh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>31</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Mechanics of Materials, Construction Materials</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>● <i>The course provides students with basic definitions physical and mechanical properties of various soils in different states, such as dry, wet, and saturated states. The methods to determine the properties of soils and the effect of groundwater on soil properties are also guided in the course. The stresses acting on the soil at any point beneath the ground caused by upper soil layers and structures constructed on the ground are mentioned. Therefore, the safety of constructed structures can be determined based on the ultimate shear strength of soils. Further, students can appreciate lateral earth pressure's effect on wall structures commonly used in civil engineering construction.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>● <i>Understand basic definitions, and determine the physical and mechanical properties of various soils in different states.</i></li> <li>● <i>Analyze the soil behaviors under different conditions.</i></li> <li>● <i>Conduct strength analysis and settlement analysis of the soil.</i></li> </ul>

Content	<p><i>The course provides students with a background of soil behaviors, Lateral earth pressure acting on structures, slope stability, bearing capacity of the soil, and settlement of structures above soil mechanics, which are commonly used in civil engineering construction. Properties of soil include soil formation, physical properties, classification, compaction, permeability, and seepage. Soil mechanics consist of in situ stress, stress in a soil mass, soil compressibility, and soil shear strength. Lateral earth pressures are expressed by pressure at rest based on Rankine and Coulomb, and curved failure surface</i></p>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>● <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>● <i>Midterm exam: 20%</i></li> <li>● <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Braja M. Das, Principles of Geotechnical Engineering, 7th Edition, CL - Engineering, 2005.</i></p> <p><i>[2] Braja M. Das, Introduction to Geotechnical Engineering, 1st Edition, CL - Engineering, 2008.</i></p> <p><i>[3] Châu Ngọc Ân, Cơ học đất, 5th Edition, HoChiMinh City Vietnam National University, 2012.</i></p>

### 37. Soil Mechanics Laboratory (303IU)

Module designation	<i>Soil Mechanics Laboratory (Code: 303IU)</i>
Semester(s) in which the module is taught	<i>1, 2</i>
Person responsible for the module	<i>Cabaltica Doliente Angeli, MSc.</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Pre-laboratory discussions and demonstrations, laboratory experiments, writing of laboratory reports</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 67.5 Contact hours (laboratory exercises):37.5 Private study including laboratory reports preparation, specified in hours<sup>32</sup>: 30</i>
Credit points	<i>1 credit/2.45 ECTS</i>
Required and recommended prerequisites for joining the module	<i>MA024IU Differential Equations</i>
Module objectives/intended learning outcomes	<p><b>Module Objectives.</b> <i>The objective of the course is to give the students practical skills in conducting tests to determine soil properties, performing computations to determine related parameters, analyzing experimental results, and reporting of results.</i></p> <p><b>Course Learning Outcomes.</b> <i>Upon the successful completion of this course students will be able to:</i></p> <ol style="list-style-type: none"> <li><i>6. use different laboratory instruments used for testing the properties of soil;</i></li> <li><i>7. conduct laboratory testing procedues to determine soil properties;</i></li> <li><i>8. perform calculations from experimental data collected;</i></li> <li><i>9. interpret collected and computed data and prepare reports, and other related documents; and</i></li> <li><i>10. work professionally in a team.</i></li> </ol>
Content	<i>The course provides students the knowledge and practical skills in conducting laboratory tests for determining soil properties needed in engineering design such as: the determination of water content and unit weight, particle size distribution, Atterberg limits, compaction test, and direct shear test. The course also provides knowledge on the different testing equipment, general procedures related to each test, and parameters measured in each test.</i>

Examination forms	
Study and examination requirements	<p><i>Students are expected to attend the practice every week. Students are divided into groups of 4-5 members. Each group performs the laboratory exercises and must prepare and submit a laboratory report one week after the laboratory exercise is done.</i></p> <p><i>Students must have an overall score of at least 50/100 points to pass this course.</i></p>
Reading list	<p>[3] <i>Experimental laboratory manuals</i></p> <p><i>Textbooks:</i></p> <p>[4] <i>Braja M. Das, Principles of Geotechnical Engineering, 7th Edition, CL - Engineering, 2005.</i></p>

### 38. Surveying (307IU)

Module designation	<i>Surveying (Code: 307IU)</i>
Semester(s) in which the module is taught	<i>1, 2</i>
Person responsible for the module	<i>Cabaltica Doliente Angeli, MSc.</i>
Language	<i>English</i>
Relation to curriculum	<i>Specialization (compulsory)</i>
Teaching methods	<i>Lecture, class discussion, computation exercises</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 85 Contact hours (lecture, class discussion, computation exercise): 25 Private study including examination preparation, specified in hours<sup>33</sup>: 60</i>
Credit points	<b><i>2 credits/3.09 ECTS</i></b>
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<p><b><i>Module Objectives.</i></b> <i>This course aims to:</i></p> <ol style="list-style-type: none"> <li><i>1. introduce students to the different techniques of data collection, layout, and presentation of field data;</i></li> <li><i>2. make students understand all the tasks involved in a various surveying operations in order that they might have the confidence to undertake such tasks in a professional capacity; and;</i></li> <li><i>3. make students understand and perform the calculations and plottings involved in surveying.</i></li> </ol> <p><b><i>Course Learning Outcomes.</i></b> <i>Upon the successful completion of this course students will be able to:</i></p> <ol style="list-style-type: none"> <li><i>1. discuss the different types of surveys;</i></li> <li><i>2. describe the different surveying tools and instruments used for different types of surveys including their evolution through time;</i></li> <li><i>3. perform calculations in surveying including distances, elevations, directions, coordinates, and areas;</i></li> <li><i>4. read, interpret, as well as prepare maps, plots, reports involved in surveying; and</i></li> <li><i>5. work professionally whether independently or in a team.</i></li> </ol>

Content	<p><i>This course covers the basics of surveying. It includes the principles of measurements of distances, elevations, and angles. The students will become familiar with all surveying instruments as well as learn about the different types of surveying including how they are carried out, the data to collect, and how to analyze, interpret, and process the data. It also includes basic error theory in measurement and calculations, and basic principles of map making.</i></p>
Examination forms	<p><i>Written examinations: Midterm and Final Exams</i>  <i>Type: Problem solving, discussion, identification</i></p>
Study and examination requirements	<p><b><i>Attendance:</i></b> <i>Students are expected to attend the lectures every week. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment.</i></p> <p><b><i>Computation exercises, quizzes (written or oral), and homeworks:</i></b> <i>are given regularly, whether individually or done by group, for the students to understand the concepts better and to improve their problem-solving skills.</i></p> <p><b><i>Examinations:</i></b> <i>A midterm exam will be given halfway through the semester and a final exam at the end. Students must have an overall score of at least 50/100 points to pass this course.</i></p>
Reading list	<p>[1] <i>Charles D. Ghilani – Paul R. Wolf , Elementary Surveying – An introduction to Geomatics, 13th, edition, Prentice Hall, 2012.</i></p> <p>[2] <i>Lillesand, Kiefer, Remote sensing and image interpretation, John Wiley &amp; Sons, 1994.</i></p> <p>[3] <i>Paul A. Longley, Michael F. Goodchild, David J. Mauire, David W. Rhind, Geographic Information Systems and Science, John Wiley &amp; Sons, 2005.</i></p>

### 39. Surveying Practice (308IU)

Module designation	<i>Surveying Practice (Code: 308IU)</i>
Semester(s) in which the module is taught	1, 2
Person responsible for the module	<i>Cabaltica Doliente Angeli, MSc.</i>
Language	<i>English</i>
Relation to curriculum	<i>Specialization (compulsory)</i>
Teaching methods	<i>Pre-lab discussions and demonstrations, field survey, writing of laboratory reports, map/plot preparations</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 67.5 Contact hours (field surveying exercises):37.5 Private study including laboratory reports preparation, specified in hours<sup>34</sup>: 30</i>
Credit points	<i>1 credit/2.45 ECTS</i>
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<p><b>Module Objectives.</b> <i>This course aims to:</i></p> <ol style="list-style-type: none"> <li>6. <i>familiarize students with the different surveying instruments;</i></li> <li>7. <i>allow the students to practice different surveying operations like angle and distance measurement, levelling, control survey, and detail surveying in a closed-loop traverse, and;</i></li> <li>8. <i>allow the students to practice adjustment and calculation of coordinates of control stations, mapping of points, and preparation of maps and reports involved in surveying.</i></li> </ol> <p><b>Course Learning Outcomes.</b> <i>Upon the successful completion of this course students will be able to:</i></p> <ol style="list-style-type: none"> <li>1. <i>use surveying tools and instruments in surveying operations;</i></li> <li>2. <i>conduct different types of surveys discussed in class;</i></li> <li>3. <i>perform calculations from field data collected including error analysis, adjustments, and corrections to field survey data;</i></li> <li>4. <i>interpret collected data in the field and prepare maps, plots, field reports, and other related documents; and</i></li> <li>5. <i>work professionally in a team.</i></li> </ol>



Content	<i>This course allows students to practice the surveying operations discussed in the theory course – CE 307IU Surveying. It will familiarize students with the different surveying instruments; allow them to practice different surveying operations like taping, stadia survey, levelling, and control survey in a closed-loop traverse; as well as make adjustments and calculations of coordinates of control stations, perform detail surveying and mapping of points.</i>
Examination forms	
Study and examination requirements	<p><i>Students are expected to attend the practice every week. Students are divided into groups of 4-5 members. Each group performs the field exercises and must prepare and submit a laboratory report one week after the field exercise is done. Each group must submit the final topographic map at the end of the course.</i></p> <p><i>Students must have an overall score of at least 50/100 points to pass this course.</i></p>
Reading list	<p><i>[4] Charles D. Ghilani – Paul R. Wolf. , Elementary Surveying – An introduction to Geomatics, 13th, edition, Prentice Hall, 2012.</i></p>

#### 40. Computer-Aided Design and Drafting (CADD) (CE103IU)

Module designation	<i>Computer Aided Design and Drafting (Code: CE103IU)</i>
Semester(s) in which the module is taught	<i>3<sup>th</sup></i>
Person responsible for the module	<i>Assoc. Prof. Pham Ngoc</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, practice, group assignments/home works, seminar</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 152.5 (Estimated) Contact hours: 62.5 Private study including examination preparation, specified in hours<sup>35</sup>: 90</i>
Credit points	<b><i>3 credits/5.55 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Non</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>To prepare and read construction drawings; are equipped with up to date information to reflect the most recent developments in the construction industry, and</i></li> <li>• <i>To interpret and deal with the technical information found in blueprint documents</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>Recognize legal documents related to civil drawings</i></li> <li>• <i>Present and illustrate professional 2D drawings</i></li> <li>• <i>Describe and interpret blueprints, sections, elevations, site plans, architectural and structural plans, and more.</i></li> <li>• <i>Present skills in teamwork, communication, presentation, and drawing skills</i></li> <li>• <i>Perform working activities in independently, actively and seriously</i></li> </ul>
Content	<i>This module introduces to the students a comprehensive overview of construction drawings basic. The course explains the use of lines, dimensions, specifications, symbols and standards, terminology and manufacturing process notes contained on a CAD drawing. The module also offers and expands into broader topic such as different construction drawing types and how blueprints and construction drawings are used to implement the construction process.</i>

Exams and assessment formats	<p><i>Progress assessment (30%GPA):</i></p> <ul style="list-style-type: none"> <li>• <i>Attendance/Quizzes in class: 15%</i></li> <li>• <i>Homeworks/Assignments: 10%PA</i></li> <li>• <i>Group report and presentation: 5%</i></li> </ul> <p><i>Exams:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm Exam: 30%GPA</i></li> <li>• <i>Final Exam: 40%GPA</i></li> </ul>
Study and examination requirements	<p><i>Attendance: 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</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><b><u>Textbooks:</u></b></p> <p><i>[1] Kirstie Plantenberg, Engineering Graphic Essentials, SDC Publications, Fourth Edition.</i></p> <p><i>[2] Sam A. A. Kubba, Blueprint Reading: Construction Drawings for the Building Trades, Mc Graw-Hill Higher Education, 2009</i></p> <p><i>[3] Gary R Bertoline, Introduction to Graphics Communication for Engineers, Mc Graw-Hill Higher Education, Fourth Edition.</i></p>

#### 41. Practice CADD (CE104IU)

Module designation	<i>Practice CADD (Code: CE104IU)</i>
Semester(s) in which the module is taught	<i>1<sup>st</sup> or 2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Nguyen Dinh Hung</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>lecture, discussion, presentation,</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 67.5 (Estimated)</i> <i>Contact hours:</i> <i>- lecture: 37.5</i> <i>- Private study including examination preparation, specified in hours<sup>36</sup>: 30</i>
Credit points	<i>1 credit/2.45 ECTS</i>
Required and recommended prerequisites for joining the module	<i>Computer-Aided Design and Drafting (CADD)</i>
Module objectives/intended learning outcomes	<i>Module objectives:</i> <ul style="list-style-type: none"> <li>• <i>This course is designed to give junior engineering students practical skills in using drawing commands, modifying commands, dimensioning commands, layer management with color and line style, printing management, and advances in auto lisp.</i></li> </ul> <i>Learning outcomes:</i> <ul style="list-style-type: none"> <li>• <i>Be able to use Auto CAD software in 2D</i></li> <li>• <i>Draw any objects related to structures in civil engineering.</i></li> <li>• <i>Set printing objects with line thickness.</i></li> <li>• <i>Be aware of drawing in the correct scale.</i></li> </ul>
Content	<i>The course provides to students the common skills to draw objects in 2D plane from Auto CAD software.</i>
Exams and assessment formats	<i>Class attendance:</i> <ul style="list-style-type: none"> <li>• <i>Class attendance and practice in class: 35%</i></li> <li>• <i>Homework: 35%</i></li> </ul> <i>Exam:</i> <ul style="list-style-type: none"> <li>• <i>Final exam: 30%</i></li> </ul>

Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Help from AutoCAD software.</i></p> <p><i>[2] IStructE/Concrete Society, Standard-Method-of-Concrete-Detailing, 3rd Edition, 2006.</i></p>

## 42. Civil Architecture (CE214IU)

Module designation	<i>Civil Architecture (Code: CE214IU)</i>
Semester(s) in which the module is taught	<i>2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Nguyen Van Tiep Dr. Nguyễn Hoài Nghĩa</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture and group presentation</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload (Estimated): 85 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25. Private study including examination preparation, specified in hours: 60</i>
Credit points	<b><i>2 credits/3.09 ECTS</i></b>

<p>Module objectives/intended learning outcomes</p>	<p><i>Module objectives:</i></p> <ol style="list-style-type: none"> <li><i>(1) identifying and solving engineering and management problems through applying principles of engineering, science, and mathematics</i></li> <li><i>(2) carrying out construction project feasibility study and that ensure the feasibility with the consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors</i></li> <li><i>(3) recognizing ethical and professional responsibilities in engineering situations; and being able to make judgments with the consideration to the impact of engineering and management solutions in the different contexts regarding global, economic, environmental, and social aspects</i></li> <li><i>(4) establishing an effective team that enhance members work together to establish goals, specific objectives and actional plans</i></li> <li><i>(5) developing and conducting appropriate construction management research including: collect the data, analyze and use engineering judgments to draw important conclusions</i></li> <li><i>(6) acquiring and applying new knowledge as needed, as well as using appropriate learning strategies.</i></li> </ol> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>● CLO1: Have essential knowledge for design and planning of a building project</i></li> <li><i>● CLO2: Be able to make judgements based on ethical codes and professional responsibilities in specific engineering situations</i></li> <li><i>● CL03: Be active and able to communicate with peers to plan and execute a team project.</i></li> </ul>
<p>Content</p>	<p><i>The course provides students with a concise source of core information needed to form a framework for a detailed planning of any building project. The information includes the principles of the design process, basic information on sitting, servicing and construction buildings, as well as illustrations and descriptions of a wide range of building types. Students work in teams, exploring hands-on activities to learn the characteristics of civil architecture.</i></p>
<p>Exams and assessment formats</p>	<ul style="list-style-type: none"> <li><i>● Individual Assignments (15%)</i></li> <li><i>● Homework exercises/ Presentation (15%)</i></li> <li><i>● Midterm exam (20%)</i></li> <li><i>● Final exam (50%)</i></li> </ul>

<p>Study and examination requirements</p>	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation, report, and defense.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
<p>Reading list</p>	<p><i>[1] Ernst Neufert &amp; Peter Neufert (2000). Ernst &amp; Peter Neufert Architect's Data, Edited by Bousmaha Baiche and Nicholas Walliman, 3rd Edition, Backwell Science</i></p> <p><i>[2] Francis D.K. Ching (2014), Building Construction Illustrated, 5th Ed., John Wiley &amp; Sons, Inc., Hoboken, New Jersey</i></p> <p><i>[3] Francis D.K. Ching, Steven P. Juroszek (2019) Design Drawing, 3rd Edition Wiley</i></p> <p><i>[4] Francis D.K. Ching (2003), Architectural graphics, 4th Ed., John Wiley &amp; Sons, Inc., New York.</i></p> <p><i>[5] Francis D.K. Ching (1995), A visual dictionary of architecture, John Wiley &amp; Sons, Inc., New York</i></p>



### III. SPECIALIZATION REQUIREMENT

#### 43. Construction Materials (CE210IU)

Module designation	<i>Construction Materials (Code: CE210IU)</i>
Semester(s) in which the module is taught	<i>1<sup>st</sup> or 2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Nguyen Dinh Hung</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>lecture, discussion, presentation, quiz</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 127.5 (Estimated)</i> <i>Contact hours:</i> <i>- lecture: 31.5</i> <i>- presentation: 0</i> <i>- quiz: 6</i> <i>Private study including examination preparation, specified in hours<sup>37</sup>: 90</i>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Mechanics of Materials 1</i>

<p>Module objectives/intended learning outcomes</p>	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>The course provides students with basic definitions, the physical, chemical and mechanical properties of various construction materials that are commonly used in civil engineering construction.</i></li> <li>• <i>Students are guided to be able to appreciate the criteria for choosing the appropriate materials and indigenous resources, and various tests to control the quality of these materials in applying for stability, durability, and saving of resources, and development of practices.</i></li> <li>• <i>The course raises awareness of using suitable materials based on their properties to protect a sustainable environment, economy, and cultural awareness towards the social and societal calls.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>Understand basic definitions, and physical, chemical, and mechanical properties of various construction materials for civil engineering. Students are explained, find themselves, or discuss the definition of each topic or property to clarify</i></li> <li>• <i>Classify types of construction material based on their advantages and disadvantages properties for civil engineering that are affected the quality of structures and the environment. Understanding the meaning of each property and how to apply in fact with sustainability.</i></li> <li>• <i>Evaluate the suitable quality of construction materials with sustainable criteria and determine properties of materials by equipment</i></li> <li>• <i>Design some mix proportions of some composite construction materials using local materials, industrial waste (fly ash, silica fume, Fluid catalytic cracking), and recycled materials such as types of Portland concrete, types of asphalt concrete, mortar, grout, composite materials with fibers and so on.</i></li> <li>• <i>Able to use social network technology to find material and its properties, and its application in civil engineering.</i></li> <li>• <i>Be aware of choosing construction materials for suitable purposes and economics in civil engineering. Construction materials cause problems for the environment. So, we have to consider choosing suitable materials to minimize the bad effects on the environment.</i></li> </ul>
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Content	<p><i>The course will introduce both conventional and modern construction materials that are commonly used in civil engineering construction. These are concrete, steel, asphalt concrete and other construction materials such as brick, mortar, grout, wood, fibers and so on. Properties of materials will be taught and discussed. Students will find out what properties are the advantages and disadvantages of materials. Therefore, material applications and detailing in structural and non-structural building components are explored. Construction materials should be harmonized to the environmental sustainability, resource durability, capitalizing on using local materials and less fee to strengthen and retrofit, using local materials also satisfy culture, economic and social justice. Resulting from this course, students will gain a comparative knowledge of material properties and possible applications in construction.</i></p>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Class attendance: 15%</i></li> <li>• <i>In-class activity: 7.5%</i></li> <li>• <i>Homework: 7.5%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 30%</i></li> <li>• <i>Final exam: 40%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Michael S. Mamlouk and John P. Zaniwski, Materials for Civil and Construction Engineers, Prentice Hall, 2005.</i></p> <p><i>[2]. Steven H. Kosmatka, Beatrix Kerckhoff, and William C. Panarese, Design and Control of Concrete Mixtures, 14th Ed., Portland Cement Association, 2008.</i></p> <p><i>[3] Neil Jackson and Ravindra K. Dhir, Civil engineering materials, 4th Ed, Palgrave Macmillan, 1996.</i></p> <p><i>[4] Phùng Văn Lự và các tác giả, Giáo trình vật liệu xây dựng, NXB Giáo dục, 2000.</i></p> <p><i>[5] Phạm Duy Hữu, Ngô Xuân Quảng và Mai Đình Lộc, Giáo trình Vật liệu xây dựng, NXB Giao Thông Vận Tải.</i></p>

