SYLLABUS

1. **Course name: ELECTRIC LAB**
2. **Course code:** ELPR210644
3. **Credit hour:** 1 (0/6/6) (0 credit hour in theory), 1 Credit hour in practice

   Duration: 8 weeks (45h main course and 90h self-study)
4. **Instructors:**

   2.1/ Nguyen Ngoc Hung M.Eng. (Mr)
   2.2/ Bui Thuan Ninh Eng (Mr)
   2.3/ Phạm Quang Huy Eng (Mr)
   2.4/ Le Thi Thanh Hoang M.Eng. (Mrs)
   2.5/ Tran Duc Loi M.Eng. (Mr)
   2.6/ Nguyen Bich Mai M.Eng. (Mrs)
   2.7/ Le Thi Hong Nhung M.Eng. (Mrs)
5. **Course conditions**

   Prerequisite course: No

   Previous course: Electrical safety
6. **Course Description**

This course supplies students with knowledge and skills on usage of tools used by electrican. Students can wire basic electrical circuits. Students can design, implement and operate electrical circuits in lighting systems and commonly used electrical machines.

7. **Course Goals**

Goals	Goal description *This course equips students with*	ELOs
G1	Basic knowledge in the field of electrical technology	01 (H)
G2	Ability to analyze, assembly and lighting systems in single phase circuits	02 (H)
G3	Ability to design and implement some electrical systems for skills	03 (H)
G4	Ability to operate some commonly used electrical machines	07 (M)
G5	Develop teamwork skill and Professional liability and ethics in related to electronics and communication engineering technology	08 (M)

*** Ghi chú: High: H; Medium: M; Low: L**

8. **Course learning outcomes**

CLOs		***Description*** *(After completing this course, students can have:)*	Outcome
G1	G1.1	Present the cause of electric shock and methods of avoidance	01

	G1.2	Connect cables in proper procedure	01
	G1.3	Present working principle of lighting systems	01
	G1.4	Present working principle of single phase circuit	01
	G1.5	Present structure and working principle of AC motor in single and three phase.	01 07
G2	G2.1	Wiring, checking and operating electrical panel and how to design them in ethics	02 08
	G2.2	Wiring, checking and operating lighting system in surface and concealed conduit wire and how to design them in ethics	02 08
	G2.3	Wiring, checking and operating single phase circuits and how to design them in ethics	02 08
	G2.4	Wiring, checking and operating circuit for control single and three phase motors.	01 07
G3	G3.1	Design and implement home lighting systems	03
	G3.2	Calculation and design of electrical systems in daily life.	03

9. Study materials

- Textbooks:

[1] Bui Van Hong, *Giao trinh thuc tap dien co ban*, NXB Dai Hoc Quoc Gia TPHCM, 2009.

- References:

[1] Dang Dao – Le Van Doanh, *Ky Thuat Dien*, NXB Khoa Hoc Ky Thuat, Ha noi 2006.

[2] Xuan Hung, *Ky Thuat Lap Dat Dien Dan Dung*, NXB Dong Nai, 2006.

[3] Hoang Huu Thuan, *Sua chua thiet bi dien*, NXB Hai Phong, 2002.

10. Student Assessments:

- Grading points: **10**
- Planning for students assessment is followed:

Type	Contents	Linetime	Assessment techniques	CLOs	Rates (%)
Excercises					**40**
Excercise 01	Electrical safety	Week 1	Question and answer	G1.1	5
Excercise 02	Electrical wiring with hard copper and soft copper wire.	Week 2	Product based assessment	G1.2	5
Excercise 03	Install electrical panels	Week 3	Product based assessment	G2.1	5
Excercise	Wiring lighting circuits with	Week 4	Product	G1.3, G2.2	5

04	surface conduit wire		based assessment		
Excercise 05	Wiring lighting circuits with concealed conduit wire	Week 5	Product based assessment	G1.3, G2.2	5
Excercise 06	Wiring, check and oprerate single phase circuits	Week 6	Product based assessment	G2.3, G1.4 G3.1, G3.2	5
Excercise 07	Wiring, check and oprerate single phase AC induction motor	Week 7	Product based assessment	G1.5, G2.4	5
Excercise 08	Wiring, check and oprerate three phase AC induction motor	Week 7	Product based assessment	G1.5, G2.4	5
Final exam					**60**
Final Exam	Design and implement required circuits	Week 8	Practice test	G1.3, G1.4 G2.2, G2.3 G3.1	

