SYLLABUS

1. **Course name:** CAD FOR AUTOMATION AND CONTROL ENGINEERING
2. **Course code:** CADA430546
3. **Credits:** 3 (3/0/6)

   Duration: 15 weeks (45 hours main course and 90 hours self-study)
4. **Instructors:**

   1- Assoc.Prof. PhD. Le Chi Kien

   2- M.Eng. Tran Phi Vu
5. **Course conditions**

   Prerequisites: Basic electronics, Electrical Circuits

   Corequisites: N/A
6. **Course description**

This course includes an introduction to Computer-Aided Design (CAD) tools and their applications to Automation and Control Engineering.

7. **Course Goals**

Goals	***Goal description*** *(This course provides students:)*	**ELOs**
G1	To implement software for Automation and Control Engineering	1.1, 1.2, 2.2, 4.3, 4.4, 1.3

** Note: High: H; Medium: M; Low: L*

8. **Course Learning Outcomes (CLOs)**

CLOs		***Description*** *(After completing this course, students can have:)*	**Outcome**
G1	G1.1	Students will understand the role of CAD in electrical component and system design by creating geometric models and engineering drawings	1.1, 1.2, 2.2, 4.3, 4.4
	G1.2	Students will understand the basic mathematics fundamental to CAD software	1.3

9. **Study materials**

- Textbooks

[1] Quyen Huy Anh, *Giao trinh CAD trong ky thuat dien*, NXB DHQG TP.HCM, 2011

- References

[2] Miltiadis A.Boboulos, CAD-CAM & Rapid prototyping Application Evaluation, 2010

10. **Sudent Assessments**

- Grading points: 10
- Planning for student assessment is followed:

Type	Contents	Linetime	Assessment techniques	CLOs	Rates (%)
Midterm					**50**
Exercise 01	Blinking LED Circuit	Week 6	Electrical circuit design file	G1.1 G1.2	10
Exercise 02	Draw a electric circuit using ePlan Electric	Week 12	Electrical circuit design file	G1.1 G1.2	10
Test 01	Two digit BCD counter circuit	Week 8	Electrical circuit design file	G1.1 G1.2	15
Test 02	Schematic diagram using ePlan Electric	Week 14	Electrical circuit design file	G1.1 G1.2	15
					50
Final Exam	The exam covers all the contents related to the ELOs of the course		Electrical circuit design file	G1.1 G1.2	

11. Course details:

Week	Contents	CLOs
1~2	***Chapter 1:*** **Role of CAD in automation and control design** *(6/0/12)*	
	A/ **Contents and teaching methods***: (6)* **Contents:** 1.1. CAD in automation and control design 1.2. NI Multisim software **Teaching methods:** + Traditional lectures using PowerPoint to review basic knowledges of steel structures course, to demonstrate large applications of automation system. A series of diagnostic questions will be also used to estimate students knowledges. + Questions	G1.1 G1.2
	B/ **Self-study contents:** *(12)* + Find on the Internet the automation system and list the softwares used in automation and control design.	
3~4	***Chapter 2:*** **Components of Multisim** *(6/0/12)*	
	A/ **Contents and teaching methods***: (6)* **Contents:** 2.1. Basic components 2.2. Analog and digital components **Teaching methods:** + Theoretical lectures + Questions	G1.1 G1.2
	B/ **Self-study contents:** *(12)* + Active and passive components + Op-amp application circuits	
5~6	***Chapter 3:*** **Instruments of Multisim** *(6/0/12)*	
	A/ **Contents and teaching methods:***(6)* **Contents:** 3.1. Introduction 3.2. Bode plotter	G1.1 G1.2

	Teaching methods: + Theoretical lectures + Questions	
	***B/* Self- study contents:** *(12)* + Instruments in industry + Bode plotter applications	
7~8	***Chapter 4:* Schematic and Simulation** *(6/0/12)*	
	***A/* Contents and teaching methods:** *(6)* **Contents:** 4.1. Component database 4.2. Simulation **Teaching methods:** + Theoretical lectures + Questions	G1.1 G1.2
	***B/* Self- study contents:** *(12)* + Find the database in Internet + Circuit analysis	
9~10	***Chapter 5:* MCU Simulation** *(6/0/12)*	
	***A/* Contents and teaching methods:** *(6)* **Contents:** 5.1. Hardware simulation 5.2. Import data **Teaching methods:** + Traditional lectures using PowerPoint + Questions	G1.1 G1.2
	***B/* Self- study contents:** *(12)* + PIC microprocessor + MCU configuration	
11~12	***Chapter 6:* PCB Board** *(6/0/12)*	
	***A/* Contents and teaching methods:** *(6)* **Contents:** 6.1. Check the circuit 6.2. Ultiboard **Teaching methods:** + Traditional lectures using PowerPoint + Questions	G1.1 G1.2
	***B/* Self-study contents:** *(12)* + PCB board international standard	
13~14	***Chapter 7:* ePlan Introduction** *(6/0/12)*	
	***A/* Contents and teaching methods:** *(6)* **Contents:** 7.1. Introduction 7.2. Circuit information **Teaching methods:** + Traditional lectures using PowerPoint + Questions	G1.1 G1.2
	***B/* Self-study contents:** *(12)* + ePlan Electric other softwares	
15	***Chapter 8:* ePlan P& ID** *(3/0/6)*	

	***A/* Contents and teaching methods:** *(3)* **Contents:** 8.1. P&ID flow diagram **Teaching methods:** + Traditional lectures using PowerPoint + Questions	G1.1 G1.2
	***B/* Self-study contents:** *(6)* + ePlan PPE + Component symbols	

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 01, 2012

14. Approval level:

Dean	Department	Instructor
Assoc. Prof. PhD. Nguyen Minh Tam	**Assoc. Prof. PhD. Truong Dinh Nhon**	**Assoc. Prof. PhD. Le Chi Kien**

15. Syllabus updated process

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