#### 44. Hydrology – Hydraulics (CE211IU)

Module designation	<i>Hydrology – Hydraulics (Code: CE211IU)</i>
Semester(s) in which the module is taught	<i>1, 2</i>
Person responsible for the module	<i>Cabaltica Doliente Angeli, MSc.</i>
Language	<i>English</i>
Relation to curriculum	<i>Core Major (compulsory)</i>
Teaching methods	<i>Lecture, class discussion, computational quizzes, computer exercises, homeworks</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 127.5 Contact hours (lecture, class discussion, computation exercises, computer exercise):37.5 Private study including examination preparation, specified in hours<sup>38</sup>: 90</i>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>CE205IU Fluid Mechanics</i>
Module objectives/intended learning outcomes	<p><b><i>Module Objectives.</i></b> <i>This course aims to:</i></p> <ol style="list-style-type: none"> <li><i>1. provide students an understanding of the physical processes of the hydrological cycle;</i></li> <li><i>2. equip the students with computational skills involved in quantifying the physical processes of the hydrological cycle;</i></li> <li><i>3. fundamental knowledge in hydraulics of open channels; and</i></li> <li><i>4. equip the students with skills in analyzing and designing open channels.</i></li> </ol> <p><b><i>Course Learning Outcomes.</i></b> <i>Upon the successful completion of this course students will be able to:</i></p> <ol style="list-style-type: none"> <li><i>4. discuss the different physical processes of the hydrological cycle and how they are measured and estimated;</i></li> <li><i>5. analyze, interpret, process, and present hydrological data;</i></li> <li><i>6. construct a hydrological model;</i></li> <li><i>7. analyze and design open channels; and</i></li> <li><i>8. work professionally whether independently or in a team.</i></li> </ol>

<p>Content</p>	<p><i>This course provides students basic knowledge on hydrology and hydraulics, the fundamentals of water engineering, an important field in civil engineering.</i></p> <p><i>In the hydrology part of this course, the students will have a deeper understanding of the physical processes of the hydrological cycle, including an understanding of how human intervention through changes made in the environment can affect the hydrological characteristics of a catchment. The students will also learn a computer software to model the hydrology of a catchment.</i></p> <p><i>In the hydraulics part, the students will apply the basic principles learned from their basic fluid mechanics course in the analysis and design of open channels and other hydraulic structures.</i></p> <p><i>This course helps students understand basic engineering principles and enhance their analytic and problem-solving skills to address real life engineering problems. It has practical applications in the fields of water supply, hydropower, flood mitigation, and other related fields.</i></p>
<p>Examination forms</p>	<p><i>Written examinations: Midterm and Final Exams</i></p> <p><i>Type: Problem solving, discussion, identification</i></p>
<p>Study and examination requirements</p>	<p><b><i>Attendance:</i></b> <i>Students are expected to attend the lectures every week. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment.</i></p> <p><b><i>Computation exercises, quizzes (written or oral), and homeworks:</i></b> <i>are given regularly, whether individually or done by group, for the students to understand the concepts better and to improve their problem-solving skills.</i></p> <p><b><i>Examinations:</i></b> <i>A midterm exam will be given halfway through the semester and a final exam at the end. Students must have an overall score of at least 50/100 points to pass this course.</i></p>
<p>Reading list</p>	<p>[1] <i>Viessman, W. and Lewis, G. (2003). Introduction to Hydrology 5th Ed. New Jersey: Prentice Hall.</i></p> <p>[2] <i>Mays, L. (2004). Water Resources Engineering (Chapter 5 and Chapter 7). Asia: John Wiley and Sons.</i></p> <p>[3] <i>Bedient, P. and Huber, W. (1992). Hydrology and Floodplain Analysis 2nd ed. USA: Addison-Wesley.</i></p> <p>[4] <i>Chanson H. (2004). The Hydraulics of Open Channel Flow: An Introduction, 2nd Ed. Elsevier.</i></p>

#### 45. Water Supply Sewerage (CE306IU)

Module designation	<i>Water Supply &amp; Sewerage (Code: CE306IU)</i>
Semester(s) in which the module is taught	1, 2
Person responsible for the module	<i>Cabaltica Doliente Angeli, MSc.</i>
Language	<i>English</i>
Relation to curriculum	<i>Specialization (compulsory)</i>
Teaching methods	<i>Lecture, class discussion, computational quizzes, computer exercises, homeworks, group reports</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 127.5 Contact hours (lecture, class discussion, computation exercises, computer exercise):37.5 Private study including examination preparation, specified in hours<sup>39</sup>: 90</i>
Credit points	<b>3 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the module	<i>CE211IU Hydrology - Hydraulics</i>
Module objectives/intended learning outcomes	<p><b>Module Objectives.</b> <i>This course aims to:</i></p> <ol style="list-style-type: none"> <li>1. <i>provide the students the fundamentals of drinking water supply systems from the extraction of raw water from its sources to the distribution of treated water;</i></li> <li>2. <i>provide the fundamentals of sewerage systems, from learning the sources and impacts of wastewater to the different types of sewers and wastewater collection systems;</i></li> <li>3. <i>equip the students with knowledge involving the design of a simple water distribution system; and</i></li> <li>4. <i>equip the students with knowledge involving the design of sanitary sewers and stormwater sewers</i></li> </ol> <p><b>Course Learning Outcomes.</b> <i>Upon the successful completion of this course students will be able to:</i></p> <ol style="list-style-type: none"> <li>1. <i>discuss in detail the components of water supply systems and of sewerage systems;</i></li> <li>2. <i>perform the computations and decision-making involved in the design of community water supply system and in the design of sanitary and stormwater sewer;</i></li> <li>3. <i>construct a simple water distribution model using EPANET and a simple drainage system using SWMM; and</i></li> <li>4. <i>work professionally whether independently or in a team.</i></li> </ol>

Content	<p><i>The rapid rise in population and industrialization place an enormous challenge on the environment and the resources. This has resulted to an increase in demand for water supply and sewerage services.</i></p> <p><i>In this course the students will learn the basic structure of a community water supply as well as that of sewerage systems. They will learn and practice the computations and decision-making involved in the planning and design of these systems. Furthermore, they will be taught some computer softwares to model a simple water distribution system and a stormwater sewer system.</i></p> <p><i>This course helps students understand basic engineering principles and enhance their analytic and problem-solving skills to address real life engineering problems.</i></p>
Examination forms	<p><i>Written examinations: Midterm and Final Exams</i></p> <p><i>Type: Problem solving, discussion, identification</i></p>
Study and examination requirements	<p><b><i>Attendance:</i></b> <i>Students are expected to attend the lectures every week. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment.</i></p> <p><b><i>Computation exercises, quizzes (written or oral), homeworks, and reports:</i></b> <i>are given regularly, whether individually or done by group, for the students to understand the concepts better and to improve their problem-solving skills.</i></p> <p><b><i>Examinations:</i></b> <i>A midterm exam will be given halfway through the semester and a final exam at the end. Students must have an overall score of at least 50/100 points to pass this course.</i></p>
Reading list	<p>[5] <i>Terence J. McGhee (1991). Water Supply and Sewerage, 6th ed. McGraw-Hill, Inc.</i></p> <p>[6] <i>Jerry A. Nathanson (2008). Basic Environmental Technology: Water Supply, Waste Management and Pollution Control, 5th ed. Prentice Hall.</i></p> <p>[7] <i>Larry Mays (2001). Stormwater Collection Systems Design Handbook. McGraw-Hill, Inc.</i></p> <p>[8] <i>Walski T. M. et al. Water distribution modeling. Haestad Press, 2001.</i></p> <p>[9] <i>TCXDVN 33: 2006. Water Supply – Distribution System and Facilities Design Standard</i></p> <p>[10] <i>TCXDVN 51: 2008. Drainage and Sewerage - External Networks and Facilities. Design Standard</i></p>

#### 46. Reinforced Concrete 1 (CE304IU)

Module designation	<i>Reinforced Concrete 1 (Code: CE304IU)</i>
Semester(s) in which the module is taught	<i>3<sup>rd</sup></i>
Person responsible for the module	<i>Assoc. Prof. Cao Thanh Ngoc Tran</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>40</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Structural analysis – CE209IU</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• Basic design concepts: basic layout of concrete structures, loading; Basic material properties: concrete and reinforcing steel; Analysis of structures: limit state design, simplification of framed structures, moment redistribution; Analysis and design of flexural members; Shear; Bond and anchorage; Serviceability; One-way and two-way slabs; Compression members; Foundation: footings. Current building code and standards are referred to extensively in this course.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Identify and calculate loadings to reinforced concrete structures.</i></li> <li><i>• Design reinforced concrete structures under ultimate and serviceability limit states.</i></li> <li><i>• Design and analyze the reinforced concrete members: beam, column, one-way and two-way slabs, footings.</i></li> </ul>



Content	<p><i>Basic design concepts: basic layout of concrete structures, loading; Basic material properties: concrete and reinforcing steel; Analysis of structures: limit state design, simplification of framed structures, moment redistribution; Analysis and design of flexural members; Shear; Bond and anchorage; Serviceability; One-way and two-way slabs; Compression members; Foundation: footings. Current building code and standards are referred to extensively in this course</i></p>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Quizzes, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Mosley, W.H., Hulse, R. and Bungey, J.H., "Reinforced Concrete Design to EuroCode 2", 6th edition, Macmillan, London, 2007.</i></p> <p><i>[2] Eurocode 2: Design of Concrete Structures – Part 1-1: General rules and rules for buildings.</i></p>

## 47. Reinforced Concrete 2 (CE310IU)

Module designation	<i>Reinforced Concrete 2 (Code: CE310IU)</i>
Semester(s) in which the module is taught	<i>3<sup>rd</sup></i>
Person responsible for the module	<i>Assoc. Prof. Cao Thanh Ngoc Tran</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 127.5 (Estimated)</i> <i>Contact hours:</i> <i>- lecture: 28.5</i> <i>- Discussion: 9</i> <i>Private study including examination preparation, specified in hours<sup>41</sup>: 90</i>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Reinforced Concrete 1 – CE304IU</i>
Module objectives/intended learning outcomes	<i>Module objectives:</i> <ul style="list-style-type: none"> <li>• <i>Analysis and design of prestressed concrete members; beam; slabs. Analysis and design of composite slabs. Current building code and standards are referred to extensively in this course.</i></li> </ul> <i>Learning outcomes:</i> <ul style="list-style-type: none"> <li>• <i>Identify and calculate loadings to prestressed and composite structures.</i></li> <li>• <i>Design prestressed and composite structures under ultimate, serviceability and transfer limit states.</i></li> <li>• <i>Design and analyze the prestressed and composite members: simply supported beams, continuous beams and composite slabs</i></li> </ul>
Content	<i>Analysis and design of prestressed concrete members; beam; slabs. Analysis and design of composite slabs. Current building code and standards are referred to extensively in this course.</i>

<sup>41</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Quizzes, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Hurst, M.K., "Prestressed Concrete Design", 2nd edition.</i></p> <p><i>[2] Mosley, W.H., Hulse, R. and Bungey, J.H., "Reinforced Concrete Design to EuroCode 2", 6th edition, Macmillan, London, 2007.</i></p>

#### 48. Reinforced Concrete Project (CE313IU)

Module designation	<i>Reinforced Concrete Project (Code: CE313IU)</i>
Semester(s) in which the module is taught	<i>3<sup>rd</sup></i>
Person responsible for the module	<i>Assoc. Prof. Cao Thanh Ngoc Tran</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 67.5 (Estimated)</i> <i>Contact hours:</i> <i>- lecture: 37.5</i> <i>Private study including examination preparation, specified in hours<sup>42</sup>: 30</i>
Credit points	<i>1 credit/2.45 ECTS</i>
Required and recommended prerequisites for joining the module	<i>Reinforced Concrete 1 – CE304IU</i>
Module objectives/intended learning outcomes	<i>Module objectives:</i> <ul style="list-style-type: none"> <li>• <i>In this course, students are supposed to apply the knowledge in the courses of reinforced concrete design to this project composing of calculating loads, designing reinforced concrete beams, columns and slabs, preparing drawing and writing a report.</i></li> </ul> <i>Learning outcomes:</i> <ul style="list-style-type: none"> <li>• <i>Designing the structural layout of reinforced concrete building.</i></li> <li>• <i>Designing the details of beams, columns and slabs</i></li> <li>• <i>Performing the design in the calculation note, drawing, and defense.</i></li> </ul>
Content	<i>In this course, students are supposed to apply the knowledge in the courses of reinforced concrete design to this project composing of calculating loads, designing reinforced concrete beams, columns and slabs, preparing drawing and writing a report.</i>
Exams and assessment formats	<i>Class attendance: Compulsory</i> <i>Report and Drawings:</i> <ul style="list-style-type: none"> <li>• <i>Report: 50%</i></li> <li>• <i>Drawings: 50%</i></li> </ul>

Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Hurst, M.K., "Prestressed Concrete Design", 2nd edition.</i></p> <p><i>[2] Mosley, W.H., Hulse, R. and Bungey, J.H., "Reinforced Concrete Design to EuroCode 2", 6th edition, Macmillan, London, 2007.</i></p>

#### 49. Steel Structure (CE305IU)

Module designation	<i>STEEL STRUCTURES (Code: CE305IU)</i>
Semester(s) in which the module is taught	<i>5<sup>TH</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5(Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>43</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Mechanics of Materials 1 and Structural Analysis 1</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to</i></p> <ul style="list-style-type: none"> <li><i>• develop an understanding of Limit State Design as applied to structural steel beams based on the latest Euro Code 3 – Design of steel structures.</i></li> <li><i>• develop an understanding of Limit State Design as applied to structural steel columns and connections based on the latest Euro Code 3 – Design of steel structures.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Analyzing, interpreting, and designing steel structures based on National Codes.</i></li> <li><i>• Problem resolution. Systematically analyze the problem and apply the appropriate technique to solve the problem.</i></li> <li><i>• Work independently and professionally</i></li> </ul>

Content	<ul style="list-style-type: none"> <li>- <i>Introduction, material properties, limit state design, loading, and section classifications.</i></li> <li>- <i>Tension members</i></li> <li>- <i>Compression members: Its Behaviors, local and overall buckling, column slenderness and effective length concept.</i></li> <li>- <i>Local buckling of thin-plate elements</i></li> <li>- <i>In-plane bending of beams</i></li> <li>- <i>Lateral buckling of beams</i></li> <li>- <i>Beam-columns</i></li> <li>- <i>Introduction to moment connections of bolted end plate connections, beam and column splices.</i></li> </ul>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] Trahair, NS.; Bradford MA.; Nethercot DA. and Gardner, L. “The Behavior Design of Steel Structures to EC 3”, 4th Edition, Taylor and Francis, 2007.</i></p> <p><i>[2] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-1: Design of Steel Structures – General Rules and Rules for Buildings, British Standards Institution, London, UK.</i></p> <p><i>[3] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-5: Design of steel structures – Plated Structural Elements, British Standards Institution, London, UK.</i></p> <p><i>[4] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-8: Design of Steel Structures – Design of Joints, British Standards Institution, London, UK.</i></p> <p><i>Additional references:</i></p> <p><i>[5] Gardner, L. and Nethercot, D.A., “Designer’s Guide to Eurocode 3: Design of Steel Structures”, 3rd Edition, Thomas Telford, 2009.</i></p>

## 50. Steel Structure Project (CE312IU)

Module designation	<i>Steel Project (Code: CE312IU)</i>
Semester(s) in which the module is taught	<i>6<sup>th</sup></i>
Person responsible for the module	<i>MSc. Pham Nhan Hoa</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>lecture, project, and defense</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 67.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 3</i></li> <li><i>- checking: 34.5</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>44</sup>: 30</i></p>
Credit points	<b><i>1 credit/2.45 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Steel Structures – CE305IU</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• The overall objectives of this course are to develop an understanding of Limit State Design as applied to structural steel beams based on the latest Euro Code 3 – Design of steel structures.</i></li> <li><i>• The course aims to develop an understanding of Limit State Design as applied to structural steel columns and connections based on the latest Euro Code 3 – Design of steel structures..</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>(4) enhance problem solving skills using the software in civil engineering problems with SAP, ETABS, and EXCEL.</i></li> <li><i>(5) develop the self-learning with respect to other softwares of civil engineering students</i></li> <li><i>(6) Work independently and professionally</i></li> </ul>
Content	<i>In this course, students are supposed to apply the knowledge in the courses of construction engineering and construction management to this project composing of calculating loads for construction, designing formwork for column, slab and beam, safety measure, preparing the schedule of concrete frame construction (optional), and finally writing a report.</i>



Exams and assessment formats	<ul style="list-style-type: none"> <li>• Attendance: 30%</li> <li>• Report – Calculation note: 20%</li> <li>• Report - Drawing: 20%</li> <li>• Final defense: 30%</li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation, report, and defense.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] Trahair, NS.; Bradford MA.; Nethercot DA. and Gardner, L. “The Behavior Design of Steel Structures to EC 3”, 4th Edition, Taylor and Francis, 2007.</i></p> <p><i>[2] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-1: Design of Steel Structures – General Rules and Rules for Buildings, British Standards Institution, London, UK.</i></p> <p><i>[3] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-5: Design of steel structures – Plated Structural Elements, British Standards Institution, London, UK.</i></p> <p><i>[4] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-8: Design of Steel Structures – Design of Joints, British Standards Institution, London, UK.</i></p> <p><i>Additional references:</i></p> <p><i>[5] Gardner, L. and Nethercot, D.A., “Designer’s Guide to Eurocode 3: Design of Steel Structures”, 3rd Edition, Thomas Telford, 2009.</i></p>

## 51. Foundation Engineering (CE309IU)

Module designation	<i>Soil mechanics (Code: CE309IU)</i>
Semester(s) in which the module is taught	<i>3<sup>rd</sup></i>
Person responsible for the module	<i>Dr. Pham Nguyen Linh Khanh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>45</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Mechanics of Materials, Construction Materials</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>● <i>This course covers foundation analysis and design concepts for civil engineering students. Topics discussed in the courses include bearing capacity, settlement and structural design of shallow foundations and deep foundations, lateral earth pressure, retaining, and sheet pile walls. Moreover, the students will be introduced to the commercial software (e.g., Plaxis, Pier) that is broadly used in practices for foundation designs and exposed to case studies. Through this course, the students will have the background and basic skills to conduct the basic steps for foundation design, given various working conditions.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>● <i>Understand the concepts of foundation designs and failure mechanisms.</i></li> <li>● <i>Analyze the geotechnical investigation results.</i></li> <li>● <i>Conduct basic calculations (e.g., bearing capacity, settlement, and structural designs) for shallow and deep foundations and associated geotechnical infrastructure.</i></li> </ul>

Content	<p><i>The course provides to students some properties of soil, soil mechanics, Lateral earth pressure acting on structures, slope stability, bearing capacity of soil and settlement of structures above soil mechanics those are commonly used in civil engineering construction. Properties of soil include soil formation, physical properties of soil, soil classification, soil compaction, permeability and seepage. Soil mechanics consist of in situ stress, stress in a soil mass, compressibility of soil and shear strength of soil. Lateral earth pressures is expressed by pressure at rest based on Rankine and Coulomb, and curved failure surface</i></p>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>● <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>● <i>Midterm exam: 20%</i></li> <li>● <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Braja M. Das, Principles of Geotechnical Engineering, 7th Edition, CL - Engineering, 2005.</i></p> <p><i>[2] Braja M. Das, Introduction to Geotechnical Engineering, 1st Edition, CL - Engineering, 2008.</i></p> <p><i>[3] Châu Ngọc Ân, Cơ học đất, 5th Edition, HoChiMinh City Vietnam National University, 2012.</i></p>