11. Course content in details:

Weeks	Contents	CLOs
1	***Chapter 1:*** **<INTRODUCTORY SECTION>** *(0/6/6)*	
	A/ **Contents and teaching methods***: (6)* **Contents:** 1.1. Lab regulation. 1.2. Electrical safety. 1.3. Usage of tools for electrican. **Teaching methods:** + Presentation + Demonstration.	G1.1
	B/ **Self-study contents**: *(6)* + Reading materials about electrical safety. + Usage of VOM, screwdriver, welding device, etc.	G1.2
2	***Chapter 2:*** **<WIRING CABLE TECHNIQUES>** *(0/6/6)*	
	A/ **Contents and teaching methods***: (6)* **Contents:** 2.1. Classification of cable. 2.2. Wiring hard copper wire. 2.3. Wiring cables. 2.4. Wiring cosses. **Teaching methods**:	G1.2

	+ Presentation + Demonstration	
	***B/* Self-study contents)**: *(6)* + Reading practical materials. + Practise wiring.	G1.2
3	***Chapter 3:* <INSTALLATION OF ELECTRICAL PANELS>** *(0/6/6)*	
	A/* Contents and teaching methods: (6)* **Contents:** 3.1. Electrical instruments in lighting systems. 3.2. Standard of electrical panel installing. 3.3. Implement electrical panel. **Teaching methods**: + Presentation + Demonstration.	G1.2 G2.1
	***B/* Self- study contents**: *(6)* + Reading practical materials. + Practise electrical panel wiring	G1.2 G2.1
4	***Chapter 4:* <WIRING LIGHTING SYSTEMS WITH SURFACE CONDUIT WIRE>** *(0/6/6)*	
	A/* Contents and teaching methods: (6)* **Contents:** 4.1. Structure and working principle of commly used lighting system wire. 4.2. Requirement of lighting system in surface conduit wire. 4.3. Wiring lighting system in surface conduit wire. **Teaching methods**: + Presentation + Demonstration.	G1.3 G2.2
	***B/* Self- study contents**: *(6)* + Reading practical materials + Practise wiring lighting system in surface conduit wire	G1.3 G2.2
5	***Chapter 5:* <WIRING LIGHTING SYSTEM IN CONCEALED CONDUIT WIRE>** *(0/6/6)*	
	A/* Contents and teaching methods: (6)* **Contents:** 5.1. Single line diagram of lighting system. 5.2. Requirement of wiring electrical circuit in concealed conduit wire. 5.3. Wiring lighting system in concealed conduit wire. **Teaching methods**: + Presentation.	G1.3 G2.2

	+ Demonstration.	
	***B/* Self- study contents**: *(6)* + Reading practical materials. + Practise wiring lighting system in concealed conduit wire.	G1.3 G2.2
6	***Chapter 6:* <WIRING SINGLE PHASE CIRCUIT>** *(0/6/6)*	
	A/* Contents and teaching methods: (6)* **Contents:** 6.1. Structure of single phase circuit. 6.2. Diagram of single phase circuit. 6.3. Wire, check and operate single phase circuit. 6.4. Design power supply for a small flat. **Teaching methods**: + Presentation. + Demonstration.	G1.4 G2.3 G3.1 G3.2
	***B/* Self- study contents**: *(6)* + Select electrical instruments for single phase circuit wire. + Practise wiring single phase circuit.	G1.4, G2.3 G3.1, G3.2
7	***Chapter 7:* <OPERATE AC SINGLE PHASE MOTOR>** *(0/3/6)*	
	A/* Contents and teaching methods: (3)* **Contents:** 7.1. Structure and working principle of AC single phase motor. 7.2. Diagram of control of AC single phase motor. 7.3. Wire, check and operate AC single phase motor. **Teaching methods**: + Presentation. + Demonstration.	G1.5 G2.4
	***B/* Self- study contents**: *(6)* + Structure, diagram and operation of AC single phase motor. + Practise wiring control circuit for AC single phase motor.	G1.5 G2.4
7	***Chapter 8:* <OPERATE AC THREE PHASE MOTOR>** *(0/3/6)*	
	A/* Contents and teaching methods: (3)* **Contents:** 8.1. Stucture and working principle of AC three phase motor. 8.2. Diagram of control of AC three phase motor 8.3. Wire, check and operate AC three phase motor. **Teaching methods**: + Presentation. + Demonstrations for students.	G1.5 G2.4
	***B/* Self- study contents**: *(6)* + Structure, working principle, diagrams and checking three phase	G1.5

	motor. + Practise wiring control circuit for AC three phase motor.	G2.4
8	**FINAL EXAM** *(0/3/6)*	
	A/* Contents and teaching methods: (3)* **Contents:** + Design and implement required circuits **Teaching methods**: + Practice tests	G1.3, G1.4 G2.2, G2.3 G3.1
	***B/* Self- study contents**: *(6)* + Review the learned knowledges	G1.3, G1.4 G2.2, G2.3 G3.1

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:

14. Approval level:

Dean **Department** **Instructor**

15. Syllabus updated process

1st time: Updated content dated	Instructors
2st time: Updated content dated	Head of department