

	<p style="text-align: center;">HO CHI MINH UNIVERSITY OF TECHNOLOGY AND EDUCATION</p> <p style="text-align: center;">FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING</p>	<p>Programme: Biomedical Engineering</p> <p>Programme Level: Undergraduate</p>
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Syllabus

1. **Course Name:** Digital Electronic Circuit Design Lab
2. **Course Code:** PRDI1310263
3. **Credits:** 1 credits (0:1:2) (5-hour lab session and 10 hours of self-study per week)
4. **Course Instructor(s):**
 - A. Duc-Dung Vo, MEng
 - B. Duy-Thao Nguyen, MEng
 - C. Dang-Khoa Tran, MEng
5. **Registration Requirements**
 - A. Pre-requisite Course(s): Digital Practice
 - B. Previous Course(s): None

6. **Course Descriptions:**

This course provides learners with advanced practice in using devices and advanced practice in digital electronic application circuits such as Counters, Adders and Comparators, Combinational Logic, Shift Registers, Memory, DAC, ADC, In addition, students can also build a specific application product on digital circuits, know how to work in groups, read datasheets in English, write weekly reports.

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

CLOs	Descriptions After completing this module you should be able to:	ELO(s)/PI(s)	Competency
CLO1	Calculate parameters for assembly in digital electronic circuits.	ELO1/PI1.2	R
CLO2	- Use simulation tools and software to perform practical exercises. - Be able to analyze and assemble/simulate digital electronic circuits.	ELO2/PI2.1	M
CLO3	Be able to work in a team to build products, read and understand practical exercises and reports in English in the digital field.	ELO6/PI6.4	M
CLO4	Be able to design and construct digital electronic circuits.	ELO7/PI7.2	M

Notes: *I: Introduction, R: Reinforce, M: Mastery*

8. Course Content

- Designing/Simulating applications of combinational circuits: Set goals, introduce related components, summarize combinational circuit theory, design and assemble/simulate combinational circuits (Multiplexer, Demultiplexer, Encoder, Decoder, Adder and Comparator). Making a report of what has been done.
- Designing/Simulating applications of Counter circuits: Set goals, introduce related components, summarize the theory of counters, design and assemble/simulate counter circuits (Synchronous counting, not synchronization counting, round counting). Making a report of what has been done.
- Designing/Simulating Shift Register Applications: Set goals, introduce related components, summarize register theory, design and assemble/simulate registers. Making a report of what has been done.
- Designing/Simulating applications of Memory: Set goals, introduce related components, summarize the theory of memory, design and assemble/simulate memory with 7-segment Led and LED Matrix. Making a report of what has been done.
- Designing and building on printed circuit a product with practical application.

9. Teaching Methods

- Presentation
- Group activities
- Practical teaching

10. Student Assessments

- Grading scale: **10**
- Assessment plan:

No.	Content	CLOs	Competency	Assessment Methods	Assessment Tools	Weighting (%)
Formative Assessment						100
1	Calculation of parameters for assembly in digital electronic circuits.	CLO1	R	Essay	Questions	10
2	Using simulation software to design, assemble and run advanced digital electronic circuits	CLO2	M	Q&A session via circuit simulation	Questions	50
3	- Working in team in order to implement product. - Reading comprehension and reporting in English in digital field	CLO3	M	Q&A session	Questions	20
4	- Design and build on printed circuit a	CLO4	M	Q&A session	Questions	30

	product with practical application.					
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11. Learning Materials

- **Main reading:** Võ Đức Dũng, Nguyễn Duy Thảo, Bài giảng thực hành thiết kế mạch điện tử số, ĐH SPKT, năm 2021.
- **Extra reading:** Nguyễn Trường Duy, Võ Đức Dũng, Nguyễn Thanh Hải, Nguyễn Duy Thảo, Giáo Trình Kỹ Thuật Số, Nhà xuất bản ĐH Quốc Gia, TP.HCM, trường ĐH SPKT, TP.HCM, 2019.

12. General Information

Academic Integrity

All students in this class are subject to HCMUTE's Academic Integrity Policy (<http://sao.hcmute.edu.vn/>) and should acquaint themselves with its content and requirements, including a strict prohibition against plagiarism. Any violations will be reported to the Faculty of Electrical and Electronic Engineering Dean's office.

Notice of Change

All information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advanced notice. Students need to regularly update the information of their registered class.

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13. Approval Date:

14. Endorsement:

Dean of Faculty	Head of Department	Course Instructor
Assoc. Prof. Minh-Tam Nguyen	Assoc. Prof. Thanh-Hai Nguyen	

15. Revision History:

1 st Revision:	<i>Course Instructor</i>
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	Assoc. Prof. Thanh-Hai Nguyen <i>Head of Department</i>
2 nd Revision:	<i>Course Instructor</i> Assoc. Prof. Thanh-Hai Nguyen <i>Head of Department</i>