## 52. Foundation Project (CE402IU)

Module designation	<i>Foundation Engineering Project (Code: CE402IU)</i>
Semester(s) in which the module is taught	<i>4<sup>th</sup></i>
Person responsible for the module	<i>Dr. Pham Nguyen Linh Khanh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Discussion and project.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 67.5 (Estimated) Contact hours: 28.5 - Discussion: 9 Private study including examination preparation, specified in hours<sup>46</sup>: 30</i>
Credit points	<i>1 credit/2.45 ECTS</i>
Required and recommended prerequisites for joining the module	<i>Foundation Engineering – CE309IU</i>
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> <li>• <i>The overall objectives of this course are to develop an understanding of foundation engineering design issues in a professional substructure design project that will merge knowledge gained in prerequisite geotechnical and foundation engineering courses. After this course, students will gain proficiency in structural conceptualization, induced load determination, modeling and analysis, detailed design of substructure, and graphical communication.</i></li> </ul>
Content	<i>This course provides an organizational and procedural understanding of geotechnical and foundation engineering. Topics covered in this course include subsurface soil investigation and integrated design of building foundations. In addition, this class will equip students with the knowledge necessary to apply geotechnical and foundation principles in analyzing and designing an economic substructure system.</i>
Exams and assessment formats	<ul style="list-style-type: none"> <li>• <i>Report/ Presentation: 100%</i></li> </ul>

Study and examination requirements	<i>Student is expected that you will spend at least 5 hours per week on 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.</i>
Reading list	<i>[1] Das, B. M. (2015). Principles of Foundation Engineering (7th Ed.). Cengage Learning. [2] Donald P. Coduto, Foundation Design Principles and Practices, 2nd, edition, Prentice Hall, 2001. [3] Joseph E. Bowles, Foundation Analysis and Design, 5th edition..</i>

### 53. Construction Engineering (CE311IU)

Module designation	<i>Construction Engineering (Code: CE311IU)</i>
Semester(s) in which the module is taught	<i>1<sup>st</sup></i>
Person responsible for the module	<i>Dr. Nguyen Hoai Nghia</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>lecture, discussion, presentation, quiz</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- presentation: 3</i></li> <li><i>- quiz: 6</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>47</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• are to equip CE students with knowledge about construction engineering, including earthwork, foundation construction, wood construction, concrete construction, masonry construction, and steel construction.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• To know the construction industry and its related matter</i></li> <li><i>• To caculate the earthwork volume and knowing earthwork construction methodology</i></li> <li><i>• To calculate the volume and knowing various construction methodology of various construction works such as: foundation, masonry, concrete works, ...</i></li> </ul>
Content	<i>This course is designed to provide students knowledge about construction engineering, including earthwork, foundation construction, wood construction, concrete construction, masonry construction, and steel construction.</i>

Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Quiz: 10%</i></li> <li>• <i>Homework, Team project: 20%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] S. W. Nunnally, (2014). Construction Methods and Management, Pearson, 8th edition.</i></p> <p><i>[2] R. L. Peurifoy, C. J. Schexnayder, R. L. Schmitt, and A. Shapira. (2018). Construction Planning, Equipment, and Methods, McGraw-Hill Education 9th edition.</i></p>

#### 54. Construction Management (CE401IU)

Module designation	<i>Construction Management (Code: CE401IU)</i>
Semester(s) in which the module is taught	<i>1<sup>st</sup>, 2<sup>nd</sup></i>
Person responsible for the module	<i>Phạm Văn Bảo (Msc)</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, presentation, discussion, and assignments</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 Private study including examination preparation, specified in hours: 90</i>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Construction Engineering</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>is to provide a basic understanding and application of construction operations and construction management and a basic understanding of construction project management.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>To understand construction documents: drawings, technical specifications, quantity takeoff, and various construction contract forms.</i></li> <li>• <i>To understand equipment ownership, construction safety, material management, and cost control.</i></li> <li>• <i>To test the application of calculation methods in construction planning &amp; scheduling, project cash flow, construction labor, cost control, and estimating process.</i></li> <li>• <i>To work independently and professionally</i></li> </ul>
Content	<i>This course is designed to provide students with knowledge about construction management, including History and basic concepts, Preparing the bid package, Issues during the construction phase, Construction contracts, Project planning, Project scheduling, Scheduling – PERT Networks and linear operations, Project cash flow and funding, Equipment Ownership, Construction labor, Estimating process, Cost control, Materials management and safety</i>



Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Quiz: 10%</i></li> <li>• <i>Homework, Team project: 20%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] D. W. Halpin (2006), "Construction Management" Third Edition, Wiley &amp; Sons</i></p> <p><i>Additional references:</i></p> <p><i>[2] Barry Fryer and Marilyn Fryer (1996), The practice of construction management, 3rd Edition, Blackwell Science</i></p> <p><i>[3] W.J. Slater (2005), Cases in construction management, Taylor &amp; Francis e-Library.</i></p>

## 55. Construction Project (CE403IU)

Module designation	<i>Construction Project (Code: CE403IU)</i>
Semester(s) in which the module is taught	<i>2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Nguyen Hoai Nghia</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>lecture, project, and defense</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 67.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 3</i></li> <li><i>- checking: 34.5</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>48</sup>: 30</i></p>
Credit points	<b><i>1 credit/2.45 ECTS</i></b>
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• are to equip CE students with skills of using knowledge about construction engineering to design construction methodology for concrete and foundation works.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>(7) To design the construction formwork system for the concrete structure and the construction methodology.</i></li> <li><i>(8) To design the construction methodology for the sub-structure, including: pressed piles, bored piles, pile caps (individually).</i></li> <li><i>(9) To perform the design in the calculation note, drawing, and defense.</i></li> </ul>
Content	<i>In this course, students are supposed to apply the knowledge in the courses of construction engineering and construction management to this project composing of calculating loads for construction, designing formwork for column, slab and beam, safety measure, preparing the schedule of concrete frame construction (optional), and finally writing a report.</i>

Exams and assessment formats	<ul style="list-style-type: none"> <li>• <i>Attendance: 30%</i></li> <li>• <i>Report – Calculation note: 20%</i></li> <li>• <i>Report - Drawing: 20%</i></li> <li>• <i>Final defense: 30%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation, report, and defense.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] S. W. Nunnally, (2014). Construction Methods and Management, Pearson, 8th edition.</i></p> <p><i>[2] R. L. Peurifoy, C. J. Schexnayder, R. L. Schmitt, and A. Shapira. (2018). Construction Planning, Equipment, and Methods, McGraw-Hill Education 9th edition.</i></p>

### III.1.CE ELECTIVE (9 of 12 Crds)

#### 56. Bridges Engineering (CE406IU)

Module designation	<i>Bridge Engineering (Code: CE406IU)</i>
Semester(s) in which the module is taught	<i>1<sup>st</sup> or 2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Nguyen Dinh Hung</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>lecture, discussion, presentation, quiz</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 31.5</i></li> <li><i>- presentation: 0</i></li> <li><i>- quiz: 6</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>49</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<p><i>Construction materials,</i></p> <p><i>Reinforced concrete 1, Reinforced concrete 2</i></p>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li><i>• The course will help the students to develop an understanding of an appreciation for basic concepts in proportioning and design of bridges in terms of aesthetics, geographical location, and functionality. It also helps the student develop an intuitive feeling about the sizing of bridge elements, i.e. developing a clear understanding of conceptual design. The students will understand the load flow mechanism and identify loads on bridges and carry out a design of bridge starting from conceptual design, selecting suitable bridge, geometry to sizing of its elements.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Understand basic definitions and design loads acting on bridge structures</i></li> <li><i>• Determine moment and shear forces at design states acting on any sections caused by design loads.</i></li> <li><i>• Design component structures of concrete bridges.</i></li> <li><i>• Be aware of design in the economy, technology, and architecture.</i></li> </ul>

Content	<p><i>The course will introduce a modern method of highway bridge analysis, design, and evaluation based on TCVN 11823:2017 that is referred by on American Association of State Highway and Transportation Officials LRFD Bridge Design Specification, 8th edition 2017. Course topics will include types of bridges, site design overview, Highway bridge loading, bridge analysis, bridge deck slab, prestressed concrete bridge design, and substructures design.</i></p>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Class attendance: 15%</i></li> <li>• <i>In-class activity: 7.5%</i></li> <li>• <i>Homework: 7.5%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 30%</i></li> <li>• <i>Final exam: 40%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] American Association of State Highway and Transportation Officials LRFD Bridge Design Specification, 8th edition 2017.</i></p> <p><i>[2] TCVN 11823-1:2017: Highway Bridge Design Specification, 2017</i></p> <p><i>Additional references:</i></p> <p><i>[3] Ed. Wai-Fah Chen and Lian Duan, Bridge Engineering Handbook, Boca Raton: CRC Press, 2000</i></p> <p><i>[4] Ed. Wai-Fah Chen and Lian Duan, Bridge Engineering, Substructure design, 2003 by Taylor &amp; Francis Group</i></p>

### 57. Dynamics of Structures (CE404IU)

Module designation	<i>DYNAMICS OF STRUCTURES (Code: CE404IU)</i>
Semester(s) in which the module is taught	<i>7<sup>TH</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>50</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<i>Engineering Mechanics – Dynamics, Structural Analysis 2</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to</i></p> <ul style="list-style-type: none"> <li><i>• to develop the fundamental concepts of structural dynamics.</i></li> <li><i>• to develop analytical and problem solving skills for free and forced vibrations of single and multiple degree of freedom structures under dynamic loading including earthquake, wind and blast loading.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Developing the fundamental concepts of structural dynamics.</i></li> <li><i>• Developing analytical and problem solving skills for free and forced vibrations of single and multiple degree of freedom structures under dynamic loading including earthquake, wind and blast loading.</i></li> <li><i>• Problem resolution. Systematically analyze the problem and apply the appropriate technique to solve the problem.</i></li> <li><i>• Work independently and professionally</i></li> </ul>

<sup>50</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<p><i>SINGLE DEGREE OF FREE DOOM</i></p> <ul style="list-style-type: none"> <li>- <i>Overview</i></li> <li>- <i>Analysis of free vibration</i></li> <li>- <i>Reponse to harmonic loading</i></li> <li>- <i>Response to periodic loading</i></li> <li>- <i>Response to impulsive loading</i></li> </ul> <p><i>MULTI-DEGREE OF FREE DOOM</i></p> <ul style="list-style-type: none"> <li>- <i>Undamped free vibration</i></li> <li>- <i>Dynamic analysis and response of linear systems</i></li> </ul>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Homework, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>Textbooks:</i></p> <p><i>[1] R.W.Clough, J.Penzien, Dynamics of Structures, 3th edition, Computers &amp; Structures Inc., 1995</i></p> <p><i>[2] A. K. Chopra, Dynamics of Structures - Theory and Applications to Earthquake Engineering, 3th edition, Pearson Prentice Hall, 2007</i></p>

## 58. Hydraulics Structures (CE405IU)

Module designation	<i>Hydraulic Structures (Code: CE405IU)</i>
Semester(s) in which the module is taught	<i>7<sup>th</sup></i>
Person responsible for the module	<i>Assoc. Prof. Pham Ngoc</i>
Language	<i>English</i>
Relation to curriculum	<i>Elective</i>
Teaching methods	<i>Lecture, lesson, project, seminar.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 127.5 (Estimated) Contact hours: 37.5 Private study including examination preparation, specified in hours<sup>51</sup>: 90</i>
Credit points	<b>3 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the module	<i>CE205IU (Fluid Mechanics) and CE211IU (Hydrology and Hydraulic)</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>Provide technical procedures, and will be practiced to design sustainable hydraulic structures, targeting to sustainable water resources engineering and water related disaster prevention structures.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>Recognize and describe the different type of hydraulic structures together with their functions, and application conditions</i></li> <li>• <i>Propose the structural measures for sustainable water resources development in a sustainable approach harmonizing technical, social, economic and environmental criteria</i></li> <li>• <i>Design some common the hydraulic structures by integrating the fundamental knowledge and skills studied previously, and the concept of sustainable development</i></li> <li>• <i>Present skills in teamwork, communication, planning, critical thinking, use of English in technical environment, identification and solving the real problems</i></li> </ul>



Content	<p><i>Water demand for economic development is dramatically increasing; but available water resources is limited. Recently, it tends to be declining as the result of climate change and man-made pollutant. Therefore, a sustainable approach for water resources development and protection is needed. This module will offer students the knowledge to design of some typical hydraulic structures supporting for sustainable water resources engineering.</i></p> <p><i>In this module, the application of fluid mechanics, hydrology and open channel hydraulics for designing some common types of water infrastructures are introduced and practiced, which includes storage structures, control structures, energy dissipation structures, coastal protection structures and so forth.</i></p> <p><i>Beside of those conventional procedures, students also are provided the sustainable solutions and environmental impact assessment (EIA) practices for the typical structures, which strongly impact on society and natural environment, such as: dam, hydro-power plants, urban drainage systems, and so forth</i></p>
Exams and assessment formats	<p><i>Progress assessment (30%GPA):</i></p> <ul style="list-style-type: none"> <li>• <i>Attendance/Quizzes in class: 10%</i></li> <li>• <i>Homeworks/Assignments: 5%</i></li> <li>• <i>Field trip: 5%</i></li> <li>• <i>Group project and presentation: 10%</i></li> </ul> <p><i>Exams:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm Exam: 30%GPA</i></li> <li>• <i>Final Exam: 40%GPA</i></li> </ul>
Study and examination requirements	<p><i>Attendance: 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.</i></p> <p><i>Assignments/Examination: Students must have GPA more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><b><u>Textbooks:</u></b></p> <p><i>[1] Novak P., Moffat A.I.B., Nalluri C, and Narayanan, Hydraulic structures (4th Edition), Taylor &amp; Francis Group. 2007.</i></p> <p><b><u>Additional references:</u></b></p> <p><i>[2] Larry W. Mays, Hydraulic design handbook, MacGraw - Hill Companies, 2004</i></p> <p><i>[3] Khatsuria R.M, Hydraulic of spillways and energy dissipaters. Marcel Dekker, 2005.</i></p> <p><i>[4] QCVN 04-05: 2012/BNNPTNT “Quy chuẩn kỹ thuật quốc gia công trình thủy lợi – các quy định chủ yếu về thiết kế ”</i></p> <p><i>[5] Tiêu chuẩn ngành 14TCN157-2005 “Tiêu chuẩn thiết kế đập đất đầm nén”</i></p> <p><i>[6] Bộ Nông nghiệp và Phát triển Nông thôn. “Tiêu chuẩn kỹ thuật thiết kế đê biển”. 2012</i></p>

### 59. Tall Buildings (CE407IU)

Module designation	<i>Tall Buildings (Code: CE407IU)</i>
Semester(s) in which the module is taught	<i>4<sup>th</sup></i>
Person responsible for the module	<i>Assoc. Prof. Cao Thanh Ngoc Tran and Dr. Pham Nguyen Linh Khanh</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 127.5(Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 28.5</i></li> <li><i>- Discussion: 9</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>52</sup>: 90</i></p>
Credit points	<b><i>3 credits/4.64 ECTS</i></b>
Required and recommended prerequisites for joining the module	<p><i>Reinforced Concrete 2 – CE407IU</i></p> <p><i>Foundation Engineering – CE309IU</i></p> <p><i>Foundation Project – CE402IU</i></p>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <ul style="list-style-type: none"> <li>• <i>The course aims at the development of ability for design of high-rise buildings. It offers the student with an opportunity to gain real life design experience, and to develop the ability to identify and solve civil engineering problems in a feasible and creative way, and to apply design procedures, codes of practice and computer software to design conventional steel and concrete high-rise buildings.</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li>• <i>Identify and calculate lateral loadings to superstructures of tall buildings.</i></li> <li>• <i>Calculate the lateral loading to each structural member.</i></li> <li>• <i>Conduct basic calculations on various foundation designs and supporting structures</i></li> </ul>

Content	<p><i>The course aims at the development of ability for design of high-rise buildings. It offers the student with an opportunity to gain real life design experience, and to develop the ability to identify and solve civil engineering problems in a feasible and creative way, and to apply design procedures, codes of practice and computer software to design conventional steel and concrete high-rise buildings</i></p>
Exams and assessment formats	<p><i>Class attendance:</i></p> <ul style="list-style-type: none"> <li>• <i>Quizzes, Attendance: 30%</i></li> </ul> <p><i>Exam:</i></p> <ul style="list-style-type: none"> <li>• <i>Midterm exam: 20%</i></li> <li>• <i>Final exam: 50%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</i></p> <p><i>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] Taranath, B.S. 2012, Reinforced Concrete Design of Tall Buildings, CRC Press, Boca Raton, FL.</i></p> <p><i>[2] Das, B. M. (2015). Principles of Foundation Engineering (7th ed.). Cengage Learning</i></p> <p><i>[3] Brown, R. W. (2001). Practical foundation engineering handbook. McGraw-Hill Education</i></p>

## 60. Advanced Artificial Intelligence In Civil Engineering And Construction Management (CE412IU)

Course designation	The objective of this course is to provide the students with the advanced information of machine learning (ML) and analysis tools with their applications in civil engineering (CE) and construction management (CM). The course will emphasize on 1) traditional supervised algorithms such as support vector machines, 2) ensemble machine learning algorithms including bagging and boosting, 3) deep learning algorithms such as convolution neural networks, 4) fundamentals of tools used to handle large-scale data, and 5) tools used to handle ML algorithms. Fundamentals of these algorithms and tools and their applications in different problems related to CE and CM will be covered along with a course project.
Semester(s) in which the course is taught	
Person responsible for the course	<i>Nguyễn Bá Quang Vinh (PhD)</i>
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, presentation, discussion, and assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 Private study including examination preparation, specified in hours <sup>53</sup> : 90
Credit points	3 credits/ <b>4.64 ECTS</b>
Required and recommended prerequisites for joining the course	Calculus, Mechanics of Material 1, Artificial Intelligence In Civil Engineering And Construction Management

<sup>53</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	<p>The aim of this course is to</p> <ul style="list-style-type: none"> <li>- Recognizing problems in CE and CM that AI can be applied.</li> <li>- Have the ability to formulate the problems.</li> <li>- Analyzing and solving the problems using AI tools.</li> <li>- Conducting case study to utilize AI for solving practical problems in CE or CM.</li> <li>- Evaluating the impacts and limitations of different schemes</li> </ul>																								
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>           CLO1. an ability to understand the basic concepts in the field.             CLO2. an ability to apply mathematics and AI tools to solve CE and CM problems         </td> </tr> <tr> <td>Skill</td> <td>           CLO3. an ability to design and conduct experiments, to analyze and interpret CE and CM data, as well as to clean data to apply AI.             CLO4. an ability to identify, formulate, and solve CE or CM problems by means of ML.         </td> </tr> <tr> <td>Attitude</td> <td>CLO5. Work independently and professionally.</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. an ability to understand the basic concepts in the field.  CLO2. an ability to apply mathematics and AI tools to solve CE and CM problems	Skill	CLO3. an ability to design and conduct experiments, to analyze and interpret CE and CM data, as well as to clean data to apply AI.  CLO4. an ability to identify, formulate, and solve CE or CM problems by means of ML.	Attitude	CLO5. Work independently and professionally.																
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Course project	3	T, U																							
Examination forms	Constructed-response test																								

Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have GPA more than 50/100 points overall to pass this course.</p>
Reading list	<p><b><u>Textbooks:</u></b></p> <p>[1] Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <a href="http://www.deeplearningbook.org/">http://www.deeplearningbook.org/</a>)</p> <p>[2] Hands-on Machine Learning with Scikit-Learn &amp; Tensorflow, Aurelien Geron, O'Reilly, 2017.</p> <p><b><u>Additional references:</u></b></p> <p>[1] <input type="checkbox"/> Hands-on Machine Learning with Scikit-Learn &amp; Tensorflow, Aurelien Geron, O'Reilly, 2017.</p>

## 61. GIS Applications in Civil Engineering (CE413IU)

Course designation	<p><b>CE413IU</b> is a practical GIS course with particular reference to applications in Civil Engineering.</p> <p>This course does not require prior knowledge of GIS. The first part of the course will include introductory concepts and will cover basic topics in GIS including data types and common GIS processing and analysis tools, thematic mapping, etc. In the second part of the course, GIS procedures and techniques that are relevant to Civil Engineering will be covered through a series of case studies and exercises.</p>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Cabaltica Doliente Angeli, <i>MSc.</i>
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, class discussion, computer exercises
Workload (incl. contact hours, self-study hours)	<p>(Estimated) Total workload: 135</p> <p>Contact hours (lecture, class discussion, computer exercise): 45</p> <p>Private study including examination preparation, specified in hours<sup>54</sup>: 90</p>
Credit points	3 credits/ <b>4.64 ECTS</b>
Required and recommended prerequisites for joining the course	<p>Recommended:</p> <p>CE307IU Surveying</p>
Parallel course	
Course objectives	<p>This course aims to:</p> <ul style="list-style-type: none"> <li>- introduce students to GIS and its applications in civil engineering</li> <li>- make students learn spatial data handling, analysis and presentation</li> </ul>

