

# SYLLABUS

1. **Course name:** Introduction to Electronics and Communication Engineering Technology

2. **Course code:** INMA133164

3. **Credits:** 3 (2/1/8)

Duration: 15 weeks (60h main course and 120 self-study)

4. **Instructors:**

- 1- Nguyen Thanh Hai, PhD
- 2- Tran Thu Ha, Assoc. Prof. PhD
- 3- Duong Thi Cam Tu, MEng
- 4- Nguyen Thoi, MEng

5. **Course conditions**

Prerequisites: N/A

Corequisites: N/A

6. **Course description**

This course supplies students general knowledge on profession, awareness in respect of an engineer's roles, responsibilities and ethics. The content contains basic concepts on technical design, training students essential social skills such as teamwork, communication, etc., helping them familiar with active and creative learning approach and ready for mature attitude behavior in order to satisfy employers' demands as fast as possible.

7. **Course Goals**

<b>Goals</b>	<b>(Goal description)</b> <i>(This course provides students:)</i>	<b>(ELOs)</b>
<b>G1</b>	Recognize the importance of the global, economic, environmental and societal context in engineering practice related to electronics and communication engineering.	10 (L)
<b>G2</b>	The ability to use textbooks, books, do homework, exams, present, practical models and introduce yourselves in English.	03 (M)
<b>G3</b>	The ability to apply the skills in teamwork, leadership to demonstrate and present technical projects.	06 (M)
<b>G4</b>	Selecting active learning approach and capable of lifelong learning.	07 (M)
<b>G5</b>	Apply the skills in communication, presentation and search documents and information in technical writing.	04 (M)
<b>G6</b>	The ability to analyze, explain, argue, solve the problems in relation to specialized fields of electronics and communication engineering technology.	01 (M) 02 (M)

<b>G7</b>	An ability to apply the knowledge in model analysis of electronics and communications systems. Professional liability and ethics in related to electronics and communication engineering technology.	11 (L)
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\* Note: High: H; Medium: M; Low: L

### 8. Course Learning Outcomes (CLOs)

<b>CLOs</b>		<b>Description</b> (After completing this course, students can have:)	<b>(ELOs)</b>
<b>G1</b>	G1.1	The ability to identify role, position and charge that an engineer must meet to solve the challenges in future; understand the impact of engineering solutions and professional technology applied in a global context and society.	10
	G1.2	The ability to recognize framework program, training program and learning outcomes that the students attend, the direction of specialized training, role, position, charge in electronics and communication engineering technology.	10
<b>G2</b>	G2.1	The ability to introduce yourselves in English.	05
	G2.2	The ability to read the document and lectures of the course in English to work out models for skills.	03
<b>G3</b>	G3.1	The ability to apply the teamwork, analyze the SWOT of a team or individual in team.	06
	G3.2	Understand the important role and skills of leadership.	06
<b>G4</b>	G4.1	The ability to learn life – long learning.	07
<b>G5</b>	G5.1	The ability to present in technical engineering.	04
	G5.2	The ability to apply the technical writing.	04
	G5.3	The ability to search, deal with information and data collected through documents relevant to studying, write reports and representations.	04, 03
<b>G6</b>	G6.1	The ability to determine, construct, and resolve technical issues.	02, 04
	G6.2	Execute skills in computer manipulation, operate technical simulation.	02
<b>G7</b>	G7.1	Working out models related to ECET and professional liability and ethics in engineering technology.	11

### 9. Study materials

**- Textbooks:**

[1] HCMUTE, *Student Handbook*, 2016.

**- References:**

[1] Philip Kosky, Robert Balmer, William Keat, George Wise: *Exploring Engineering – Second Edition* 2010.

[2] Saeed Moaveni: *Engineering Fundamentals – An Introduction to Engineering – Fourth Edition* 2010.

[3] Andrew Singmin: Beginning Analog Electronics through projects – Second Edition.

[4] Lectures notes.

## 10. Student Assessments

- Grading points: 10

- Planning for students assessment is followed:

