

## SYLLABUS

1. **Course name:** Undergraduate thesis

2. **Course code:** GRPR403264

3. **Credits:** 10 (20/20/0)

Duration: 15 weeks (20 theories + 20 laboratories + 0 self-studying/week)

4. **Instructors:**

1- Phan Van Ca, PhD

2- Pham Ngoc Son, PhD

3- Truong Ngoc Son, PhD

4- Pham Hong Lien, PhD

5- Vo Minh Huan, MEng

6- Le Minh Thanh, MEng

7- Nguyen Van Phuc, MEng

5. **Course conditions**

Prerequisites: All courses

Co-requisites: All courses

6. **Course description**

The project is intended as a culmination project in our engineering programs. It is designed for students to gain significant design experience while applying integrated knowledge from several courses. It is also a means to practice project management, technical writing, and technical presentation and other soft skills. Students work in groups under faculty supervision to solve complex interdisciplinary design problems typically involving communications, signal processing, control systems, electromagnetics, power electronics, software design, and/or hardware design. The project fosters teamwork among team members and allows students to develop their ability to carry out the work in various aspects of real engineering projects.

7. **Course Goals**

Goals	Goal description (This course provides students:)	ELOs
G1	An ability to apply the knowledge in circuit analysis, programming tools, and professional software in order to design, operate, test, and maintain electronics and communications systems.	01-03, 06-11 (H)
G2	An ability to read professional documents in English.	05 (H)
G3	An ability to write reports and make presentations clearly and coherently.	04 (H)

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

## 8. Course Learning Outcomes (CLOs)

CLOs		Description (After completing this course, students can have:)	ELOs
G1	G1.1	An ability to use the theories in digital and analog circuits in order to calculate and choose the appropriate components in designing electronics and communications systems.	01, 02
	G1.2	An ability to use some popular programming languages, such as C++, Java, and Python, to program electronics and communications systems.	01, 03
	G1.3	An ability to draw and simulate electric and electronic circuits by applying some computer aided software, such as Protues, Orcad, and ISE Design Suite.	11, 07
	G1.4	An ability to evaluate and choose the appropriate designing prototypes according to the requirements.	11, 07
	G1.5	An ability to implement a designing prototypes according to the requirements.	11, 07
	G1.6	An ability to validate and verify designing prototypes according to the requirements.	10, 07
	G1.7	An ability to examine and analyse any impacts their projects may have in the final reports.	09
	G1.8	An ability to collaborate in teams, brainstorm, and reach decisions effectively.	06
	G1.9	An ability to demonstrate their knowledge and practice of ethical behavior in conducting their project work	08
G2	G2.1	An ability to read the datasheets of available electric and electronic components in English.	05, 07
	G2.2	An ability to read online training documents in English.	05, 07
G3	G3.1	An ability to read and compile the requirements about contents, formats, and methods of presenting the reports.	04, 07
	G3.2	An ability to form and arrange ideas in reports.	04, 07
	G3.3	An ability to design slides clearly and coherently in order to present the reports.	04, 07

## 9. Study materials

### - Textbooks:

There is no required textbook for the course. However, students are encouraged to use the following books as a general guideline to work on the project:

- [1] Project Management & Teamwork, by Karl Smith
- [2] Tools and Tactics of Design (paperback) by Peter G. Dominick et al. Wiley, 1st edition (2000). ISBN: 0471386480.
- [3] Guidelines to Professional Practice (free, available on-line) by the OIQ, 1999. ISBN: 2980218618.

### - References:

## 10. Student Assessments

- Grading points: 10

- Planning for students assessment is followed:

Type	Contents	Linetime	Assessment techniques	CLOs	Rates (%)
<b>Assessment of reviewers</b>					<b>20</b>
Test 1	Before defending the undergraduate thesis, students are assessed by reviewers about results, contents, and formats of their reports.	Week 14	Rubrics	All	20
<b>Final reports</b>				<b>50</b>	<b>80</b>
Test 2	The contents of the reports have to cover all requirements approved for each student.	Week 15	Reports and Presentations	All	80

## 11. Course details:

Weeks	Contents	CLOs
1-2	<b>Phase 1: Project selection and planning</b>	
	<ul style="list-style-type: none"> <li>+ Formation of the team, selection and definition of the project, design, simulation, implementation, and testing plan, task assignment, and work schedule and budget justification.</li> <li>+ Each capstone project is done by a group of 2 ~ 3 students under the supervision of one or two faculty members. The projects can be proposed by faculty members. Alternatively, students can come up with their own project ideas or bring a project from industry, providing that the project will be supervised, solely or jointly, by a faculty member in the Department.</li> </ul>	
	<b>Deliverable:</b> <ul style="list-style-type: none"> <li>+ Report</li> <li>+ Oral presentation</li> </ul>	
3-8	<b>Phase 2: Design, simulation, and implementation</b>	
	<ul style="list-style-type: none"> <li>+ Carrying out the design work as scheduled in Phase 1, preparing the design and specification review, updating the schedule and plan, documenting the design and implementation.</li> </ul>	
	<b>Deliverable:</b> <ul style="list-style-type: none"> <li>+ Report</li> <li>+ Oral presentation</li> </ul>	
9-15	<b>Phase 3: Design, implementation, and testing</b>	
	<ul style="list-style-type: none"> <li>+ Carrying out the design work as scheduled in Phase 1 and revised in Phase 2, testing and verifying the system functions and specifications, documenting the work and preparing the final reports and demos.</li> </ul>	
	<b>Deliverable:</b> <ul style="list-style-type: none"> <li>+ Pre-demo</li> <li>+ Report</li> </ul>	

	+ Poster/Demo	
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**12. Learning ethics:**

All pictures, diagrams, flow charts, and tables in the report must not be copied from other official documents without clearly referenced. The results of each student project have to be conducted by his own. If there are any violation detected from the project, this project will be evaluated zero mark for the final result.

**13. First approved date:**

**14. Approval level:**

**Dean**

**Department**

**Instructor**

**15. Syllabus updated process**

<p><b>1<sup>st</sup> time:</b> Updated content dated</p>	<p>Instructors Phan Van Ca</p>
<p><b>2<sup>st</sup> time:</b> Updated content dated</p>	<p>Head of department</p>