<sup>54</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon successful completion of this course, students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. create, acquire, and display spatial data GIS datasets	
	Skill	CLO2. use GIS tools to analyse spatial data CLO3. perform modelling, analysis and presentation for different GIS applications in civil engineering	
Attitude			
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (2 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p>		
	Topic	Weight	Level
	1. Basic introduction to GIS concepts	1	I,T
	2. Projections and Coordinate Systems	1	I,T,U
	3. Common GIS data types	1	I, T, U
	4. Symbolizing features	1	I, T, U
	5. Acquiring spatial data, Digitization	1	I, T, U
	6. Spatial Operations	2	I, T, U
	7. Spatial Analysis	2	I, T, U
	8. Map making	1	I, T, U
	9. Case Studies & Exercises	5	U
Examination forms	<p>Written examinations: Midterm and Final Exams</p> <p>Type: Constructed response test</p>		



<p>Study and examination requirements</p>	<p><b>Attendance:</b> Students are expected to attend the lectures every week. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment.</p> <p><b>Computer exercises:</b> are given regularly for the students to understand the concepts better and to improve their problem-solving skills.</p> <p><b>Examinations:</b> A midterm exam will be given halfway through the semester and a final exam at the end. Students must have an overall score of at least 50/100 points to pass this course.</p>
<p>Reading list</p>	<p>References</p> <p>[1] Bernhardsen, Tor. <i>Geographic information systems: An introduction</i>. New York: John Wiley &amp; Sons, 2001.</p> <p>[2] Paul A. Longley, Michael F. Goodchild, David J. Mauire, David W. Rhind. <i>Geographic Information Systems and Science</i>, John Wiley &amp; Sons, 2005.</p>

## 62. Construction Project Management (CE414IU)

Module designation	<b>CE414IU – Construction Project Management</b> In this course, students will study roles, responsibilities, and authority of project participants. They also study how to manage project participants, material, safety, waste, and environment. The jobsite layout design and control are also a part of the course.
Semester(s) in which the module is taught	3
Person responsible for the module	Dr. Nguyen, Hoai Nghia, MSc. Nguyen, Pham Duy Phuong
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, presentation, and assignments.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours <sup>55</sup> : 90
Credit points	3 credits/ <b>4.64 ECTS</b>
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	<b>Overall objectives</b> are to equip IU students with knowledge of jobsite management including jobsite layout design and control; labor management, material management, safety management, waste management, and environment management; and meeting skills.  Students who complete the course will be able to perform the following tasks:  (10) Having knowledge of project participants' roles, responsibilities, and authority (11) Having enhanced ability to design and control jobsite layout (12) Manage labor, material, safety, waste, and environment.

<sup>55</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td><b>Construction project team</b></td> <td>2</td> <td>I</td> </tr> <tr> <td><b>Jobsite layout and control</b></td> <td>3</td> <td>T, U</td> </tr> <tr> <td><b>Meeting, negotiations, and dispute resolution</b></td> <td>2</td> <td>T</td> </tr> <tr> <td><b>Jobsite labor relations and control</b></td> <td>2</td> <td>T</td> </tr> <tr> <td><b>Material management</b></td> <td>1</td> <td>T</td> </tr> <tr> <td><b>Personnel and safety management</b></td> <td>3</td> <td>T</td> </tr> <tr> <td><b>Waste and environmental management and sustainable construction practices</b></td> <td>2</td> <td>T</td> </tr> </tbody> </table>	Topic	Weight	Level	<b>Construction project team</b>	2	I	<b>Jobsite layout and control</b>	3	T, U	<b>Meeting, negotiations, and dispute resolution</b>	2	T	<b>Jobsite labor relations and control</b>	2	T	<b>Material management</b>	1	T	<b>Personnel and safety management</b>	3	T	<b>Waste and environmental management and sustainable construction practices</b>	2	T
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Examination forms	Constructed-response test																								
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</p>																								
Reading list	<p>Textbook:</p> <p>[1] Minks, W.R. and Johnston, H. (2017). <i>Construction Jobsite Management</i>, 4th ed. Boston: Cengage Learning.</p> <p>[2] Thomas, H.R. and Ellis, R.D. Jr. (2017). <i>Construction Site Management and Labor Productivity Improvement</i>, Virginia: ASCE Press.</p> <p>References:</p> <p>[1] Howarth, T. and Greenwood, D. (2018). <i>Construction Quality Management – Principle and Practice</i>, 2nd ed. New York: Routledge.</p> <p>[2] Fisk, E.R. and Reynolds, W.D. (2014). <i>Construction Project Administration</i>, 10th ed. New Jersey: Pearson</p>																								

### 63. Building Information Management (CM310IU)

<b>Course designation</b>	Face to Face
<b>Semester(s) in which the course is taught</b>	Semester V and/or Semester VI
<b>Person responsible for the course</b>	Dr Nguyễn Văn Tiếp Dr Nguyễn Bá Quang Vinh Dr Phạm Thanh Tùng
<b>Language</b>	English
<b>Relation to curriculum</b>	Compulsory
<b>Teaching methods</b>	Student-centred approach
<b>Workload (incl. contact hours, self-study hours)</b>	(Estimated) Total workload: 127.5 hours Contact hours (lecture, in class discussions): 37.5 hours Private study including examination preparation, specified in hours <sup>56</sup> : 90
<b>Credit points</b>	3 credits/4.64 ECTS
<b>Required and recommended prerequisites for joining the course</b>	N/A
<b>Course objectives</b>	The aim of the course is to provide students with the insight of Building Information Modeling and its development. The applications of BIM in different partnerships of construction industry are also provided.

<sup>56</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

<b>Course learning outcomes</b>	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1. Have sufficient knowledge regarding BIM fundamentals and its historical development stages CLO2. Have acquired well-founded knowledge regarding applications of BIM with the involvements of stakeholders including owners, architects, engineers, contractors, subcontractors, and fabricators
	Skills	CL03. conduct construction management research, analyze, and interpret BIM data, and use engineering judgments to draw conclusions
<b>Content</b>	The course will provide students with knowledge in terms of characteristics of Building Information Modeling and its application in construction industry.	
<b>Examination forms</b>	Quiz Presentation Multiple choice questions Case-based exams	

**Study and examination requirements**

**Requirements for successfully passing the module:**

To pass this course, the students must:

- Achieve a composite mark of at least 50; and
- Make a satisfactory attempt at all process assessment tasks.

**GRADING POLICY**

Grades can be based on the following:

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Quiz	10
	A1.2 Presentation	10
	A1.3 Attendance	10
A2. Midterm assessment	A2.1 Mid-term exam	20
A3. Final assessment	A3.1 Final exam	50

**COURSE POLICIES**

**Attendance**

Regular and punctual attendance at lectures and seminars is expected in this course. University regulations indicate that if students attend less than eighty percent of scheduled classes, they may be refused final assessment. Exemptions may only be made on eligible medical grounds.

**Workload**

It is expected that the students will spend at least *six* hours per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where they need to complete assignments or prepare for examinations, the workload may be greater.

Over-commitment has been a cause of failure for many students. They should take the required workload into account when planning how to balance study with part-time jobs and other activities.

**General Conduct and Behaviour**

The students are expected to conduct themselves with consideration and respect for the needs of fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as ringing or talking on mobile phones, is not acceptable and students will be asked to leave the class. The use of laptops is also encouraged during law lessons only to search for materials online. More

	<p>information on student conduct is available on <a href="#">the university webpage</a>.</p> <p><b>Keeping informed</b></p> <p>The students should take note of all announcements made in lectures or on the course’s Blackboard, and another announced mean of communications. From time to time, the university will send important announcements to their university e-mail addresses without providing a paper copy. The students will be deemed to have received this information.</p> <p><b>Academic honesty and plagiarism</b></p> <p>Plagiarism is the presentation of the thoughts or work of another as one’s own. Students are also reminded that careful time management is an important part of the study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items. The university regards plagiarism as a form of academic misconduct and has very strict rules regarding plagiarism.</p> <p><b>Special consideration</b></p> <p>Requests for special consideration (for final examination only) must be made to the Office of Academic Affairs within one week after the examination. General policy and information on special consideration can be found at the Office of Academic Affairs. Absence on the Mid-term is not allowed, or in special cases approved by Lecturer can be replaced with relevant Assignment.</p> <p><b>Meeting up with the lecturers after classes</b></p> <p>Students must make an appointment via emails if they want to meet up with the lecturer after classes and be on time. If there are any changes to the scheduled time, students must inform the lecturer immediately.</p>
<p><b>Reading list</b></p>	<p><b>Textbooks:</b></p> <ol style="list-style-type: none"> <li>1. Eastman, C., Teicholz, P., Sacks, R., and Liston, K. (2011). A guide to Building Information Modeling for Owners, Managers, Designers, Engineers, and Contractors, 2nd ed. New Jersey: John Wiley &amp; Sons.</li> <li>2. Holzer, D. (2015). The BIM Manager’s Handbook: Guidance for professionals in architecture, engineering, and construction. West Sussex: John Wiley &amp; Sons.</li> </ol> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Dzambazova, T, Krygiel, E., and Demchak, G. (2009). Introducing Revit Architecture 2010 – BIM for beginners. New Jersey: John Wiley &amp; Sons.</li> </ol>

#### 64. Construction Measurement And Cost Estimating (CM202IU)

Course name	CM202IU – Construction Measurement And Cost Estimating CM202IU – Đo bóc khối lượng và ước tính chi phí
Module designation	In this course, students will study about quantity measurement and cost estimation. The measured quantity is used to estimate construction cost and developed procurement and contract documents.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:.....</i>
Semester(s) in which the module is taught	4
Person responsible for the module	Dr. Nguyen, Hoai Nghia
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, presentation, and assignments.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (lecture, exercise, laboratory session, etc.): 37.5 Private study including examination preparation, specified in hours <sup>57</sup> : 90
Credit points	<b>3 credits (Theory: 03 + Practice: 00)</b> <b>4.64 ECTS</b>
Number of periods	<b>Theory: 45</b> <b>Practice: 00</b>
Required and recommended prerequisites for joining the module	- Prerequisites: - Corequisites: - Previous course: Construction Material (CE210IU), Reinforced Concrete 1 (CE304IU), Introduction to Construction Management
Module objectives/intended learning outcomes	<b>Overall objectives</b> Upon successful completion of this course, the students should be able to demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Roles of quantity surveyors and construction industry.</li> </ul>

<sup>57</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.



	<ul style="list-style-type: none"> <li>• Measurement and quantification.</li> <li>• Construction cost estimating.</li> </ul> <p>Students who complete the course will be able to perform the following tasks:</p> <p>(13) Understand roles of quantity surveyors and construction industry.</p> <p>(14) Be able to measure and quantify construction quantity</p> <p>(15) Be able to estimate construction</p>																		
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Quantity surveyors and construction industry</td> <td>2</td> <td>I</td> </tr> <tr> <td>Measurement and quantification</td> <td>6</td> <td>T</td> </tr> <tr> <td>Forecasting costs and value</td> <td>4</td> <td>T</td> </tr> <tr> <td>Pricing and tendering</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Related Vietnamese laws and regulations</td> <td>1</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Quantity surveyors and construction industry	2	I	Measurement and quantification	6	T	Forecasting costs and value	4	T	Pricing and tendering	2	T, U	Related Vietnamese laws and regulations	1	T, U
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Pricing and tendering	2	T, U																	
Related Vietnamese laws and regulations	1	T, U																	
Examination forms	Constructed-response test																		
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</p>																		
Reading list	<p>Textbook:</p> <ul style="list-style-type: none"> <li>• [Duncan Cartlidge, Quantity Surveyor's Pocket Book, 2009, 1<sup>st</sup> edition.</li> <li>• Parviz F. Rad, Project Estimating and Cost Management, 2002.</li> <li>• Sean D.C. Ostrowski, Measurement Using the New Rules of Measurement, 2013, 1<sup>st</sup></li> </ul>																		

## 65. Construction Procurement and Tendering

Course name	- (in English): <i>Construction Procurement and Tendering</i> - (in Vietnamese): <i>Đấu thầu và mua sắm</i>
Course designation	<b>CM302IU – CONSTRUCTION PROCUREMENT AND TENDERING</b>  This course is designed to provide students knowledge about procurement methods in construction projects. The advantages and disadvantages, procedures, and application of different procurement methods are introduced. The preparation and invitation of tenders are also mentioned in this course.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:.....</i>
Semester(s) in which the module is taught	5
Person responsible for the module	Dr. Nguyen, Hoai Nghia, Dr. Nguyen, Van Tiep, MSc. Nguyen, Pham Duy Phuong
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, presentation, and assignments.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (lecture): 45 Private study including examination preparation, specified in hours <sup>58</sup> : 90
Credit points	3 credits (Theory: 45 + Practice: 0) 4.64 ECTS ( <i>optional</i> )
Number of periods	Theory: 45 Practice: 0
Required and recommended prerequisites for joining the module	CM305IU (Construction Cost Management)
Course objectives	<b>Overall objectives</b>

<sup>58</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

	<p>Students who complete the course will be able to perform the following tasks:</p> <p>(16) Be able to brief the rights, duties and responsibilities of project team members</p> <p>(17) Understand different procurement methods</p> <p>(18) Understand tender preparation and invitation procedures</p>																		
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO3: Understand tender preparation and invitation procedures</td> </tr> <tr> <td>Skill</td> <td>CLO2: Understand different procurement methods</td> </tr> <tr> <td>Attitude</td> <td>CLO1: Be able to brief the rights, duties and responsibilities of project team members</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO3: Understand tender preparation and invitation procedures	Skill	CLO2: Understand different procurement methods	Attitude	CLO1: Be able to brief the rights, duties and responsibilities of project team members										
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Attitude	CLO1: Be able to brief the rights, duties and responsibilities of project team members																		
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Briefing the project team</td> <td>1</td> <td>I</td> </tr> <tr> <td>Procurement methods</td> <td>5</td> <td>T, U</td> </tr> <tr> <td>Preparing for tenders</td> <td>4</td> <td>T, U</td> </tr> <tr> <td>Inviting tenders Negotiating and contract awarding</td> <td>4</td> <td>T, U</td> </tr> <tr> <td>Related Vietnamese laws and regulations</td> <td>1</td> <td>I</td> </tr> </tbody> </table>	Topic	Weight	Level	Briefing the project team	1	I	Procurement methods	5	T, U	Preparing for tenders	4	T, U	Inviting tenders Negotiating and contract awarding	4	T, U	Related Vietnamese laws and regulations	1	I
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Related Vietnamese laws and regulations	1	I																	
Examination forms	Constructed-response test																		
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</p>																		
Reading list	Textbook:																		

	<p>[1] Mark Hackett and Gary Statham, <i>The Aqua Group Guide to Procurement, Tendering and Contract Administration</i>, 2016, 2nd edition.</p> <p>[2] Martin Brook, <i>Estimating and Tendering for Construction Work</i>, 2008, 4th edition.</p>
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## 66. Contract Management – FIDIC contracts (CM404IU)

Course name	<b>CM404IU – Contract Management – FIDIC contracts</b> <b>CM404IU – Quản lý hợp đồng – Hợp đồng FIDIC</b>
Module designation	In this course, students will study knowledge of construction contract management and the FIDIC contracts.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:.....</i>
Semester(s) in which the module is taught	7 or 8
Person responsible for the module	Dr. Nguyen, Hoai Nghia, Dr. Nguyen, Van Tiep, MSc. Nguyen, Pham Duy Phuong
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, presentation, and assignments.
Workload (incl. contact hours, self-study hours)	<p>(Estimated) Total workload: 127.5</p> <p>Contact hours (lecture, exercise, laboratory session, etc.): 37.5</p> <p>Private study including examination preparation, specified in hours<sup>59</sup>: 90</p>
Credit points	<b>3 credits (Theory: 03 + Practice: 00)</b> <b>4.64 ECTS</b>
Number of periods	<b>Theory: 45</b> <b>Practice: 00</b>

<sup>59</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Required and recommended prerequisites for joining the module	<ul style="list-style-type: none"> <li>- Prerequisites:</li> <li>- Corequisites:</li> <li>- Previous course:</li> </ul>																																				
Module objectives/intended learning outcomes	<p><b>Overall objectives</b> are to provide students with the insight of contract management and the FIDIC contracts' contents.</p> <p>Students who complete the course will be able to perform the following tasks:</p> <ul style="list-style-type: none"> <li>(19) Having knowledge of contract management</li> <li>(20) Having knowledge of FIDIC contracts and its applications</li> </ul>																																				
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to conditions of contract</td> <td>1</td> <td>I</td> </tr> <tr> <td>Insurance and security</td> <td>1</td> <td>T</td> </tr> <tr> <td>Administration of the contract</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Defaults and disputes</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Subcontracts</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Change Orders and Variations</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Delays and extensions</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Interim valuations</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Completion of the project</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>FIDIC contracts</td> <td>5</td> <td>T, U</td> </tr> <tr> <td>Related Vietnamese laws and regulations</td> <td>1</td> <td>T</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to conditions of contract	1	I	Insurance and security	1	T	Administration of the contract	1	T, U	Defaults and disputes	1	T, U	Subcontracts	1	T, U	Change Orders and Variations	1	T, U	Delays and extensions	1	T, U	Interim valuations	1	T, U	Completion of the project	1	T, U	FIDIC contracts	5	T, U	Related Vietnamese laws and regulations	1	T
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Related Vietnamese laws and regulations	1	T																																			
Examination forms	Constructed-response test																																				
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this module.</p>																																				

Reading list	Textbook: [1] Goldfayl, G. (2011). Construction contract administration, 2 <sup>nd</sup> ed. Sydney: A UNSW press book. [2] FIDIC contracts. References: [1] Murdoch, J. and Hughes W. (2000). Construction contracts – Law and management, 3 <sup>rd</sup> ed. London: Spon Press
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### 67. Sustainable Construction (CE415IU)

Course name	- <i>Sustainable Construction</i> - <i>Xây dựng bền vững</i>
Course designation	This course provides students with knowledge of green building, including green building fundamentals, green building assessment, green building design, and green building implementation.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others: .....</i>
Semester(s) in which the course is taught	<b>Semester 7</b>
Person responsible for the course	MSc. Đinh Viết Duy, Dr. Phạm Thanh Tung
Language	English
Relation to curriculum	<input type="checkbox"/> Compulsory <input checked="" type="checkbox"/> Elective
Teaching methods	Lecture, presentation, discussion, and assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): - Lecture: 28.5 - Discussion: 9 Private study including examination preparation, specified in hours: 90

Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS ( <i>optional</i> )	
Number of periods	Theory: 15 Practice: 0	
Required and recommended prerequisites for joining the course	<ul style="list-style-type: none"> <li>- Prerequisites:</li> <li>- Corequisites:</li> <li>- Previous course: <b>Civil Architecture</b></li> </ul>	
Course objectives	<p>The aim of this course is to provide:</p> <ul style="list-style-type: none"> <li>• An understanding of green building fundamentals, including main concepts, major concerns, and notable movement.</li> <li>• An understanding of green building assessment, including the use of LEED Building Rating System and Green Globes Building Rating Tools.</li> <li>• An understanding of green building design, including sustainable site and landscape, low-energy building, hydrologic cycle, building materials and products, carbon footprint, and indoor environmental quality.</li> <li>• An understanding of green building implementation, including construction operations and commissioning, green building economics, and sustainable construction.</li> </ul>	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1: Demonstrate green building fundamentals CLO2: Present green building implementations
	Skill	CLO3: Assessing sustainability aspects in construction CLO4: Applying green building design in construction
	Attitude	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Green Building Fundamentals</td> <td>2</td> <td>I,</td> </tr> <tr> <td>Green Building Assessment</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Green Building Design</td> <td>7</td> <td>T, U</td> </tr> <tr> <td>Green Building Implementation</td> <td>3</td> <td>I, T</td> </tr> </tbody> </table>	Topic	Weight	Level	Green Building Fundamentals	2	I,	Green Building Assessment	3	T, U	Green Building Design	7	T, U	Green Building Implementation	3	I, T
Topic	Weight	Level														
Green Building Fundamentals	2	I,														
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Green Building Design	7	T, U														
Green Building Implementation	3	I, T														
Examination forms	Constructed-response test															
Study and examination requirements	<ul style="list-style-type: none"> <li>Attendance: 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.</li> <li>Assignments/Examination: Students must have GPA more than 50/100 points overall to pass this course.</li> </ul>															
Reading list	<ul style="list-style-type: none"> <li>Textbooks: <ul style="list-style-type: none"> <li>[1] C.J., Kibert, Sustainable Construction Green Building Design and Delivery, 4th ed., Wiley, 2016.</li> </ul> </li> <li>Reference: <ul style="list-style-type: none"> <li>[1] Hu., Ming, Green building costs: the affordability of sustainable design, Taylor &amp; Francis, 2024.</li> <li>[2] M., Montoya, Green building fundamentals : practical guide to understanding and applying fundamental sustainable construction practices and the leed system, 2<sup>nd</sup> ed., Pearson, 2011.</li> </ul> </li> </ul>															