Type	Contents	Linetime	Assessment techniques	CLOs	Rates (%)
<b>Bài tập</b>					<b>70</b>
Exam 01	<p><b>Overview the Electronics and Communication Engineering Technology:</b></p> <ul style="list-style-type: none"> <li>- Introduction to career in engineering relevant specialties as mechatronics, robotics, automobile technology, aerospace, etc.</li> <li>- Orient the development of the Electronics and Communication Engineering Technology in the future.</li> <li>- Report to lecture's email or studying web.</li> </ul>	Week 1	Report	G1.1 G1.2	10
Exam 02	<ul style="list-style-type: none"> <li>- Introduce yourseleve and orient student' life in the future by mindmap.</li> <li>- Report to lecture's email or studying web.</li> </ul>	Week 2	Assignment	G2.1 G3.2	5
Exam 03	<p><b>Teamwork:</b> <i>Complete the task to make a building with paper and cardboard or design a rocket duration the time given and the competition among the groups.</i></p> <ul style="list-style-type: none"> <li>- 3-5 random students per team.</li> <li>- Lecturer give the link to student to download the sample report.</li> <li>- Students give their report to the lecture by email.</li> </ul>	Week 3	Work in class and Assignment	G3.1 G3.2 G5.1 G5.3 G6.1 G6.2	10
Exam 04	<p><b>Presentation:</b> topics relevant to engineering which students prepared with Poster.</p> <p>Students give the topic to lecturer by email.</p>	Week 6-7	Work in class and report by the email	G2.2 G5.1	10
Exam 05	<p><b>Oral Communication – introduce yourseleve:</b> Every Student makes a video clip that can introduce individual himself or herself in English in 2 minutes and uploads to the internet, gives the link to lecturer.</p>	Week 9	Assignment	G2.1	10

Exam 06	<b>Ethic in engineering</b> - 3-5 random students per team. - Do the lessons in group. - Report in class.	Week 10	Work in class	G4.1	5
Exam 07	<b>Skill and method to write technical reports and search documents and information: Sightseeing labs of school and company, industries</b> - Every team of students will make the plan to identify the roles and tasks of every team members. - Report to the lecturer by the email.	Week 12	Report	G1.1 G1.2 G2.2 G3.1 G4.1 G5.2 G5.3	20
<b>Project – Final Term</b>					
	<b>Final project</b> - The student will be given the topics from the lecture or they can make by themselves. - Discussion about the topics. - Implement, perform and present the projects.	Week 13-15	Work in class and Assignment	G2.2 G3.1 G3.2 G4.1 G5.1 G5.2 G5.3 G6.1 G6.2	<b>30</b>

### 11. Course details:

Weeks	Contents	CLOs
1	<b>Chapter 1: &lt;INTRODUCTION TO CONCEPT ON TECHNOLOGY ENGINEERING&gt; (4/0/8)</b>	
	<b>A/ Tóm tắt các ND và PPGD chính trên lớp: (4)</b> <b>Nội dung GD lý thuyết:</b> 1.1. An overview of STEM and engineering. 1.2. Role of STEM in national economic and global in the 21 <sup>th</sup> century. 1.3. Role, position and charge of engineers 1.4. Introduction to relevant specialties as mechatronics, robotics, automobile technology, aerospace. + Supply WEB addresses to download documents, guide how to write reports, etc. + Supply instructor's email. <b>Teaching methods:</b> + Theoretical lectures, presentation, group discussion.	G1.1
	<b>B/ Self-study contents (8)</b> + Read textbook given. + Read students' handbook.	G1.1, G1.2

	+ Understand organizational structure of HCMUTE, Faculty, LABs and Workshops of Faculty.	
2	<b>Chapter 2: &lt;INTRODUCTION TO ELECTRONICS AND COMMUNICATION ENGINEERING TECHNOLOGY&gt; (4/0/8)</b>	
	<b>A/ Contents and teaching methods (4)</b> <b>Contents:</b> <ul style="list-style-type: none"> <li>2.1 Learning outcome of specialties of Electronics and Communication Engineering Technology in faculty of Electrical and Electronics Engineering Technology.</li> <li>2.2 Contents on framework program of specialties of Electronics and Communication Engineering Technology in Faculty of Electrical Electronic Engineering.</li> <li>2.3 All courses adapted with learning outcomes.</li> </ul> <b>Teaching methods:</b> <ul style="list-style-type: none"> <li>+ Ask questions in class so that the groups discuss to answer.</li> <li>+ Instructor performs lectures. <ul style="list-style-type: none"> <li>✓ Do assignments in class with groups.</li> <li>✓ Guide skills in teamwork.</li> </ul> </li> </ul>	G1.2
	<b>B/ Self-study contents (8)</b> <ul style="list-style-type: none"> <li>+ Role of technology in daily life and in social.</li> <li>+ Technical career.</li> </ul>	G1.1 G1.2
3	<b>Chapter 3: &lt;SKILLS IN COMMUNICATION AND TEAMWORK&gt; (2/2/8)</b>	
	<b>A/ Contents and teaching methods: (4)</b> <b>Contents:</b> <ul style="list-style-type: none"> <li>3.1 Introduction to skill in teamwork.</li> <li>3.2 Engineers' very common communication skill – Communication with basic English. <ul style="list-style-type: none"> <li>✓ Eye contact.</li> <li>✓ Oral communication.</li> <li>✓ Practise on planning tasks of leader and members in team.</li> <li>✓ Analyze SWOT according to the consequences of teamwork.</li> </ul> </li> </ul> Problem: Practice on teamwork <i>Complete the task to make a building with paper and cardboard duration the time given and the competition among the groups</i> <b>Teaching methods:</b> <ul style="list-style-type: none"> <li>+ Lecture, slideshow, lecture on skills and tasks of group chief.</li> <li>+ Discussion, evaluate and self-evaluate.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1
	<b>B/ Self-study contents (8)</b> <ul style="list-style-type: none"> <li>+ Prepare to report on skill in teamwork.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1
4	<b>Chapter 3: &lt;SKILLS IN COMMUNICATION AND TEAMWORK (Cont'd)&gt; (4/0/8)</b>	

