

## EE1010 Introduction to Electrical Engineering

**1. Course Title:** Introduction to Electrical Engineering

**2. Course Number:** EE1010

**3. Credits:** 3(2-0-3-6)

- Lecture: 45 hours
- Internship + Labs at EE Training Center: 25 hours
- Course project: 20 hours

**4. Participation:** Junior students in all fields

**5. Prerequisites**

- None

**6. Learning Objectives and Outcomes**

This course helps freshmen in Electrical Engineering and Control Engineering & Automation with deep recognition of their professional characteristics and required knowledge and skills for engineers. At the same time, the course helps the student to gain confidence and passions in their study and future careers; to equip the student at the first step with problem solving skills related to their specialism, a feel of hands-on experience as well as teamwork, technical writing and presentation skills.

Indicate the student outcomes (listed in Program Criteria) addressed by the course: <3 levels: IN (Introduce), LE (Lecture) or AP (require students to apply or practice) to match the sub-criteria of the Program's Student Outcomes >

Sub-criterion	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	4.1	4.2	4.3	4.4	4.5
Level	AP	AP	IN	IN	IN	IN	IN	IN	IN	LE	LE	-	IN	IN	IN	-	-

**7. Brief Contents**

Lectures or discussions on some specific topics: introduction to jobs and carriers, introduction to the study program, technical writing, presentation, and teamwork skills, introduction to industrial projects... Study trips to some manufacturing companies. Dividing groups of 3 students to do small projects on making and installing a simple device/system at home and at the training workshop (with registered plan of each group) under the lecturer's instructions. Every student group is asked to write a technical report (in the form of a small project) and defend it before the Committee.

**8. Required Materials**

- Textbook:
- Lecture notes (pdf): Introduction to Electrical Engineering

**9. Learning Methods and Student Obligation**

- The students are required to have a thorough grasp of the study program for bachelor degree in electrical engineering

- The students are required to practice some soft skills: basic text editing, presentation, report writing, searching information on internet, teamwork and independent work in terms of small projects under the lecturer's instructions.

## 10. Grading

- Midterm: 0.4 including labs (0.1) + student participation (0.2) + internship at companies (0.1)
- Final examination (in the form of small projects): 0.6

## 11. Detailed Content and Schedule

Week	Content	Textbook	Assignments, Labs
1-3	Chapter 1. Introduction to HUST undergraduate program Introduction to the history of SEE SEE organization structure Problems in electrical engineering that need solving Introduction to SEE undergraduate program		
4	4.1 Chapter 2. Introduction to soft skills for electrical engineering students Introduction to principles of writing a research project proposal 4.2 Labs at Electricity Workshop		Dividing into groups to do small projects Do one of the 12 labs
5	5.1 Chapter 2. Introduction to principles of forming a project An example of a project in electricity major 5.2 Labs at Electricity Workshop		Dividing into groups to do small projects Do one of the 12 labs
6	6.1 Chapter 2 Technical writing skill: writing principles, writing course projects, final projects, ... 6.2 Labs at Electricity Workshop		Dividing into groups to do small projects Do one of the 12 labs
7	7.1 Chapter 2 Introduction to some presentation principles 7.2 Labs at Electricity Workshop		Dividing into groups to do small projects Do one of the 12 labs
8	8.1 Chapter 3. Introduction to Electrical Engineering <ul style="list-style-type: none"> <li>• General introduction</li> <li>• Specialism of Power Systems</li> </ul> 8.2 Labs at Electricity Workshop		Dividing into groups to do small projects Do one of the 12 labs
9	9.1 Chapter 3. Introduction to Electrical Engineering		Dividing into

	<ul style="list-style-type: none"> <li>Specialism of Power Systems</li> </ul> 9.2 Labs at Electricity Workshop		groups to do small projects Do one of the 12 labs
10	10.1 Chapter 3. Introduction to Electrical Engineering <ul style="list-style-type: none"> <li>Specialism of Electrical and Electronic Devices</li> </ul> An example 10.2 Labs at Electricity Workshop		Dividing into groups to do small projects Do one of the 12 labs
11	11.1 Chapter 4. Introduction to Control Engineering and Automation <ul style="list-style-type: none"> <li>General introduction</li> <li>Analysis of a typical example</li> </ul> 11.2 Labs at Electricity Workshop		Dividing into groups for internship study at companies Do one of the 12 labs
12	12.1 Chapter 4. Introduction to Control Engineering and Automation <ul style="list-style-type: none"> <li>Introduction to Specialism of Industrial Automation</li> </ul> 12.2 Labs at Electricity Workshop		Dividing into groups for internship study at companies Do one of the 12 labs
13	13.1 Chapter 4. Introduction to Control Engineering and Automation <ul style="list-style-type: none"> <li>Introduction to Specialism of Instrumentation and Industrial Informatics Technology</li> <li>A typical example</li> </ul> 13.2 Labs at Electricity Workshop		Dividing into groups for internship study at companies Do one of the 12 labs
14	14.1 Chapter 4. Introduction to Control Engineering and Automation <ul style="list-style-type: none"> <li>Introduction to Specialism of Automatic Control</li> </ul> 14.2 Labs at Electricity Workshop		Dividing into groups for internship study at companies Do one of the 12 labs
15	Review		Dividing into groups for internship study at companies

## 12. Lab sessions (including internships, small projects, labs)

The internships for groups of 45-50 students to visit companies and faculty laboratories are assigned by SEE. The students are required to write reports and defend them to the instructors. The suggested companies are as follows

1. Hoa Binh Hydro Power Company
2. Pha Lai Thermal Power Joint Stock Company
3. Bai Bang Paper Company
4. Hoang Thach Cement Company
5. Dong Anh Electronic Equipment Manufacturing Company
6. ABB Transformer Manufacturing Company

Small projects: The students are divided into groups of 2-3 students. The instructors assign tasks for students with the following directions:

1. Learning about a general problem relevant to the major/specialism.
2. Learning about applying knowledge of physics and electrical circuits to solve a simple problem in electrical engineering.
3. Reading documents of a specific topic under lecturers' instructions.

List of topics covered in the SEE electricity workshop. Students are required to do and make reports.

<i>No</i>	<i>Code</i>	<i>Topics of LABs</i>
1	CS1	Realize the shape and structure of static and rotating electric machines.
2	CS2	Identify, disassemble and start-up asynchronous motors.
3	CS3	Make and assemble devices: Disassemble and wind single-phase and three-phase transformers.
4	CS4	Identify, select and test circuit breakers.
5	CS5	Identify semiconductor components/devices.
6	CS6	Practice on rectifiers.
7	CS7	Realize the AC electric drive systems.
8	CS8	Use basic measuring instruments: multimeters, voltmeters, ammeters.
9	CS9	Use and assemble wattmeters, cosphi meters, frequency meters, single-phase and three-phase electric-energy meters, active and reactive electric-energy meters.
10	CS10	Basic winding skills
11	CS11	Make and assemble control board for water pump motors.
12	CS12	Assemble electric circuits for home purposes.

### **Syllabus Development Group**

(Full name and signature)

Dr. Nguyen Thi Lan Huong

Day           month           year

**Chair of Science and Education Committee**

**School of ...**

(Full name and signature)