### III.2.IU FREE ELECTIVE (6 Crds) (See the list below)

#### 68. Principles of Marketing (BA003IU)

Course designation	<p><i>The course named “Principles of Marketing” provides the students with necessary information on the basic concepts of marketing and its principles. 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 affects the marketing activities.</i></p>
Semester(s) in which the course is taught	1, 2



Person responsible for the course	Ms. Dang Thi Uyen Thao
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, projects, quizzes, examinations.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours: 37.5 (15 classes, 1 class = 3 periods, 1 period = 50 minutes) Private study including examination preparation, specified in hours: 90
Credit points	03 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	This course is an introduction to the field of marketing. In this course, the students will start to examine the most basic concepts in marketing – customer needs, wants, and demand to understand the marketplace. Next, main steps in designing a customer-driven marketing strategy are also explored. This course specially focuses on constructing an integrated marketing program that delivers superior value by using the marketing mix (the four Ps) – product/service design, pricing, distribution, and promotion. At last, other new contents of modern marketing, such as customer relationship management and partner relationship management are also briefly mentioned.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	<p>CLO1. Understand marketing terminology and concepts and the principles used in developing marketing programs in a firm.</p> <p>CLO6. Understand basic characteristic of B2B and B2C marketing.</p> <p>CLO7. Understand the differences of goods and service characteristic in marketing</p>
	Skill	<p>CLO2. Identify wants, environmental factors and personal factors that shape marketing activities for certain target markets</p> <p>CLO3. Demonstrate knowledge of the individual components of a marketing mix</p> <p>CLO4. Demonstrate knowledge of key business communication strategies within the marketing field</p> <p>CLO5. Identify the organizational processes involved in the planning, implementation and control of marketing activities</p>
Attitude		

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Chapter 1: Creating and Capturing Customer Value</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chapter 2: Company and Marketing Strategy- Partnering to Build Customer Engagement, Value, and Relationships</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chapter 3: Analysing the marketing environment</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 5: Understanding consumer buyer behaviour</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 6: Business Markets and Business Buying Behavior</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chapter 7: Customer-Driven Marketing Strategy: Creating Value for Target Customers</td> <td>2</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 8: Product, Services, and Brands: Building Customer Value</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 10: Pricing: Understanding and Capturing Customer Value</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chapter 12: Marketing Channels: Delivering Customer Value</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Chapter 14: Communicating Customer Value: Integrated Marketing Communications Strategy</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Chapter 15: Advertising and Public Relations</td> <td>1</td> <td>I, T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Chapter 1: Creating and Capturing Customer Value	1	I, T	Chapter 2: Company and Marketing Strategy- Partnering to Build Customer Engagement, Value, and Relationships	1	I, T	Chapter 3: Analysing the marketing environment	1	I, T, U	Chapter 5: Understanding consumer buyer behaviour	2	I, T, U	Chapter 6: Business Markets and Business Buying Behavior	1	I, T	Chapter 7: Customer-Driven Marketing Strategy: Creating Value for Target Customers	2	I, T, U	Chapter 8: Product, Services, and Brands: Building Customer Value	1	I, T, U	Chapter 10: Pricing: Understanding and Capturing Customer Value	1	I, T	Chapter 12: Marketing Channels: Delivering Customer Value	1	I, T	Chapter 14: Communicating Customer Value: Integrated Marketing Communications Strategy	1	I, T, U	Chapter 15: Advertising and Public Relations	1	I, T, U
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Examination forms	Essay questions, case studies																																				
Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																				
Reading list	<p>[1] Textbook: Philip Kotler and Gary Armstrong (2015), <b>Principles of Marketing, 16th Edition</b>, Prentice Hall, Upper Saddle River, New Jersey</p> <p>[2] Slides and other materials are provided in the Blackboard</p>																																				

## 69. Business Communication (BA006IU)

Course designation	<i>This course is designed to provide students with a strong foundation in communicating at the workplace, focusing on: (1) communicating in the digital-age workplace, (2) developing business writing skills, (3) embracing professionalism at work, (2) developing business presentation skills, (4) preparing for successful job search, resumes, cover letters, and job interviews.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	MSc. Pham Thanh Huyen
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, presentation.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (whether lecture, exercise, laboratory session, etc.): 37.5 Self-study includes examination preparation, specified in hours <sup>60</sup> : 90
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	This course is designed to give students a comprehensive view of communication, its scope and importance in business, and the role of communication in establishing a favourable outside the firm environment, as well as an effective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	<p>CLO1. Identify the role and process of communication as a means of achieving organizational objectives.</p> <p>CLO2. Define communication and explain communication barriers.</p> <p>CLO3. Identify the different types of writing performed by business professionals in each of the various functional areas of business.</p>
	Skill	<p>CLO4. Strengthen perception skills by embracing professionalism; by recognizing nonverbal responses; by improving listening skill; and by analyzing personal value systems; role and status, and cultural differences in organizational communication.</p> <p>CLO5. Apply a clear, concise, convincing, and correct style of writing for business purposes.</p> <p>CLO6. Complete an accurate, complete resume and cover letter.</p>
Attitude	<p>CLO7. Conduct well-prepared interviews and complete follow-up employment correspondence.</p> <p>CLO8. Demonstrate the ability to present effective oral reports.</p>	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Communicating in the Digital-Age Workplace</td> <td>1</td> <td>I</td> </tr> <tr> <td>Professionalism at Work: Business Etiquette, Ethics, Teamwork, and Meetings</td> <td>1</td> <td>T</td> </tr> <tr> <td>Business Presentations</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Planning Business Messages</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Organizing and Drafting Business Messages</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Revising Business Messages</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Short Workplace Messages and Digital Media</td> <td>0.5</td> <td>I, T</td> </tr> <tr> <td>Positive Messages</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Negative Messages</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Persuasive and Sales Messages</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Informal Reports</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Proposals and Formal Reports</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>The Job Search and Resumes in the Digital Age</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Interviewing and Following Up</td> <td>1</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Communicating in the Digital-Age Workplace	1	I	Professionalism at Work: Business Etiquette, Ethics, Teamwork, and Meetings	1	T	Business Presentations	1	T, U	Planning Business Messages	0.5	I, T	Organizing and Drafting Business Messages	0.5	I, T	Revising Business Messages	0.5	I, T	Short Workplace Messages and Digital Media	0.5	I, T	Positive Messages	1	T, U	Negative Messages	1	T, U	Persuasive and Sales Messages	1	T, U	Informal Reports	1	I, T	Proposals and Formal Reports	1	I, T	The Job Search and Resumes in the Digital Age	1	T, U	Interviewing and Following Up	1	T, U
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Examination forms	Short-answer questions, Messages writing questions																																													
Study and examination requirements	<ul style="list-style-type: none"> <li>. Attend more than 80% of class meetings in order to take the final exam (Your name will be called randomly to answer questions during class discussion. If you do not show up to answer the question, you will be marked as absent for that class.)</li> <li>. Show respect to the instructor and classmates.</li> <li>. Actively participate in class activities</li> <li>. Fulfil tasks given by instructor after class</li> <li>. Access Blackboard for announcements, assignments, and materials of the course</li> </ul>																																													
Reading list	<p>Main textbooks:</p> <p>Mary Ellen Guffey &amp; Dana Loewy, Essentials of Business Communication, 11th edition, Thompson South Western.</p>																																													

## 70. Business Ethics (BA020IU)

Course description	This course introduces students to the relevance and importance of ethics and social responsibility in business. It aims to increase student's awareness and understanding of ethical issues in business and to provide them with useful conceptual tools to guide analysis and decisions. After the completion of the course, students are expected to identify, think critically, and suggest solutions to ethical issues encountered at the individual, organizational, and societal levels.
Semester(s) in which the course is taught	1, 2
Lecturer	
Language	English
Relation to curriculum	R (Reinforced), M (Mastered) → focus on Comprehension, Application, and Analysis in the Bloom taxonomy (levels 2, 3, 4).
Teaching methods	Lecture, presentation, discussion
Workload (incl. contact hours, self-study hours)	Total workload: 135 hours (estimated) Teaching hours (including lectures, in-class discussions, assignments, quizzes, and presentations): 45 Self-study (including take-home assignments, individual or teamwork after class hours, and preparation for examinations): 90
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	The aim of the course is to communicate theoretical and practical insights and developments in the fields of business ethics and sustainable business. Students learn the characteristics of ethical issues in business. They become acquainted with the theoretical basis of business ethics: stakeholder-theory, theories of responsibility and normative ethical theory, intercultural ethics; as well as with theories and practices on the implementation of business ethics.

Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge: Bloom 4 - Analyze Skill: Oral communication</td> <td>CLO1. Analyze ethical issues and corporate social responsibility in oral form (M)</td> </tr> <tr> <td>Knowledge: Bloom 2 - Understand Skill: Written communication</td> <td>CLO2. Recognize ethical issues that arise in business and social situations in written form (R)</td> </tr> <tr> <td>Knowledge: Bloom 3 – Apply Skill: Oral and written communication</td> <td>CLO3. Employ various ethical theories and ethical concepts to interpret actions taken in business ethics (R)</td> </tr> <tr> <td>Attitude (Affective: Bloom 3) Skill: Oral and written communication</td> <td>CLO4. Propose appropriate ethical behaviors in business and society context. (M)</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge: Bloom 4 - Analyze Skill: Oral communication	CLO1. Analyze ethical issues and corporate social responsibility in oral form (M)	Knowledge: Bloom 2 - Understand Skill: Written communication	CLO2. Recognize ethical issues that arise in business and social situations in written form (R)	Knowledge: Bloom 3 – Apply Skill: Oral and written communication	CLO3. Employ various ethical theories and ethical concepts to interpret actions taken in business ethics (R)	Attitude (Affective: Bloom 3) Skill: Oral and written communication	CLO4. Propose appropriate ethical behaviors in business and society context. (M)																										
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Examination forms	Short questions; essay																																				
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Understanding Ethics</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Defining Business Ethics</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Organizational Ethics</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Corporate Social Responsibility</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Corporate Governance</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>The Role of Government</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Blowing the Whistle</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Ethics and Technology</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Ethics and Globalization</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Making It Stick: Doing What’s Right in a Competitive Market</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Workshop “Ethical considerations in reality”</td> <td>1</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Understanding Ethics	1	I, T, U	Defining Business Ethics	1	I, T	Organizational Ethics	1	I, T	Corporate Social Responsibility	1	I, T, U	Corporate Governance	1	I, T	The Role of Government	1	I, T	Blowing the Whistle	1	I, T	Ethics and Technology	1	I, T	Ethics and Globalization	1	I, T, U	Making It Stick: Doing What’s Right in a Competitive Market	1	I, T	Workshop “Ethical considerations in reality”	1	T, U
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Reading list	<p>Main textbook:</p> <p>G Ghillyer, A. W. (2021) <i>Business Ethics Now</i>. 6th edn. New York: McGraw-Hill Education.</p> <p>Reference book:</p> <p>Ferrell, O. C., Fraedrich, J. and Ferrell, L. (2022) <i>Business Ethics: Ethical Decision Making and Cases</i>. 13th edn. Cengage.</p>
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### 71. Introduction to Sociology (Social Science) (BA116IU)

Course designation	<i>Introduction to the Social Sciences is designed to introduce the student to the broad and exciting field of the social sciences which embraces a diverse mixture of disciplines of anthropology, sociology, psychology, economics, history, geography, and political science, ect. The course will focus on the field of sociology and its key themes as they relate to the study of management and business as well as modern society. This facilitates the development of awareness of the language and methodology associated with the study of the social sciences. This course will utilize an interdisciplinary approach to study and understand human behavior and various contemporary social issues.</i>
Semester(s) in which the course is taught	7, 8
Person responsible for the course	
Language	English
Relation to curriculum	<i>Elective</i>
Teaching methods	Lecture, discussion, and assignments.

Workload (incl. contact hours, self-study hours)	Total workload: 127.5 (Estimated) Contact hours: - lecture: 28.5 - Discussion: 9 Private study including examination preparation, specified in hours <sup>61</sup> : 90	
Credit points	3 credits/4.64 ECTS	
Required and recommended prerequisites for joining the course	No	
Course objectives	<p><i>This course aims at providing a basic understanding of the nature of social sciences. It introduces an overview of the fields of studies within social sciences. You should be able to do the following upon completion of this class:</i></p> <ul style="list-style-type: none"> <li>• <i>Explaining several reasons for studying the social sciences.</i></li> <li>• <i>Describing the methods used by social scientists to conduct research.</i></li> <li>• <i>Identifying and discuss key issues involved in debates about social change in areas such as: group and organization, gender, social interaction and network (structure), culture, etc.</i></li> <li>• <i>Developing critical thinking skills as course topics are discussed and debated.</i></li> <li>• <i>Improving writing skills through essays and in-class writing assignments.</i></li> </ul>	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	<p>CLO1. <i>Know and understand the underlying concepts and principles of social science as they relate to the study of business management.</i></p> <p>CLO2. <i>Organize ideas gained from theoretical understanding of social science principles and apply them to business and management situations.</i></p>

<sup>61</sup> When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Overview of the Social Sciences and Sociology</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Understanding Sociology</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Sociological Research</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Culture</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Social Interaction and Social Structure</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Groups and Organizations</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>The family and Intimate Relationships</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Stratification by Gender and Age</td> <td>1</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Overview of the Social Sciences and Sociology	2	T, U	Understanding Sociology	2	T, U	Sociological Research	2	T, U	Culture	2	T, U	Social Interaction and Social Structure	2	T, U	Groups and Organizations	2	T, U	The family and Intimate Relationships	2	T, U	Stratification by Gender and Age	1	T, U
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Examination forms	Constructed-response test																											
Study and examination requirements	<ol style="list-style-type: none"> <li>1. <i>Attend more than 80% of contact hours in order to be accepted to the final examination</i></li> <li>2. <i>Actively participate in class activities.</i></li> <li>3. <i>Fulfill tasks given by instructor after class.</i></li> <li>4. <i>Use their own laptop in class only for learning purpose.</i></li> <li>5. <i>Read the textbook in advance.</i></li> <li>6. <i>Access the Blackboard for up-to-date information and material of the course, for online supports from teachers and other students and for practicing and assessment.</i></li> </ol>																											
Reading list	<p><b>Textbooks:</b></p> <p>[1] Schaefer, R. T. (2006), <i>Sociology: A Brief Introduction</i>, 6th ed., McGraw Hill.</p>																											

## 72. Introduction to Psychology (BA118IU)

Course designation	<i>Introduction to Psychology focuses on the application of scientific psychology to human life. Emphasis is on "normal" behavior and its antecedents. Includes the study of broad categories of human behavior through various psychological models, Psychology is an introductory course that studies the foundations of human behaviors, thoughts, and emotions. The course will approach various topics from a scientific perspective, using systematic investigation and critical thinking methods rather than personal impressions and "common sense". The knowledge of Psychology is very useful for students who need to learn people as producers and consumers.</i>
Semester(s) in which the course is taught	1, 2,3
Person responsible for the course	Nguyen Vo Hien Chau, MBA.
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, project, discussion, presentation.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, class discussion, project preparation.): 37.5 Private study including examination preparation, specified in hours <sup>62</sup> : 90
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	The chief aims of this course are for students to learn: <ul style="list-style-type: none"> <li>○ The subject of human behavior,</li> <li>○ The methods of social sciences,</li> <li>○ The resources for continuous learning after the course,</li> <li>○ The applications in both professional and personal realms, and</li> <li>○ The enjoyment of learning.</li> </ul>

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1. Learn how people behave—what they see, what they feel, how they work, how they love, what make them happy, and so on.
	Skill	CLO2. Learn how to use a vast array of information, from websites to scholarly articles to books, so that students can continue to learn, to grow in the understanding of human behavior for the rest of their lives. CLO3: Learn how to detect wrong information—what some of them are, how they come about, how they are advocated, why they are wrong, what the is contrary evidence, and how to take the next step
Attitude	CLO4: Learn how to apply them to students' life. This applies to students, to their career, and to their personal relationships such as with friends, parents, future children, bosses, peers, and opponents.	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to the Class Discovering Psychology?</td> <td>2.5</td> <td>I, T</td> </tr> <tr> <td>Sensation and Perception</td> <td>2.5</td> <td>I, T, U</td> </tr> <tr> <td>Learning</td> <td>2.5</td> <td>T, U</td> </tr> <tr> <td>Memory</td> <td>1.5</td> <td>T, U</td> </tr> <tr> <td>Remembering and forgetting</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Intelligence</td> <td>1.5</td> <td>T, U</td> </tr> <tr> <td>Emotional Intelligence</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Motivation</td> <td>2.5</td> <td>T, U</td> </tr> <tr> <td>Personality</td> <td>2.5</td> <td>I, T, U</td> </tr> <tr> <td>Adolescence and adulthood</td> <td>1.5</td> <td>T, U</td> </tr> <tr> <td>Major Depressive Disorder</td> <td>1</td> <td>T</td> </tr> <tr> <td>Health, Stress and Coping</td> <td>2.5</td> <td>T</td> </tr> <tr> <td>Anxiety Disorder</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Mood Disorder</td> <td>1</td> <td>I, T, U</td> </tr> <tr> <td>Therapies</td> <td>0.5</td> <td>I, T, U</td> </tr> <tr> <td>Social psychology</td> <td>2.5</td> <td>T, U</td> </tr> <tr> <td>Cialdini 6 principles of persuasion</td> <td>2.5</td> <td>T, U</td> </tr> <tr> <td>How do we love and cheat</td> <td>2.5</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to the Class Discovering Psychology?	2.5	I, T	Sensation and Perception	2.5	I, T, U	Learning	2.5	T, U	Memory	1.5	T, U	Remembering and forgetting	1	T, U	Intelligence	1.5	T, U	Emotional Intelligence	1	T, U	Motivation	2.5	T, U	Personality	2.5	I, T, U	Adolescence and adulthood	1.5	T, U	Major Depressive Disorder	1	T	Health, Stress and Coping	2.5	T	Anxiety Disorder	1	I, T, U	Mood Disorder	1	I, T, U	Therapies	0.5	I, T, U	Social psychology	2.5	T, U	Cialdini 6 principles of persuasion	2.5	T, U	How do we love and cheat	2.5	T, U
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Learning	2.5	T, U																																																								
Memory	1.5	T, U																																																								
Remembering and forgetting	1	T, U																																																								
Intelligence	1.5	T, U																																																								
Emotional Intelligence	1	T, U																																																								
Motivation	2.5	T, U																																																								
Personality	2.5	I, T, U																																																								
Adolescence and adulthood	1.5	T, U																																																								
Major Depressive Disorder	1	T																																																								
Health, Stress and Coping	2.5	T																																																								
Anxiety Disorder	1	I, T, U																																																								
Mood Disorder	1	I, T, U																																																								
Therapies	0.5	I, T, U																																																								
Social psychology	2.5	T, U																																																								
Cialdini 6 principles of persuasion	2.5	T, U																																																								
How do we love and cheat	2.5	T, U																																																								
Examination forms	Multiple-choice questions Quiz and Essay Questions Exam.																																																									
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																																									