	<p><b>A/ Contents and teaching methods: (4)</b></p> <p><b>Contents:</b></p> <p>3.3 Presentation skill</p> <ul style="list-style-type: none"> <li>✓ During the presentation, practise on communication with eye contact.</li> <li>✓ Oral communication.</li> <li>✓ Communication with text form.</li> <li>✓ Communication with graphic form.</li> <li>✓ Methods to compose and report with slideshow like powerpoint, prezi, etc.</li> </ul> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Intuitive method with slideshow.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1
	<p><b>B/ Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ Read textbook and references given.</li> <li>+ Further reading to search relevant knowledge in textbook or references given.</li> <li>+ Correct the report writing with powerpoint file send it to instructor.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1
	<p><b>Chapter 3: &lt;SKILLS IN COMMUNICATION AND TEAMWORK (Cont'd)&gt; (0/4/8)</b></p>	
5	<p><b>A/ Contents and teaching methods: (4)</b></p> <p><b>Contents:</b></p> <p>3.3 Presentation skill.</p> <ul style="list-style-type: none"> <li>✓ Students present the topics that are relevant to their major.</li> <li>✓ Assessment by Rubric and Feedback from students and lecturer.</li> </ul> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Intuitive method with slideshow.</li> <li>+ Discussion; Divide situations to practise answering the questions in relation to the way to resolve the problems of the characters.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1
	<p><b>B/ Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ Do assignments, write the reports.</li> <li>+ Discussion; practise answering the questions in relation to the way to resolve the problems of the characters.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1
	<p><b>Chapter 3: &lt;SKILLS IN COMMUNICATION AND TEAMWORK (Cont'd)&gt; (0/4/8)</b></p>	
6	<p><b>A/ Contents and teaching methods: (4)</b></p> <p><b>Contents:</b></p> <p>3.3 Presentation skill.</p> <ul style="list-style-type: none"> <li>✓ Students present the topics that are relevant to their major.</li> <li>✓ Assessment by Rubric and Feedback from students and</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1

	<p>lecturer.</p> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Intuitive method with slideshow.</li> <li>+ Discussion; Divide situations to practise answering the questions in relation to the way to resolve the problems of the characters.</li> </ul>	
	<p><b>B/ Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ Do assignments, write the reports.</li> <li>+ Discussion; practise answering the questions in relation to the way to resolve the problems of the characters.</li> </ul>	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1
	<p><b>Chapter 4 : &lt;SKILLS TO SEARCH DOCUMENTS AND INFORMATION&gt; (4/0/8)</b></p>	
7	<p><b>A/ Contents and teaching methods: (4)</b></p> <p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>4.1 Technique to search information on the net.</li> <li>4.2 Databases, books related to professions (hardware).</li> <li>4.3 Databases, books related to professions (software).</li> <li>4.4 Data collection, reporting, presenting essays, problem, application, etc.</li> <li>4.5 Lifelong learning and skills for lifelong learning.</li> </ul> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Intuitive method with slideshow.</li> </ul>	G2.2, G3.1, G4.1, G5.1, G5.3,
	<p><b>B/ Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ Look up relevant documents on the internet, search information related to semiconductors and construction, operation principles of electronic devices.</li> <li>+ Further reading to search relevant knowledge in textbook or references given.</li> </ul>	G2.2, G3.1, G4.1, G5.1, G5.3,
	<p><b>Chapter 5: &lt;SKILL AND METHOD TO WRITE TECHNICAL REPORTS&gt; (4/0/8)</b></p>	
8	<p><b>A/ Contents and teaching methods: (4)</b></p> <p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>5.1 Research methodology to perform coursework, essays, projects and scientific research.</li> <li>5.2 Process to perform – method to present.</li> <li>5.3 Write an essay, a report to present a topic related to electrical electronic engineering technology: Investigate the application circuits in industry (Essay for full course).</li> </ul> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Intuitive method with slideshow.</li> </ul>	G2.2, G3.1, G3.2, G4.1, G5.2, G5.3

