



Course Descriptor [ECEN532 Digital Electronics]

ACADEMIC YEAR	2020-2021		
Course Code & Title	ECEN532	Digital Electronics	
Credit hours	3	Level of study	Undergraduate
College / Centre	COE		
Co-requisites		Pre-requisites	ECEN332 Electronics II

1. COURSE OUTLINE

[This course covers the structure and the operation of the MOSFET. It discusses the design and performance of CMOS gates. The course covers the issue of designing and implementation of digital CMOS circuits in very large scale integrated systems. Analysis and design constraints of interconnects and memory circuits including ROM, SRAM, and DRAM are studied]

2. AIMS

[This course prepares students for engineering practice through analysis and design of digital circuits in very large scale integrated systems. This course includes engineering topics and engineering design.]

3. LEARNING OUTCOMES (*Definitive*) and TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes (<i>Definitive</i>)	Teaching and Learning methods (<i>Indicative</i>)	Assessment (<i>Indicative</i>)
Upon successful completion of this course, students will be able to:		
1. Explain the basic operation and structure of MOSFETs	Lecturer, Presentation	Written Examination
2. Describe the integrated circuit fabrication process.	Lecturer, Presentation	Written Examination
3. Describe the integrated circuit fabrication process	Lecturer, Presentation, seminar	Class Presentation, Written Examination
4. Design transistor-level logic circuits: combinational and sequential	Lecturer, Presentation, seminar	Class Presentation, Written Examination
5. Describe the fundamental operation and design constraints of memory circuits including ROM, SRAM, and DRAM	Lecturer, Presentation	Written Examination
6. Use modern IC software to design and simulate digital circuits	Presentation, Seminar	Mini Project

4. ASSESSMENT WEIGHTING

Assessment	Percentage of
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	final mark (%)
Mid-term examination I	20
Mini Project	40
Final Examination	40
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve **3** credit hours for this course by passing **ALL** of the course assessments [*alternatively, list the compulsory pass assessments**] and achieving a **minimum overall score of 50%**

NB *Ensure that ALL learning outcomes are taken into account

6. RECOMMENDED READING

Core text/s:

1. Neil H. E. Weste, and David Money Harris, CMOS VLSI Design: A Circuits and Systems Perspective, 5th edition, Addison-Wesley, 2011.
2. David Hodges, Horace Jackson, and Resve Saleh, Analysis and Design of Digital Integrated Circuits, 3rd edition, McGraw-Hill, 2004

Library + online resources:
Ngspice simulator