Reading list	<p><b><u>Textbook required:</u></b></p> <p>[1] Rod Plotnik and Haig Kouyoumdjian, <i>Introduction to Psychology</i>, ninth edition</p> <p><b><u>Further reading:</u></b></p> <p>[2] Helen Fisher, <i>Anatomy of Love – A natural history of Mating Marriage and Why we Stray</i>, 2016.  [3] Robert B. Cialdini, <i>Influence – the Psychology of Persuasion</i>, 2007  [4] David H. Barlow, <i>Clinical Handbook of Psychological Disorders</i>, 2008</p>
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### 73. Introduction to Microeconomics (BA117IU)

Course designation	<i>Microeconomics is the introductory course in economics. The course is designed to teach you the basic tools of microeconomic analysis. Microeconomics is the branch of economics that deals with the interaction of households and firms in individual markets. Some of the issues we will study include how prices and output levels are determined, what happens when governments intervene in markets, when do markets “fail”, how do markets produce an “efficient” use of a society’s scarce resources and are market outcomes equitable. Learning “to think like an economist” should make you a more informed student, consumer, worker and voter.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Professor Nguyen Van Phuong
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, projects, quizzes, examinations.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours: 38 (15 classes, 1 class = 3 periods, 1 period = 50 minutes) Private study including examination preparation, specified in hours: 90
Credit points	<b>03 credits/4.64 ECTS</b>
Required and recommended prerequisites for joining the course	None

Course objectives	<p>At the completion of this course students will be able to:</p> <ul style="list-style-type: none"> <li>• Determine how elasticity affects consumer demand and firms' production decisions.</li> <li>• Recognize the role that utility plays in consumer consumption choices.</li> <li>• Understand a body of social science knowledge and its disciplinary perspective.</li> </ul>									
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> <ul style="list-style-type: none"> <li>• CLO1. Recognize the importance that economic models play in economic analysis.</li> <li>• CLO2. Understand opportunity cost and how this concept can be applied in all facets of life.</li> <li>• CLO3: Understand markets characterized by monopoly and imperfect competition.</li> </ul> </td> </tr> <tr> <td>Skill</td> <td> <ul style="list-style-type: none"> <li>• CLO4. Use supply and demand analysis to predict changes in price/quantities in markets, including when government policies play essential roles in these markets.</li> <li>• CLO5: Apply the relationship between production and costs to determine the profit-maximizing output of firms in different market types.</li> </ul> </td> </tr> <tr> <td>Attitude</td> <td></td> </tr> </tbody> </table>		Competency level	Course learning outcome (CLO)	Knowledge	<ul style="list-style-type: none"> <li>• CLO1. Recognize the importance that economic models play in economic analysis.</li> <li>• CLO2. Understand opportunity cost and how this concept can be applied in all facets of life.</li> <li>• CLO3: Understand markets characterized by monopoly and imperfect competition.</li> </ul>	Skill	<ul style="list-style-type: none"> <li>• CLO4. Use supply and demand analysis to predict changes in price/quantities in markets, including when government policies play essential roles in these markets.</li> <li>• CLO5: Apply the relationship between production and costs to determine the profit-maximizing output of firms in different market types.</li> </ul>	Attitude	
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Attitude										



Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>				
	Teaching levels: I (Introduce); T (Teach); U (Utilize)				
	Wk	Topic	Date	Textbook (Mankiw)/Readings	Group Presentation
	1	Course Introduction Basic Concepts of the Economics	Mar/09	Chapter 1 - Lecture Notes/ Chapter 1 & Chapter 3 (Textbook)	
	2	Basic Concepts of the Economics	Mar/16	Chapter 1 - Lecture Notes/ Chapter 2 & Chapter 3 (Textbook)	
	3	Supply – Demand & Market Prices	Mar/23	Chapter 2 - Lecture Notes/ Chapter 4, Chapter 6, Chapter 7 (Textbook)	<b>1</b>
	4	Supply – Demand & Market Prices (con't)	Mar/30	Chapter 2-Lecture Notes/ Chapter 4, Chapter 6, Chapter 7 (Textbook)	<b>2</b>
	5	Elasticity and Its Applications	Apr/6	Chapter 3-Lecture Notes/ Chapter 5 (textbook)	<b>3</b>
	6	Theories of Consumer Choice	Apr/13	Chapter 4 - Lecture Notes/ Chapter 21 (Textbook)	<b>4</b>
	7	MID-TERM	Apr/20		<b>5&amp;6</b>
	8	Production and the Cost of production	Apr/27	Chapter 5- Lecture Notes/ Chapter 13 (Textbook)	<b>7</b>
	9	Perfect competitive market	May/04	Chapter 6 - Lecture Notes/ Chapter 14 (Textbook)	<b>8</b>
10	Monopoly	May/11	Chapter 7 - Lecture Notes/ Chapter 15 (textbook)	<b>9</b>	
11	Monopolistic competition & Oligopoly	May/18	Chapter 8 - Lecture Notes/ Chapter 16, 17 (textbook)	<b>10</b>	

	12	Monopolistic competition & Oligopoly (Cont')	May/25	Chapter 8 - Lecture Notes/ Chapter 16, 17 (textbook)	<b>11</b>	
	13	Market for factor inputs	Jun/04	Chapter 9 - Lecture Notes/ Chapter 18 (Textbook)	<b>12</b>	
		Final Exam				
Examination forms	Essay questions, case studies					
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.					
Reading list	<b>Principles of Microeconomics, 8<sup>th</sup> Edition, 2018, by N. Gregory Mankiw,</b> or <b><i>Principles of Economics, 8<sup>th</sup> Edition, 2018, by N. Gregory Mankiw.</i></b> (Earlier versions are acceptable.)					

## 74. Introduction to Macroeconomics (BA119IU)

Course designation	<i>This subject will provide the fundamental macroeconomic theories and concepts of economic as they apply within the contemporary work environment.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	
Language	English
Relation to curriculum	<i>Compulsory</i>
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 Contact hours: 34 (15 sessions, 1 session = 3 periods, 1 period = 45 minutes) Expected self-study hours: 90 (reading, research, working on group assignments)
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	This course is designed to introduce students to the concepts, models, policies, and analysis in macroeconomics. After taking this course, the students should be able to: <ul style="list-style-type: none"> <li>- Analyze the economic situation in their country and develop plans for effective response.</li> <li>- Measure a country's economic performance and macroeconomic indicators such as unemployment, inflation, the balance of payment, etc.</li> <li>- Understand the effect of various kinds of government policies on the economy and develop activities to deal with the negative effects.</li> </ul>

Course learning outcomes	Upon the successful completion of this course, students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge (I, R)	<p>CLO1. Identifying how to measure a nation's income, cost of living, unemployment rate, and other important macroeconomic indicators in the economy through group assignments/class discussions.</p> <p>CLO2. Explain macroeconomic policies such as monetary policy and fiscal policy, and environmental factors that can affect a country's performance and enhance economic growth.</p> <p>CLO3. Describe the challenges and opportunities that countries are facing today such as inflation, net capital outflow, trade deficit/ surplus, budget deficit/surplus, investment, and national saving, economic fluctuations...</p>
	Skill	<p>CLO4. Explain the macroeconomic practices of an organization through assignments and presentations.</p> <p>CLO5. Develop communication skills via in-class presentations (70% of students get 2/4 in the skill assessment rubrics).</p> <p>CLO6. Develop teamwork skills via group assignments (70% of students get 2/4 in the skill assessment rubrics).</p>
Attitude	CLO7. Apply professional ethics, moral, and proper understanding of integrity, responsibility, accountability.	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Learning levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Measuring a Nation's Income</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Measuring Cost of Living</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Production and Growth</td> <td>1</td> <td>I,T, U</td> </tr> <tr> <td>Saving, Investment and Financial Investments</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Unemployment Rate</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>The Monetary System</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Money Growth &amp; Inflation</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Open- Economy Macroeconomics: Basic Concepts</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>A Macroeconomic Theory of the Open Economy.</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Aggregate Demand and Aggregate Supply</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>The Influence of Monetary and Fiscal Policies on Aggregate Demand</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Short-run tradeoffs between inflation and the unemployment rate</td> <td>1</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Measuring a Nation's Income	1	I, T	Measuring Cost of Living	1	I, T	Production and Growth	1	I,T, U	Saving, Investment and Financial Investments	1	T, U	Unemployment Rate	1	I, T	The Monetary System	2	I, T	Money Growth & Inflation	1	I, T	Open- Economy Macroeconomics: Basic Concepts	1	I, T	A Macroeconomic Theory of the Open Economy.	1	T, U	Aggregate Demand and Aggregate Supply	2	I, T	The Influence of Monetary and Fiscal Policies on Aggregate Demand	2	T, U	Short-run tradeoffs between inflation and the unemployment rate	1	T, U
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Examination forms	Multiple-choice questions, short-answer questions / essays																																							
Study and examination requirements	<ul style="list-style-type: none"> <li>- Attend more than 80% of contact hours in order to be accepted to the final examination</li> <li>- Actively participate in class activities</li> <li>- Fulfill tasks given by the instructor after class</li> <li>- Use their own laptop in class only for learning purposes</li> <li>- Read the textbook in advance</li> <li>- Access the course Blackboard for up-to-date information and material of the course.</li> </ul>																																							

Reading list	<p>Main textbooks:</p> <p><i>Mankiw, N.G., 2017, Principles of Macroeconomics or Principles of Economics, 8th Edition, South-Western, Cengage Learning. (Version 1)</i></p> <p><i>or Mankiw, N.G., 2017, Principles of Economics, 8th Edition, South-Western, Cengage Learning (Version 2)</i></p> <p><i>(These two versions of the textbooks are similar in main contents and chapters. If you have obtained a copy of version 2 for Introduction to Microeconomics then you can reuse the textbook for this class.)</i></p> <p>Other data sources:</p> <p>[1] Wall Street Journal: <a href="http://www.ws.com">www.ws.com</a></p> <p>[2] Yahoo Finance: <a href="http://finance.yahoo.com">http://finance.yahoo.com</a></p> <p>[3]. Bloomberg Net: <a href="http://www.bloomberg.com">www.bloomberg.com</a></p> <p>[4] Financial Times: <a href="http://www.ft.com">www.ft.com</a></p> <p>[5] IMF: <a href="http://www.imf.org">www.imf.org</a></p> <p>[6] World Bank: <a href="http://www.worldbank.com">www.worldbank.com</a></p> <p>[7] ADB: <a href="https://www.adb.org">https://www.adb.org</a></p>
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## 75. Principles of Management (BA123IU)

Course designation	<i>This subject will provide the fundamental theories and concepts of management as they apply within the contemporary work environment.</i>	
Semester(s) in which the course is taught	1, 2, 3	
Person responsible for the course		
Language	English	
Relation to curriculum	Compulsory	
Teaching methods	Lecture; Case study; Group discussion	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 Contact hours: 34 (15 sessions, 1 session = 3 periods, 1 period = 45 minutes) Expected self-study hours: 86 (reading, research, working on group assignments)	
Credit points	3 credits/4.64 ECTS	
Required and recommended prerequisites for joining the course	None	
Course Description	Students will be provided with the fundamental theories and concepts of management as they apply within the contemporary work environment. The course is an introduction to the basic concepts on management roles such as planning and controlling, organization, leadership and motivation. Through this course, students will become acquainted with different management approaches and the challenges for management in the twenty-first century.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge (I, R)	CLO1. Identifying how managers use leadership theories, motivation theories, and other basic concepts of teamwork and communication in high-performance organizations through group assignments. CLO2. Explain four management functions: planning, organizing, leading, and controlling CLO3. Describe the challenges and opportunities that organizations are facing today such as globalization, diversity, technology, and social responsibility.
	Skill (R)	CLO4. Explain the managerial practices of an organization through assignments and presentations. CLO5. Develop communication skills via in-class presentations (70% of students get 2/4 in the skill assessment rubrics). CLO6. Develop teamwork skills via group assignments (70% of students get 2/4 in the skill assessment rubrics).
	Attitude	CLO7. Follow ethical issues in managerial situations.

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Learning levels: I (Introduce); T (Teach); U (Utilize)</p>		
	Topic	Weight	Level
	Introducing Management	1	I, T
	Management Learning Past to Present	1	I, T
	Environment, Innovation, and Sustainability	1	I, T
	Global Management and Cultural Diversity	1	T, U
	Planning Processes and Techniques	1	I, T
	Control Processes and Systems	1	I, T
	Organization Structures and Designs	1	I, T
	Leading and Leadership Development	2	I, T
	Individual Behavior	1	T, U
	Motivation Theory and Practice	2	I, T
	Teams and Teamwork	1	T, U
	Communication and Collaboration	1	T, U
Examination forms	Short-answer questions		
Study and examination requirements	<p>Regular and punctual attendance at lectures is expected in this course. University regulations indicate that if students attend less than eighty percent of scheduled classes, they may not be considered for final assessment.</p> <p>Discussions are strongly encouraged.</p> <p>Students must gain more than 50/100 points overall to pass this course.</p>		
Reading list	<p>[1] Schermerhorn, John R. 2013. <i>Management</i>. 12th ed. John Wiley &amp; Sons, Inc.</p> <p>[2] Schermerhorn, J., Davidson, P., Woods, P., Factor, A., Simon, A. and McBarron, E., 2017. <i>Management, 6th Asia-Pacific Edition</i>. 6th ed. Sydney: John Wiley.</p> <p>[3] DuBrin, Andrew J. 2008. <i>Essentials of Management</i>. 8th ed. Cengage Learning.</p>		



## 76. Organizational Behavior (BA130IU)

Course designation	<i>The course is organized around three determinants of behavior in organizations: 1) individuals, 2) groups/teams, and 3) organizational structure. Particular emphasis will be placed on individual difference, attitude, motivation, job satisfaction, communication, leadership, stress, change, and organizational culture. Vigorous class discussions, presentations, cases, activities, along with group projects and self quizzes will provide the basis for the learning environment in the classroom.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Mai Ngọc Khương Room: O1.306 Telephone: N/A E-mail: <a href="mailto:mnkhuong@hcmuii.edu.vn">mnkhuong@hcmuii.edu.vn</a> Consultation Hours: Fri, 1:00pm – 4:00 pm
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, group project
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours<sup>63</sup>: 90</i>
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	After taking this class, the students should all be able: <ul style="list-style-type: none"> <li>- To demonstrate an understanding of the effects that individuals and groups have on organizations, and apply that understanding to the solving organizational problems.</li> <li>- To demonstrate an understanding of the theories and concepts of individual, group and organizational behavior as they apply to organizational decision-making.</li> <li>- To apply concepts and theories about individual style and perception to solving organizational problems.</li> <li>- To apply theories of motivation to the management of organizations.</li> </ul>

	<ul style="list-style-type: none"> <li>- To use systematic problem-solving approaches in developing solutions to organizational problems.</li> <li>- To exhibit clear and concise written reports and oral presentations skills to communicate understanding and application of theories, topics and concepts.</li> <li>- To effectively participate individually, and as a member of small and large teams, in the completion of all course assignments.</li> </ul>								
Course learning outcomes	<p>Upon the successful completion After completing the course, students should have developed skills in:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>           LO1. Compare the effects of various psychological factors on individual behavior            LO2. Examine major inter-personal forces that alter human behaviors in team/group context in oral form. (Discuss)            LO3. Classify the potential effects of organizational-level factors (such as structure, culture and change) on organizational behavior         </td> </tr> <tr> <td>Skill</td> <td>LO4. Apply a motivational theory to a realistic motivational problem in an organizational context; provide management recommendations consistent with theory</td> </tr> <tr> <td>Attitude</td> <td>LO5. Solve typical organizational-level issues to achieve overall organizational success in the context of cultural diversity and global sustainability.</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	LO1. Compare the effects of various psychological factors on individual behavior LO2. Examine major inter-personal forces that alter human behaviors in team/group context in oral form. (Discuss) LO3. Classify the potential effects of organizational-level factors (such as structure, culture and change) on organizational behavior	Skill	LO4. Apply a motivational theory to a realistic motivational problem in an organizational context; provide management recommendations consistent with theory	Attitude	LO5. Solve typical organizational-level issues to achieve overall organizational success in the context of cultural diversity and global sustainability.
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Skill	LO4. Apply a motivational theory to a realistic motivational problem in an organizational context; provide management recommendations consistent with theory								
Attitude	LO5. Solve typical organizational-level issues to achieve overall organizational success in the context of cultural diversity and global sustainability.								
Content	This course is designed to give students the basic knowledge of human behavior in organizations and how to apply this knowledge to increase the organization effectiveness.								
Examination forms	Multiple-choice questions								
Study and examination requirements	<p>In order to pass this course, the students must:</p> <ul style="list-style-type: none"> <li>– achieve a composite mark of at least 50;</li> <li>– attend at least 80 percent of the total sessions of the course;</li> <li>– make a satisfactory attempt at all assessment tasks (see below).</li> </ul>								
Reading list	<p><u>Text book</u></p> <p>[1]• Robbins, S. P. and Judge, T. A. (2013), <i>Essentials of Organizational Behavior</i>, 12<sup>th</sup> edition, Pearson Education.</p> <p><u>Reference book:</u></p> <p>[2]• John W. Newstrom, (2014), <i>Organizational Behavior-Human Behavior at Work</i>, 14<sup>th</sup> Edition, International Edition, McGraw Hill.</p> <p>[3]• Hellrigel, D., Slocum, J., &amp; Woodman (2010), <i>Organizational Behavior</i>; 13<sup>th</sup></p>								

edition, Thomson-South Western.

– Additional material

The instructor will provide his/her lecture notes and additional reading available on Blackboard. However this is not an automatic entitlement for students doing this subject. Note that this is not a distance-learning course, and the students are expected to attend lectures and take notes. This way, the students will get the additional benefit of class interaction and demonstration.

## 77. Introduction to Vietnamese Legal System (BA167IU)

<b>Course designation</b>	Face to face
<b>Semester(s) in which the course is taught</b>	All semesters in each academic year
<b>Person responsible for the course</b>	Dr. Vo Tuong Huan LLM. Bui Doan Danh Thao
<b>Language</b>	English
<b>Relation to curriculum</b>	Compulsory
<b>Teaching methods</b>	Student-centred approach
<b>Workload (incl. contact hours, self-study hours)</b>	(Estimated) Total workload: 127.5 Contact hours (lecture, in class discussions): 37.5 hours Private study including examination preparation, specified in hours <sup>64</sup> : 90
<b>Credit points</b>	3 credits/4.64 ECTS
<b>Required and recommended prerequisites for joining the course</b>	N/A
<b>Course objectives</b>	<p>The overarching aims of this course are to:</p> <ul style="list-style-type: none"> <li>● Provide essential knowledge of Vietnamese legal system through integrated technology and real cases for social and cultural sustainability.</li> <li>● Raise awareness of responsibility toward others in society and how to stand for ending all types of legal violations/</li> <li>● Voluntarily act as an ambassador to ensure social fairness and global equitable rights</li> <li>● Use integrated online legal resources and communication tools to help the community to identify issues and develop countermeasures.</li> <li>● Use the online forum and video conferences to collaborate with their peers and colleagues to conduct business activities legally</li> </ul>

<b>Course learning outcomes</b>	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	CLO1. Understand legal concepts in Vietnamese legal system and start to develop base on how to communicate the legalities theoretically delivered through the course content into real social praxis for fair sustainable lifelong being.
	Skill	CLO2. Learn to how to apply the theoretical contents into practice; to move from awareness of business law to knowledge and action.  CLO3. Learn how to approach those who do not have voices and to raise their legal rights aiming for fair social/cultural moves.  CLO4. Use online legal libraries and resources, video review for moot courts for effective integration and interaction between knowledge and reality  CLO5. Realize whether their prior thoughts/ behavior complies with law or not and change students' previous thoughts and to act as ambassadors for social fairness and global equitable rights.
	Attitude	CLO6. Understand and take responsibilities to comply with the business law and to rise the self-motivational theme to reflect the academic knowledge through activities such as case studies from real life  CLO7. Take responsibility to conduct business activities legally and learn the base for coexistence on the national and international scope of business.
<b>Content</b>	The course will introduce students to Vietnamese legal systems. In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice in society.	
<b>Examination forms</b>	Multiple choice questions Case-based exams Essay exams Oral exams	
<b>Study examination and requirements</b>	To pass this course, the students must: <ul style="list-style-type: none"> <li>● Achieve a composite mark of at least 50; and</li> <li>● Make a satisfactory attempt at all assessment tasks (see below).</li> </ul>	

## **GRADING POLICY**

Grades can be based on the following:

Assignment	20%
Midterm examination	30%
Final examination	50%
<b>Total</b>	<b>100%</b>

## **COURSE POLICIES**

### **Attendance**

Regular and punctual attendance at lectures and seminars is expected in this course. University regulations indicate that if students attend less than eighty percent of scheduled classes they may be refused final assessment. Exemptions may only be made on eligible medical grounds.