	<p><b>B/ Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ Reference on a sample of an experimental report.</li> <li>+ Write a report.</li> </ul>	G2.2, G3.1, G3.2, G4.1, G5.2, G5.3
9	<p><b>Chapter 6: &lt;TECHNICAL DESIGN&gt; (4/0/8)</b></p>	
	<p><b>A/ Contents and teaching methods: (4)</b></p> <p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>6.1 Introduction. Analyzation of problems. Engineering methods. Standards to show problems. Basic terms and concepts.</li> <li>4.2 Process of technical design. Brainstorming in the design. Sustainability in design.</li> <li>4.3 Experimental design.</li> <li>4.4 Project schedule.</li> <li>4.5 Standards and assessment.</li> <li>4.6 Example exercises on design contest: Design contest. Design solutions. Regulations of design contest. Concluding remarks on the important role of the project in the design.</li> </ul> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Student groups perform the report writing and report it.</li> <li>+ Submit the report writing (word format), report it with power point.</li> </ul>	G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
	<p><b>B/ Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ The groups self-evaluate and write the report.</li> </ul>	G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
10	<p><b>Chapter 7: &lt;PERSONAL ETHICS AND CAREER&gt; (3/1/8)</b></p>	
	<p><b>A/ Contents and teaching methods (4)</b></p> <p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>7.1 Overview ethics.</li> <li>7.2 Rules of professional ethics for engineer.</li> <li>7.3 Refer some kind of rules of professional ethics for engineer in the global.</li> </ul> <p><b>Teaching methods:</b></p> <ul style="list-style-type: none"> <li>+ Presentation, question, group discussion.</li> <li>+ Intuitive method with slideshow, simulation.</li> <li>+ Emulation among the groups completing the tasks represents engineers' ethics.</li> </ul>	G7.1
	<p><b>B Self-study contents (8)</b></p> <ul style="list-style-type: none"> <li>+ Consolidate the knowledge learned.</li> <li>+ Further reading to search relevant knowledge in textbook or references given.</li> </ul>	G7.1, G5.3

	<b>Chapter 8: &lt;SIGHTSEEING LABS OF SCHOOL AND COMPANY, INDUSTRIES&gt; (0/4/8)</b>	
11	<b>A/ Contents and teaching methods: (4)</b> <b>Contents:</b> 8.1 Sightseeing LABs of school. 8.2 Sightseeing companies, industries. <b>Teaching methods:</b> + Presentation, question, group discussion. + Intuitive method with slideshow.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.2, G7.1
	<b>B/ Self-study contents (8)</b> + Write a report after sightseeing.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.2, G7.1
	<b>Chapter 8: &lt;SIGHTSEEING LABS OF SCHOOL AND COMPANY, INDUSTRIES (Cont'd)&gt; (0/4/8)</b>	
12	<b>A/ Contents and teaching methods: (4)</b> <b>Contents:</b> 8.1 Sightseeing LABs of school. 8.2 Sightseeing companies, industries. <b>Teaching methods:</b> + Presentation, question, group discussion. + Intuitive method with slideshow.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.2. G7.1
	<b>B// Self-study contents (8)</b> + Write a report after sightseeing.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.2. G7.1
	<b>&lt;FINAL TERM: FINAL PROJECT&gt; (1/3/8)</b>	
13	<b>A/ Contents and teaching methods: (4)</b> <b>Contents:</b> <b>Final project</b> + The student will be given the topics from the lecture or they can make by themselves. + Discussion about the topics. <b>Teaching methods:</b> + Presentation, question, group discussion. + Intuitive method with slideshow.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
	<b>B/ Các nội dung cần tự học ở nhà: (8)</b> + Implement, perform and prepare to present the projects.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
14	<b>&lt;PERFORM THE FINAL PROJECT&gt; (0/4/8)</b>	

	+ Perform, present and report the content of the final project.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
	<b>B/ Các nội dung cần tự học ở nhà: (8)</b> + Implement, perform and repaire to present the projects.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
15	<b>&lt;PERFORM THE FINAL PROJECT&gt; (0/4/8)</b>	
	+ Perform, present and report the content of the final project. + Summarize the course.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2
	<b>B/ Các nội dung cần tự học ở nhà: (8)</b> + Review all content of the course.	G1.1, G1.2, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G6.1, G6.2

## 12. Learning ethics:

Home assignments and projects must be done by the students themselves. Plagiarism found in the assessments will get zero point.

## 13. First approved date: August 1<sup>st</sup> 2012

## 14. Approval level:

Dean

Department

Instructor

## 15. Syllabus updated process

1 <sup>st</sup> time: Updated content dated	Instructors
2 <sup>st</sup> time: Updated content dated	Head of department

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