### **Workload**

It is expected that the students will spend at least *six* hours per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where they need to complete assignments or prepare for examinations, the workload may be greater.

Over-commitment has been a cause of failure for many students. They should take the required workload into account when planning how to balance study with part-time jobs and other activities.

### **General Conduct and Behaviour**

The students are expected to conduct themselves with consideration and respect for the needs of fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as ringing or talking on mobile phones, is not acceptable and students will be asked to leave the class. The use of laptops is also encouraged during law lessons only to search for materials online. More information on student conduct is available on [the university webpage](#).

### **Keeping informed**

The students should take note of all announcements made in lectures or on the course's Blackboard, and another announced mean of communications. From time to time, the university will send important announcements to their university e-mail addresses without providing a paper copy. The students will be deemed to have received this information.

### **Academic honesty and plagiarism**

Plagiarism is the presentation of the thoughts or work of another as one's own. Students are also reminded that careful time management is an important part of the study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items. The university regards

plagiarism as a form of academic misconduct and has very strict rules regarding plagiarism.

**Special consideration**

Requests for special consideration (for final examination only) must be made to the Office of Academic Affairs within one week after the examination. General policy and information on special consideration can be found at the Office of Academic Affairs. Absence on the Mid-term is not allowed, or in special cases approved by Lecturer can be replaced with relevant Assignment.

**Meeting up with the lecturers after classes**

Students must make an appointment via emails if they want to meet up with the lecturer after classes and be on time. If there are any changes to the scheduled time, students must inform the lecturer immediately.

## Reading list

Please note that it is very important to gain familiarity with the subject matter in the readings and cases available on Blackboard and the internet *before* attendance in classes.

### Required Course Texts and Materials

#### Legal Texts:

1. Constitution of Vietnam - 2013
2. Civil Code of Vietnam - 2015
3. Criminal Code of Vietnam – 2015 (amended in 2017)
4. Law on Law on Handling of Administrative Violations 2012
5. Law on Enterprises – 2020
6. Labour Code 2019

Available at <https://luatvietnam.vn/> or Blackboard

#### Books:

- PGS.TS. Phan Trung Hien, *Giáo trình Pháp Luật Đại cương*, NXB Chính Trị Quốc Gia Sự Thật 2019.
- Mai Hong Quy (Chief Editor) (2<sup>nd</sup> 2017), *Introduction to Vietnamese Law*, Hong Duc Publishing House.

#### Additional materials provided in Blackboard

The lecturer will attempt to make lecture notes and additional reading available on Blackboard. However, this is not an automatic entitlement for students doing this subject. Note that this is not a distance learning course, and you are expected to attend lectures and take notes. This way, you will get the added benefit of class interaction and demonstration.

### Optional Course Texts and Materials

#### Recommended Internet sites

UNCTAD (United Nations Conference on Trade and Development)

WTO (World Trade Organization)

MOIT - Vietnam (Official website of Ministry of Industry and Trade)

MPI - Vietnam (Official website of Ministry of Planning and Investment)

#### Other Resources, Support and Information

Additional learning assistance is available for students in this course and will be made available on Blackboard. Academic journal articles are available through connections via the VNU - Central Library. Recommended articles will be duly informed to the students.



## 78. Management Information Systems (BA169IU)

Course designation	<i>This subject will provide a broad introduction to four key aspects of data science: data retrieval and manipulation, data visualization, statistical computation and machine learning, and presentation and communication.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Dr. Ha Minh Tri Dr. Nguyen Hong Anh
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, etc.): 37.5 Private study including examination preparation, specified in hours <sup>65</sup> : 90
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	This course is designed to introduce students to the concepts, analysis, and activities involved in management of information system. More specific, students will get to know about Enterprise Resource Planning system (ERP) and how to apply this system to manage business from every perspectives.

Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> CLO1. Describe what MIS is and how it is important for business.  CLO2. Get to know ERP and other popular systems are in used in business today.  CLO3. Understanding different kinds of data and how to collect and process them.  CLO4: How to apply MIS to achieve Operational excellence and customer intimacy.  CLO5: How to use MIS to shape business strategy.  CLO6: How to apply MIS to support E-commerce  CLO7: How to use MIS to manage knowledge and intelligence within organization. </td> </tr> <tr> <td>Skill</td> <td>CLO8: In use of ERP and Camtasia for individual project.</td> </tr> <tr> <td>Attitude</td> <td>CLO4. Reason around ethical and privacy issues in data and ethical practices.</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Describe what MIS is and how it is important for business. CLO2. Get to know ERP and other popular systems are in used in business today. CLO3. Understanding different kinds of data and how to collect and process them. CLO4: How to apply MIS to achieve Operational excellence and customer intimacy. CLO5: How to use MIS to shape business strategy. CLO6: How to apply MIS to support E-commerce CLO7: How to use MIS to manage knowledge and intelligence within organization.	Skill	CLO8: In use of ERP and Camtasia for individual project.	Attitude	CLO4. Reason around ethical and privacy issues in data and ethical practices.																									
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Examination forms	Short-answer questions																																	

Study and examination requirements	Attendance: 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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[E-commerce 2021–2022: business. technology. society., Global Edition 17th Edition by Kenneth Laudon (Author), Carol Traver (Author)  <i>ISBN-13: 978-1292409313</i> <i>ISBN-10: 1292409312</i>

### 79. Introduction to Business Administration (BA115IU)

1	<b>Course Name</b>	INTRODUCTION TO BUSINESS ADMINISTRATION
2	<b>Course Code</b>	BA115IU
3	<b>No of credits</b>	3 credits/4.64 ECTS
4	<b>Degree Level</b>	Bachelor in Business Administration
5	<b>Time Allocation</b>	15 classes; 1 class = 3 periods; 1period = 50 minutes
6	<b>Pre-requisite</b>	<i>No</i>
7	<b>Main objectives</b>	This course is designed to provide the student with the below objectives - To provide knowledge of functional areas of business management and the integration among them. - To give students a strong awareness of global issues, including an understanding of approaches to business ethics, business environment and multinational issues. - To develop students' basic research, analysis, writing, teaming, and presentation skills. - To develop students' applied critical thinking skills and communication through the development of a portfolio of a firm in an industry in which they are interested.
8	<b>Course Learning Outcomes</b>	LO1. Explain how rapidly the business world is changing and the importance of life long learning. LO2. Explain how global issues influence business entities. LO3. Understanding forms of business of ownership. LO4. Develop a high level of familiarity with four function of business management. LO5. Understaing basic characteristic of production and operation management. LO6. Explain theories about motivation. LO7. Understanding basic characteristic of HRM in an organisation. LO8. Understanding basic characteristic of marketing mix.

9	<b>Description</b>	Employing the interactive learning and problem-based teaching approach, this course emphasises the interaction between lecturers and students. The lecture materials will be uploaded in Blackboard to help the students to preview the materials and to concentrate on listening and critical thinking during the lecture. This will help students to interact with the lecturer during the classroom. The sessions for presentations and discussions comprise company case studies as well as answering some theoretical and conceptual questions, which help the students to see how the concepts are applied in the real business context. Students will present the case to the class and discuss with the peers. Guest speakers are invited to talk about selected topics or real life experiences.
9	<b>Student's tasks</b>	<ol style="list-style-type: none"> <li>1. Attend more than 80% of contact hours in order to be accepted to the final examination</li> <li>2. Actively participate in class activities.</li> <li>3. Fulfill tasks given by instructor after class.</li> <li>4. Use their own laptop in class only for learning purpose.</li> <li>5. Read the textbook in advance.</li> <li>6. Access the Blackboard for up-to-date information and material of the course, for online supports from teachers and other students and for practicing and assessment.</li> </ol>
10	<b>Teaching &amp; Learning Materials</b>	<p><b>Main</b> William G. Nickels, James M. McHugh, Susan M. McHugh – Understanding Business, 11th edition, McGraw-Hill</p> <p><b>textbooks:</b></p> <p>IM, Video, PPT, Test bank</p>
11	<b>Assessment scheme</b>	1. Homework/ assignments/ presentation; 30% ; 2. Midterm exam: 30%; 3. Final Exam; 40%
12	<b>Scoring scale</b>	<b>100</b>
13	<b>Schedule</b>	<u>See Appendix 1</u>
14	<b>Exam structure</b>	<u>See Appendix 2</u>
15	<b>Approval Date</b>	
16	<b>Approval Level</b>	

## 80. Business Computing Skills (BA120IU)

<b>Course designation</b>	<i>This course is designed to combine knowledge of business and information technologies. It explores the breadth of Information and Communications Technology (ICT), including business hardware and software, professional computing ethics and behaviors as well as design information systems. Also, students will be knowledgeable about computing terminology, the fundamentals of database management, presentation graphics and an introduction to data analysis. The course will prepare students to work in a variety of industries, involving business administration, economics, finance, and accounting.</i>
<b>Semester(s) in which the course is taught</b>	2, 3
<b>Person responsible for the course</b>	Dr. Nguyen, Ngoc Truong Minh
<b>Language</b>	English
<b>Relation to curriculum</b>	Compulsory
<b>Teaching methods</b>	Lecture, Lesson, Practical Problems
<b>Workload (incl. contact hours, self-study hours)</b>	(Estimated) Total workload: 135 Contact hours: 45 (15 hours of lecture and 30 hours of exercise) Private study including examination preparation, specified in hours <sup>66</sup> : 90
<b>Credit points</b>	03
<b>Required and recommended prerequisites for joining the course</b>	None
<b>Course objectives</b>	<p>This course accentuates the abilities of computer systems and their applications in business. The course will provide a solid foundation of knowledge about skills that students must develop to effectively use computerized decision tools for typical business problems. Specific objectives include:</p> <ul style="list-style-type: none"> <li>● explore basic relationships of computer products and concepts</li> <li>● create MS Access objects, enter criteria into data, form expressions and create functions, and customize the appearance of forms and reports</li> <li>● create document templates in MS Word that will help businesses streamline their correspondence, use mail merge, print mailing labels, templates, newsletters, and flyers</li> <li>● analyze data with practical analysis of real business problems and streamline office tasks to present it in a way the managers can use</li> <li>● acquire strong ability in using MS Excel software as tools in decision-</li> </ul>

	making. This course will provide a complete learning in MS Excel.			
<b>Course Learning Outcomes</b>	Upon the successful completion of this course, students will be able to:			
	Competency Level	Course Learning Outcomes (CLOs)		
	Knowledge	CLO1. Summarize different technical knowledge to support management and supervisors. CLO2. Describe written directions and specific documents for business general purposes.		
	Skills	CLO3. Identify critically the use of information and communications technologies (ICT). CLO4. Classify Internet and office skills including e-mail management, web research, and document exchange. CLO5. Generalize technical computer-based skills needed to prepare documents, presentations, and spreadsheets using Microsoft's Office Suite Software (including Access, Word, and Excel).		
	Attitude	CLO6. Recognize the advantages and disadvantages of ICT and the Internet in general and in business activities particularly.		
<b>Content</b>	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>			
	Weight: Lecture Session (01 class) <sup>67</sup>			
	Learning levels: I (Introduce); R (Re-enforce); M (Master)			
		Topic	Weight	Level
		Introduction to Information Systems	1	I
		Computer Hardware and Software	1	I
		The Internet, Personal Email Account	1	I, R
		MS Access – Creating Relational Tables	1	I, R
		MS Access – Basic and Advanced Queries	1	I, R
		MS Access – Forms and Reports Customization	1	I
		MS Word – Creating Templates	1	I, R
		MS Word – Mail Merge and Protecting Documents	1	I
	MS Excel – Formulas and Functions	1	I	

<sup>67</sup> Total: 15 classes; 1 class = 03 periods; 01 period = 50 minutes

	MS Excel – Charting	1	I
	MS Excel – Pivoting Data (Table and Chart)	2	I, R
	MS Excel – Sorting and Filtering	1	I
	MS Excel – Data Validation, What-If Analysis	2	I, R
	MS Excel – Introduction to VBA	1	I
<b>Examination forms</b>	Multiple-Choice Questions, Problem-Solving Questions		
<b>Study and examination requirements</b>	<p><b>Attendance:</b> 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.</p> <p><b>Assignments/Examination:</b> Students must have more than 50/100 points overall to pass this course.</p>		
<b>Reading list</b>	<p>[1] James A. O’Brien, George Marakas (2017), Introduction to Information Systems, 12<sup>th</sup> edition, Mc-Graw Hill.</p> <p>[2] Ron McFadyen (2021), Relational Databases and Microsoft Access 365.</p> <p>[3] Joan Lambert, Microsoft Word 2019</p> <p>[4] Michael Alexander, Dick Kusleika (2019), Excel 2019 Bible, Wiley.</p> <p>[5] Hector Guerrero (2016), Excel Data Analysis Modeling and Simulation, Springer.</p>		

### 81. Production Management (IS019IU)

Course designation	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.
Semester(s) in which the course is taught	4
Person responsible for the course	Tran Van Ly
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, homework.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, etc.): 37.5 Private study including examination preparation, specified in hours <sup>68</sup> : 90
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	Students will be provided with knowledge and skills of forecasting, inventory, aggregate planning, MPS/MRP, facility layout and location, and production scheduling & sequencing.



Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>           CLO1. Understand the adequate knowledge and analysis for decision making in modern production systems, such as forecasting, inventory, aggregate planning.            CLO2. Understand the approaches and techniques in MPS/MRP, facility layout and location, and production scheduling &amp; sequencing.         </td> </tr> <tr> <td>Skill</td> <td>CLO3. Work effectively in group project of production activities/processes in a specific context; combining the techniques to improve the practical cases. Respond to the needs of community and industrial sectors</td> </tr> <tr> <td>Attitude</td> <td>CLO4. Identify and follow strictly ethical disciplines in operations</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand the adequate knowledge and analysis for decision making in modern production systems, such as forecasting, inventory, aggregate planning. CLO2. Understand the approaches and techniques in MPS/MRP, facility layout and location, and production scheduling & sequencing.	Skill	CLO3. Work effectively in group project of production activities/processes in a specific context; combining the techniques to improve the practical cases. Respond to the needs of community and industrial sectors	Attitude	CLO4. Identify and follow strictly ethical disciplines in operations																			
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Lecture 6: Material Requirement Planning (MRP)	2	I, T																										
Lecture 7: Facility layout and Location	2	I, T																										
Lecture 8: Scheduling & Sequencing	1	I, T																										
Examination forms	Short-answer questions, exercises																											
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																											

Reading list	<p>[1] Russell &amp; Taylor, Operations Management, Along the Supply Chain. 7th ed., John Wiley &amp; Son, Inc.</p> <p>[2] W. J. Hopp and M. L. Spearman (2008), Factory Physics: The Foundations of Manufacturing Management, 3rd ed., Irwin/McGraw-Hill.</p> <p>[3] D. Sipper and R. L. Bulfin, (1997), Production: Planning, Control, and Integration, McGraw Hill.</p> <p>[4] Edward A. Silver, David F. Pyke and Rein Peterson, Inventory Management and Production Planning and Scheduling, 3rd ed., John Wiley &amp; Sons.</p>
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## 82. Project Management (IS050IU)

Course designation	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.
Semester(s) in which the course is taught	4
Person responsible for the course	Tran Van Ly
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, homework.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, etc.): 37.5 Private study including examination preparation, specified in hours <sup>69</sup> : 90
Credit points	3 credits/4.64 ECTS
Required and recommended prerequisites for joining the course	None
Course objectives	Students will be provided with knowledge and skills of constructing the network (AON & AOA), GANNT Chart, solving the network; Resource allocation, resource loading & levelling; Project budgeting & cost estimation, risk management; Project quality management; Project human resource management; Project procurement management; Project executing, monitoring & control to closing the project

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	<b>Competency level</b>	<b>Course learning outcome (CLO)</b>
	Knowledge	<p>CLO1. Able to align the project to the organization's strategic plans and business justification throughout its lifecycle; to identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in consultation with stakeholders.</p> <p>CLO2. Able to manage the scope, cost, timing, and quality of the project, at all times focused on project success as defined by project stakeholders Able to Implement general business concepts, practices, and tools to facilitate project success.</p>
	Skill	CLO3. Work effectively in group project in a specific context; combining the techniques to conduct practical cases. Respond to the needs of community and industrial sectors
Attitude	<p>CLO4. Able to Apply appropriate legal and ethical standards.</p> <p>Adapt project management practices to meet the needs of stakeholders from multiple sectors of the economy (i.e. consulting, government, arts, media, and charity organizations); Identify and follow strictly ethical disciplines in project management</p>	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Lecture 1: Introduction to Project Management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 2: Project management processes for a project</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 3: Work breakdown structure</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 4: Project scheduling</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 5: Resource allocation</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 6: Logical Framework</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Lecture 7: Project cost management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 8: Project risk management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 9: Project quality management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 10: Project human resource management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 11: Project procurement management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 12: Project executing, monitoring &amp; control.</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Lecture 13: Project closing</td> <td>1</td> <td>I, T</td> </tr> </tbody> </table>	Topic	Weight	Level	Lecture 1: Introduction to Project Management	1	I, T	Lecture 2: Project management processes for a project	1	I, T	Lecture 3: Work breakdown structure	1	I, T	Lecture 4: Project scheduling	1	I, T	Lecture 5: Resource allocation	1	I, T	Lecture 6: Logical Framework	2	I, T	Lecture 7: Project cost management	1	I, T	Lecture 8: Project risk management	1	I, T	Lecture 9: Project quality management	1	I, T	Lecture 10: Project human resource management	1	I, T	Lecture 11: Project procurement management	1	I, T	Lecture 12: Project executing, monitoring & control.	1	I, T	Lecture 13: Project closing	1	I, T
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Lecture 13: Project closing	1	I, T																																									
Examination forms	Short-answer questions, exercises																																										
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																										
Reading list	<p>[1] Book name: A Guide to the project management body of knowledge (PMBOK® Guide). 5<sup>th</sup> Edition, Newtown Square, Pa. : Project Management Institute, Inc.</p> <p>[2] Project management: A managerial approach / Jack R. Meredith, Samuel J. Mantel. 7<sup>th</sup> Edition, Hoboken, N.J. : Wiley ; Chichester : John Wiley [distributor], 2009.</p> <p>[3] The project management life cycle/ Jason West land. Kogan Page Limited, 2006</p>																																										

### 83. Theoretical Models in Computing (IT131)

Course designation	This course is oriented to those undergraduate students who require a working knowledge of numerical methods					
Semester(s) in which the course is taught	3					
Person responsible for the course	Dr. Ha Viet Uyen Synh					
Language	English					
Relation to curriculum	Compulsory					
Teaching methods	Lecture, lesson, project, seminar.					
Workload (incl. contact hours, self-study hours)	Total workload: 195 Contact hours: 45 (lecture) + 30 (laboratory) Private study including examination preparation, specified in hours: 120					
Credit points	Number of credits : 4 Lecture: 3 Laboratory: 1					
Required and recommended prerequisites for joining the course						
Course objectives	This course is oriented to those undergraduate students who require a working knowledge of numerical methods. Topics to be covered include solving nonlinear equations and linear systems, interpolation and least square method, numerical evaluation of derivatives, integral and solution of differential equations. The focus will be on understanding the solving techniques and the engineering meaning of diver problems, and not on rigorous profs. ❖					
Course learning outcomes	<p>CLO 1. Solve numerically nonlinear equations by bisection, iterative and Newton methods.</p> <p>CLO 2. Solve big linear systems by exact and iterative methods.</p> <p>CLO 3. Fit data by interpolation polynomials, Spline ❖ polynomials and least square methods.</p> <p>CLO 4. Evaluate numerically derivatives and integrals.</p> <p>CLO 5. Solve numerically Boundary value problems by Euler, Euler improved and Finite Difference methods.</p> <p>CLO 6. Study diverse engineering problems by numerical methods</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>1,2,3,4,5</td> </tr> </tbody> </table>		Competency level	Course learning outcome (CLO)	Knowledge	1,2,3,4,5
Competency level	Course learning outcome (CLO)					
Knowledge	1,2,3,4,5					

		Skill	6																														
		Attitude																															
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Chapter 1. Introduction</td> <td>3</td> <td>I</td> </tr> <tr> <td>Chapter 2. Errors &amp; Taylor Series</td> <td>3</td> <td>T,U</td> </tr> <tr> <td>Chapter 3. Roots of Non-linear Equations</td> <td>3</td> <td>T,U</td> </tr> <tr> <td>Chapter 4. Linear Algebraic Equations</td> <td>6</td> <td>T,U</td> </tr> <tr> <td>Chapter 5. Optimization</td> <td>6</td> <td>T,U</td> </tr> <tr> <td>Chapter 6. Curve Fitting &amp; Interpolation</td> <td>6</td> <td>T,U</td> </tr> <tr> <td>Chapter 7. Numerical Differentiation and Integration</td> <td>6</td> <td>T,U</td> </tr> <tr> <td>Chapter 8. Ordinary Differential Equations</td> <td>6</td> <td>T,U</td> </tr> <tr> <td>Chapter 9. Partial Differential Equations</td> <td>6</td> <td>T,U</td> </tr> </tbody> </table>			Topic	Weight	Level	Chapter 1. Introduction	3	I	Chapter 2. Errors & Taylor Series	3	T,U	Chapter 3. Roots of Non-linear Equations	3	T,U	Chapter 4. Linear Algebraic Equations	6	T,U	Chapter 5. Optimization	6	T,U	Chapter 6. Curve Fitting & Interpolation	6	T,U	Chapter 7. Numerical Differentiation and Integration	6	T,U	Chapter 8. Ordinary Differential Equations	6	T,U	Chapter 9. Partial Differential Equations	6	T,U
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Examination forms	Multiple-choice questions, short-answer questions																																
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																
Reading list	<ol style="list-style-type: none"> <li>Steven C. Chapra, Raymond P. Canale, Numerical methods for engineers 6th, 2008</li> </ol>																																

## 84. Computer Networks (IT091)

Course designation	This subject covers the fundamental knowledge of computer networks								
Semester(s) in which the course is taught	3,5								
Person responsible for the course	Assoc. Prof. Vo Thi Luu Phuong.								
Language	English								
Relation to curriculum	Compulsory (CS, NE, CE)								
Teaching methods	Lecture, lesson, project, seminar.								
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 195 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) + 30 (laboratory) Private study including examination preparation, specified in hours: 120								
Credit points	Number of credits: 4 Lecture: 3 Laboratory: 1								
Required and recommended prerequisites for joining the course	None								
Course objectives	This course covers the fundamental knowledge of computer networks such as OSI, TCP/IP models, network architectures, LAN, WAN, the typical network protocols. The students will also study to design, implement and monitor a small / medium scale network.								
Course learning outcomes	CLO 1. Analyze the components, architecture, and protocols in computer networks; CLO 2. Apply the theory in designing a small/medium computer networks; CLO 3. Show the ability to work in teams; <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1</td> </tr> <tr> <td>Skill</td> <td>CLO2, CLO3</td> </tr> <tr> <td>Attitude</td> <td>CLO2</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO2
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1								
Skill	CLO2, CLO3								
Attitude	CLO2								
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)								



	<b>Topic</b>	<b>Weight</b>	<b>Level</b>
	Introduction of computer networks	2	T, U
	Network applications: HTTP, FTP, DNS, SMTP	2	T, U
	Transport layer: congestion control, TCP, UDP	2	T, U
	IP addressing, CIDR, VLSM	2	T, U
	Network layer: routing algorithms, routing protocols	2	T, U
	Datalink layer and physical layer	2	T, U
	Wireless and mobile networks	2	T
	Some advanced topics in contemporary networks	1	U
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>		
Reading list	1. J. F. Kurose and K. W. Ross, Computer Networking: A Top Down Approach 7th, 2014		

## 85. Information System Management (IT094)

Course designation	This course covers the concepts of information systems and their applications to business processes									
Semester(s) in which the course is taught	6									
Person responsible for the course	Dr. Tran Thanh Tung									
Language	English									
Relation to curriculum	Elective course (CS, DS) Specialization (required) (NE)									
Teaching methods	Lecture, lesson, project, seminar.									
Workload (incl. contact hours, self-study hours)	Total workload: 195 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) + 30 (laboratory) Private study including examination preparation, specified in hours: 120									
Credit points	Number of credits : 4  Lecture: 3  Laboratory: 1									
Required and recommended prerequisites for joining the course	Principles of Database Management									
Course objectives	This course will aim to provide students with: The concepts of information systems and their applications to business processes. Use of computer-based information systems in functional areas of business. Understanding of computer and information technology, resources, management and end-user decision making, and system development.									
Course learning outcomes	<p>CLO 1. understand basic information system concepts as applied to business operations and management.</p> <p>CLO 2. identify the major components of a computer system, including hardware, software, operating systems and operating environments as they apply to information systems.</p> <p>CLO 3. develop basic MIS applications such as spreadsheet, database, and web development.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>1, 2</td> </tr> <tr> <td>Skill</td> <td>3</td> </tr> <tr> <td>Attitude</td> <td></td> </tr> </tbody> </table>		Competency level	Course learning outcome (CLO)	Knowledge	1, 2	Skill	3	Attitude	
Competency level	Course learning outcome (CLO)									
Knowledge	1, 2									
Skill	3									
Attitude										

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Information Systems in Global Business;</td> <td>1</td> <td>I</td> </tr> <tr> <td>Global E-Business and Collaboration;</td> <td>1</td> <td>I</td> </tr> <tr> <td>Information Systems, Organizations and Strategy</td> <td>2</td> <td>T</td> </tr> <tr> <td>Ethical and Social Issues in Information Systems;</td> <td>1</td> <td>T</td> </tr> <tr> <td>Telecommunications, the Internet, and Wireless Technology;</td> <td>1</td> <td>T</td> </tr> <tr> <td>Foundations of Business Intelligence: Databases and Information Management</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>E-Commerce: Digital Markets, Digital Goods;</td> <td>2</td> <td>T,U</td> </tr> <tr> <td>Achieving Operational Excellence and Customer Intimacy: Enterprise Applications;</td> <td>2</td> <td>T,U</td> </tr> <tr> <td>Building Information Systems;</td> <td>2</td> <td>T,U</td> </tr> <tr> <td>Managing Knowledge;</td> <td>1</td> <td>T</td> </tr> <tr> <td>Enhancing Decision Making.</td> <td>1</td> <td>T</td> </tr> </tbody> </table>	Topic	Weight	Level	Information Systems in Global Business;	1	I	Global E-Business and Collaboration;	1	I	Information Systems, Organizations and Strategy	2	T	Ethical and Social Issues in Information Systems;	1	T	Telecommunications, the Internet, and Wireless Technology;	1	T	Foundations of Business Intelligence: Databases and Information Management	1	T,U	E-Commerce: Digital Markets, Digital Goods;	2	T,U	Achieving Operational Excellence and Customer Intimacy: Enterprise Applications;	2	T,U	Building Information Systems;	2	T,U	Managing Knowledge;	1	T	Enhancing Decision Making.	1	T
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Examination forms	Multiple-choice questions, short-answer questions																																				
Study and examination requirements	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																				
Reading list	<ol style="list-style-type: none"> <li>1. Kenneth C. Laudon, Jane P. Laudon, Management Information Systems: Managing the Digital Firm 14th, 2016</li> <li>2. Kenneth C. Laudon and Jane Laudon, Essentials of Management Information Systems 11th, 2015</li> </ol>																																				

## 86. Entrepreneurship and Business Management (BA154IU)

Course designation	<i>This course aims to provide a hands-on introduction to the scalable venture creation process for students with a strong interest in entrepreneurship. The course is designed for a variety of student interests. It directly addresses the concerns of students wanting to become entrepreneurs in the near or more distant future. It is also useful to anyone who expects to be interacting with entrepreneurs in their business careers. Finally, this course is useful for anybody with a curious mind and a willingness to combine serious analysis with creative thinking.</i>	
Semester(s) in which the course is taught	1, 2	
Person responsible for the course	Nguyen Vo Hien Chau, MBA.	
Language	English	
Relation to curriculum	<input checked="" type="checkbox"/> General <input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization <input type="checkbox"/> Project/Internship/Thesis	<input type="checkbox"/> Compulsory <input checked="" type="checkbox"/> Elective
Teaching methods	Lecture, project, discussion, presentation.	
Workload (incl. contact hours, self-study hours)	Total workload: 127.5 hours Contact hours: 37.5 hours Private study including examination preparation, specified in hours: 90 hours	
Credits/ECTS	3 credits/4.64 ECTS	
Required and recommended prerequisites for joining the	None	

course	
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Course objectives	<p>After studying this course, the students would be able to build on personal as well as external resources with a view to successfully launching and subsequently managing their enterprises. They would have not only a definite idea as to which support/developmental agency to look up to and for what purpose, but also the necessary know-how and wherewithal for accessing their help. They would have basic skills in operations, finance, marketing, and human resource management.</p>
Course learning outcomes	<p>Upon the successful completion of this course students will be able to: <b>Competency level Course learning outcome (CLO)</b></p> <p>Knowledge CLO1. Describe the entrepreneurial profile and evaluate your potential as an entrepreneur</p> <p>CLO2. Explain the steps the entrepreneur must complete when starting a new business venture</p> <p>CLO3: Describe the elements of a solid business plan</p> <p>CLO4: Describe key business terms demonstrating overall business knowledge</p> <p>Skill CLO5. Complete self-analysis of entrepreneurial competencies</p> <p>CLO6: Analyze various new business options</p> <p>CLO7: Complete a written business plan</p> <p>CLO8: Demonstrate the keys to making an effective business plan presentation</p> <p>Attitude CLO9. Build up entrepreneurship spirit from a curious mind and a willingness to combine serious analysis with creative thinking.</p>

<p>Content</p>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (2.5 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <p><b>Topic Weight Level</b> Foundation of Entrepreneurship 1 I, T Creative and Innovation: Key to Entrepreneurial success 1 I, T, U Conducting a Feasibility Analysis and Designing a  3 T, U business model Crafting a business plan and building a solid strategic plan 1 T, U Building a powerful bootstrap marketing plan 1 T, U Pricing Strategy 1 T, U Ecommerce and the entrepreneur 1 T, U Creating a successful financial plan and managing cash  2 T, U flow Source of financing: finance vs debt 1 I, T, U Choosing the right location and layout 1 T, U Buying an existing business 1 T Franchising and entrepreneur 1 T</p>
<p>Examination forms</p>	<p>Multiple-choice questions, Essay Questions, Business Plan.</p>
<p>Study and examination requirements</p>	<p>Attendance: 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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>

Reading list	<p><u>Textbook:</u></p> <p>[1] Norman M. Scarborough. 2019. <i>Essentials of Entrepreneurship and Small Business Management</i>, 9<sup>th</sup> edition, Pearson.</p> <p><u>Reference Books:</u></p> <p>[2] Alexander Osterwalder &amp; Yves Pigneur. 2010. <i>Business Model Generation</i>, Wiley.</p> <p>[3] Alexander Osterwalder &amp; Yves Pigneur. 2010. <i>Value Proposition Design</i>, Wiley.</p> <p>[4] Robert A. Baron, Scott A. Shane, and A. Rebecca Reuber. 2008. <i>Entrepreneurship</i>, 1<sup>st</sup> edition, Thomson.</p> <p>[5] Richard Dorf, Thomas Byers. 2006. <i>Technology Ventures, From Idea to Enterprise</i>, 2<sup>nd</sup> edition, McGraw Hill.</p>
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### 87. C++Programming (I116IU)

Course designation	Learning the basics of programming
Semester(s) in which the course is taught	2
Person responsible for the course	MSc. Le Thanh Son
Language	English
Relation to curriculum	Compulsory (CS, NE, CE)
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 195 Contact hours: 45 (lecture) + 30 (laboratory) Private study including examination preparation, specified in hours: 120
Credit points	Number of credits: 4 Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	None
Course objectives	This course concentrates on learning the basics of programming languages which are the foundations for further studies in IT. The course enables students to get familiar with C programming language. The course covers all basic C data structures, control flows, simple data structures as well as other advanced topics which include pointers, bit operators, file processing, dynamic data types.

Course learning outcomes	<p>CLO 1. Understand programming languages and applications, how applications work</p> <p>CLO 2. Understand basic data structure and control flow of C programming language</p> <p>CLO 3. Able to write applications using C</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>1</td> </tr> <tr> <td>Skill</td> <td>2, 3</td> </tr> <tr> <td>Attitude</td> <td></td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	1	Skill	2, 3	Attitude																																									
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Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to Computer and Programming Language</td> <td>1</td> <td>I</td> </tr> <tr> <td>Introduction to C Programming Language</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>C Basic Data Types</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Control Flow: Branching statements</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Control Flow: Iteration</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Functions</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Array</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Pointers</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>String</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>File Processing</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Dynamic Memory Allocation</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Struct, Union</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Bitwise Operation</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Linked list, Stack, Queue</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Binary tree</td> <td>1</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to Computer and Programming Language	1	I	Introduction to C Programming Language	1	I, T	C Basic Data Types	1	T, U	Control Flow: Branching statements	1	T, U	Control Flow: Iteration	1	T, U	Functions	1	T, U	Array	1	T, U	Pointers	1	T, U	String	1	T, U	File Processing	1	T, U	Dynamic Memory Allocation	1	T, U	Struct, Union	1	T, U	Bitwise Operation	1	T, U	Linked list, Stack, Queue	1	T, U	Binary tree	1	T, U
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Examination forms	Short-answer questions, Programming exercises																																																



Study and examination requirements	Attendance: 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.  Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	1. Paul Deitel, C How to Program 8th, 2016

## IV. PROFESSIONAL PRACTICE AND RESEARCH

### 88. Summer Internship (CE314IU)

Module designation	<i>Summer Internship(Code: CE314IU)</i>
Semester(s) in which the module is taught	<i>2<sup>nd</sup></i>
Person responsible for the module	<i>Dr. Nguyen Hoai Nghia</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>apprenticeship</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload: 202.5 (Estimated)</i> <i>Contact hours:</i> <i>- lecture: 0</i> <i>- internship: 112.5</i> <i>Private study including examination preparation, specified in hours<sup>70</sup>: 90</i>
Credit points	<b><i>3 credits/7.36 ECTS</i></b>
Required and recommended prerequisites for joining the module	
Module objectives/intended learning outcomes	<i>Module objectives:</i> <ul style="list-style-type: none"> <li>• <i>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 Civil Engineering.</i></li> </ul> <i>Learning outcomes:</i> <p>(21) <i>Applying the civil engineering knowledge to handle problems in reality.</i></p> <p>(22) <i>Practicing the ethics and professional skills.</i></p>

Content	<i>In this course, students are supposed to apply all knowledge provided in the university to the practice, learning the new skills of practical working, and finally writing a report.</i>
Exams and assessment formats	<ul style="list-style-type: none"> <li>• <i>Internship Student evaluation: 50%</i></li> <li>• <i>Defense: 30%</i></li> </ul>
Study and examination requirements	<p><i>Attendance: Student will presence all working days at the internship places (offices and/or sites). Students will report weekly via email to advisors.</i></p> <p><i>Examination: Students submit final reports and defence to advisors. Students must have more than 50/100 points overall to pass this module.</i></p>
Reading list	<p><i>[1] S. W. Nunnally, (2014). Construction Methods and Management, Pearson, 8th edition.</i></p> <p><i>[2] R. L. Peurifoy, C. J. Schexnayder, R. L. Schmitt, and A. Shapira. (2018). Construction Planning, Equipment, and Methods, McGraw-Hill Education 9th edition.</i></p> <p><i>[3] Hurst, M.K., "Prestressed Concrete Design", 2nd edition.</i></p> <p><i>[4] Mosley, W.H., Hulse, R. and Bungey, J.H., "Reinforced Concrete Design to EuroCode 2", 6th edition, Macmillan, London, 2007</i></p> <p><i>[5] Eurocode 2: Design of Concrete Structures – Part 1-1: General rules and rules for buildings [1] Trahair, NS.; Bradford MA.; Nethercot DA. and Gardner, L. "The Behavior Design of Steel Structures to EC 3", 4th Edition, Taylor and Francis, 2007.</i></p> <p><i>[2] [6] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-8: Design of Steel Structures – Design of Joints, British Standards Institution, London, UK.</i></p>

### 89. Thesis (CE420IU)

Module designation	<i>THESIS (Code: CE420IU)</i>
Semester(s) in which the module is taught	<i>5<sup>TH</sup></i>
Person responsible for the module	<i>MSc. PHAM NHAN HOA</i>
Language	<i>English</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lecture, discussion, and assignments.</i>
Workload (incl. contact hours, self-study hours)	<p><i>Total workload: 675 (Estimated)</i></p> <p><i>Contact hours:</i></p> <ul style="list-style-type: none"> <li><i>- lecture: 300</i></li> <li><i>- Discussion: 75</i></li> </ul> <p><i>Private study including examination preparation, specified in hours<sup>71</sup>: 300</i></p>
Credit points	<i>10 credits/24.55 ECTS</i>
Required and recommended prerequisites for joining the module	<i>Mechanics of Materials 1 and Structural Analysis 1</i>
Module objectives/intended learning outcomes	<p><i>Module objectives:</i></p> <p><i>The aim of this course is to</i></p> <ul style="list-style-type: none"> <li><i>• Develop the concepts of structural design and construction, or manage a practical civil structure to enhance traditional classroom-based learning compared with experiential learning</i></li> <li><i>• Conduct research on civil engineering problems</i></li> </ul> <p><i>Learning outcomes:</i></p> <ul style="list-style-type: none"> <li><i>• Develop the concepts of structural design, construction, or manage a practical civil structure to enhance traditional classroom-based learning compared with experiential learning</i></li> <li><i>• Conduct research on civil engineering problems</i></li> <li><i>• Improve vital skills for students working at companies</i></li> <li><i>• Improve writing and presentation skills</i></li> <li><i>• Enhance the use of English in both technical and day-life situations</i></li> <li><i>• Work independently and professionally</i></li> </ul>
Content	<i>It is dependent on on-site construction works indicated by Supervisor and Advisor</i>

Exams and assessment formats	<i>Discussion, Assignment, and Presentation</i>
Study and examination requirements	<p><b>Attendance:</b> 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.</p> <p><b>Assignment and Presentation:</b> Students must have GPA of more than 50/100 points overall to pass this course.</p>
Reading list	<p><b>Textbooks:</b> (depend on Advisors)</p> <p>[1] C P Kaushik, S S Bhavikatti, Anubha Kaushik, "Basic Civil and Environmental Engineering", New Age International (P) Ltd., Publishers, 2010.</p> <p>[2] Pham Nhan Hoa, "Lecture Note.: STRUCTURAL ANALYSIS AND DESIGN WITH CIVIL ENGINEERING SOFTWARE", Sep 2019</p> <p>[3] R.C. Hibbeler, "Structural Analysis", 9th Edition, Pearson Prentice Hall, US</p> <p>[4] W. H. Mosley, J. H. Bungey and R. Hulse, "Reinforced concrete design to Eurocode 2", PALGRAVE MACMILLAN, 7th Edition, 2012.</p> <p>[4.1] Eurocode 2: Design of Concrete Structures - Part 1-1: General rules and rules for buildings</p> <p>[5] Trahair, NS.; Bradford MA.; Nethercot DA. and Gardner, L. "The Behavior Design of Steel Structures to EC 3", 4th Edition, Taylor and Francis, 2007.</p> <p>[5.1] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-1: Design of Steel Structures - GENERAL RULES and RULES OF BUILDINGS, British Standards Institution, London, UK.</p> <p>[5.2] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-5: General rules - PLATED STRUCTURAL ELEMENTS, British Standards Institution, London, UK.</p> <p>[5.3] Eurocode 3 (BS EN 1993-1-1:2005) Part 1-8: Design of Steel Structures - DESIGNS OF JOINS, British Standards Institution, London, UK.</p> <p>[6] BRAJA M. DAS, KHALED SOBHAN, "Principles of Geotechnical Engineering", 9th Edition, Cengage Learning, 2018</p> <p>[7] BRAJA M. DAS, "Principles of Foundation Engineering, SI", 7th Edition, Cengage Learning, 2011</p> <p><b>Reference books:</b></p> <p>[1a] S. S. Bhavikatti, "Basic_Civil_Engineering", New Age International (P) Ltd., Publishers, 2010.</p> <p>[5a] Gardner, L. and Nethercot, D.A., "Designer's Guide to Eurocode 3: Design of Steel Structures", 3rd Edition, Thomas Telford, 2009</p>