

ENT 361 DIGITAL ELECTRONICS & APPLICATIONS

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COURSE OBJECTIVES

CO1: Able to identify and differentiate digital electronics applications.

CO2: Able to describe and analyze the logic circuit.

CO3: Ability in distinguishing electronic components in mechanical engineering applications.

CO4: Capable in recognizing and integrating electronic components in specific applications.

Study Week	Course Content
1	<p>Introduction to Digital Electronics Brief introduction to the difference between analog and digital systems, numerical representation, memory, digital computers. [Dr.PAUL]</p>
2	<p>Digital Number Systems Numbering conversions, coding, byte, nibble, word, applications. [Dr.PAUL]</p>
3	<p>Describing Logic Circuits and Boolean Algebra Functions The AND, OR, NOT gates and operations, Boolean equations, Truth Tables, implementation of circuits from Boolean Expressions, NOR and NAND gates, applications, IEEE / ANSI Standard logic symbols. [Dr.PAUL]</p>
4	<p>Combinational Logic Circuits Sum-of-products form, simplifying logic circuits, designing combinational logic circuits, Karnaugh map method. [Dr.PAUL]</p>

5 - 6	<p>Basic Storage Elements NAND gate latch, NOR gate latch, troubleshooting case study, digital pulses, clock signals and clocked flip-flops, S-R, J-K and D flip-flops. [Dr.PAUL]</p>
7	<p>Counters & Registers (Part I) Synchronous and asynchronous counters, time delay. [Dr.PAUL]</p>
8	<p>CUTI PERTENGAHAN SEMESTER/MID SEMESTER BREAK</p>
9	<p>Counters & Registers (Part II) Analysis of sequential circuits, shift register basics. [EN.ROSLIZAM]</p>
10	<p>Interfacing with the Analog World Review of Digital vs Analog, Operational Amplifier basic, Digital-to-Analog Conversion, DAC specifications and applications, Analog-to-Digital Conversion, Data Acquisition System applications, transducers and signal conditioning. [EN.ROSLIZAM]</p>

11	<p>Memory Devices Memory concepts, static and dynamic RAMs, ROMs, memory expansion and address decoding applications, magnetic and optical storage.</p> <p style="text-align: right;">[EN.ROSLIZAM]</p>
12 - 15	<p>Overview of Basic Electronics Components and Applications Distinguish and integrate electronic components, common failures, troubleshooting problems in mechanical engineering.</p> <p style="text-align: right;">[EN.ROSLIZAM]</p>
16	MINGGU ULANGKAJI / REVISION WEEK
17-18	PEPERIKSAAN AKHIR SEMESTER / FINAL EXAMINATION

Text Book:

1. Terry L.M. Bartlelt, "Digital Electronics: An Integrated Laboratory Approach", Prentice Hall, 2002.

Reference Books:

1. Tocci, R.J., "Digital Systems: Principles and Applications", 10th Ed., Prentice Hall, 2007.
2. M.M. Mano, "Digital Design", 3rd Ed., Prentice Hall, 2002.
3. Kleitz, W., "Digital Electronics: A Practical Approach", 8th Ed., Prentice Hall, 2008.
4. Tokheim, R.L., "Digital Electronics – Principles and Applications", McGraw Hill, 2007.
5. Goodman, R.L., "How Electronic Things Work.. And What to do When They Don't", McGraw Hill, 2002.
6. Kissell, Thomas E., "Industrial Electronics: Applications for Programmable Controllers, Instrumentation and Process Control, and Electrical Machines and Motor Controls", Prentice Hall,

COURSE EVALUATION PLAN

Method	Questions/Numbers	Sub Weightage	Weightage
Final Exam	6 Questions	Answer any 5 Questions	50%
Mid-Term	6 Questions	Answer any 5 Questions	10%
Assignments	2		5%
Quiz	4		5%
Tutorials	3		-
Lab	5 Experiments	(Report 5% + Lab Test 10%)	15%
PBL	1	(Report 10 % + Presentation 5%)	15%
TOTAL			100%

**FINAL EXAM
QUESTION PATTERN**

Weightage: 50%

ANSWER ANY FIVE QUESTIONS

Time 3 Hours

Marks:100

1 a) From Lecture Week 1

1 b) From Lecture Week 2

1 c) From Lecture Week 3

2 a) From Lecture Week 4

2 b) From Lecture Week 5

2 c) From Lecture Week 6

3 a) From Lecture Week 7

3 b) From Lecture Week 7

3 c) From Lecture Week 9

4 a) From Lecture Week 10

4 b) From Lecture Week 10

4 c) From Lecture Week 10

5a) From Lecture Week 11

5 b) From Lecture Week 11

5 c) From Lecture Week 11

6 a) From Lecture Week 12-15

6 b) From Lecture Week 12-15

6 c) From Lecture Week 12-15

**MID-TERM EXAM
QUESTION PATTERN**

Weightage: 10%

ANSWER ANY FIVE QUESTIONS

Time 2 Hours

Marks:100

- 1 a) From Lecture Week 1
- 1 b) From Lecture Week 1
- 1 c) From Lecture Week 2

- 2 a) From Lecture Week 2
- 2 b) From Lecture Week 2
- 2 c) From Lecture Week 2

- 3 a) From Lecture Week 3
- 3 b) From Lecture Week 3
- 3 c) From Lecture Week 3

- 4 a) From Lecture Week 4
- 4 b) From Lecture Week 4
- 4 c) From Lecture Week 4

- 5 a) From Lecture Week 5
- 5 b) From Lecture Week 5
- 5 c) From Lecture Week 5

- 6 a) From Lecture Week 6
- 6 b) From Lecture Week 6
- 6 c) From Lecture Week 6

Weightage: 10%

LAB TEST EVALUATION SCHEME

S.No	Experiment	Marks
1	Objective	10%
2	Experiment Theory	10%
3	Experiment Circuit Diagram and Procedure	30%
4	Observation and Readings	30%
4	Results	20%
Total		100%

Weightage: 10%

PROJECT REPORT EVALUATION SCHEME

No	Assessment	Marks
1	Overall Report Organization	10%
2	Project Objective and Literature Review	10%
3	Project Concepts and Design	20%
4	Project Implementation and Testing	20%
5	Project Results and Discussions	20%
6	Conclusion	20%
Total		100%

Weightage: 5%

PROJECT PRESENTATION EVALUATION SCHEME

S.No	Presentation	Marks
1	Objective	10%
2	Project Overview & Methodology	25%
3	Results and Discussions	30%
4	Quality of Presentation: Structure + Flow + Visual + clarity	15%
5	Q&A	20%
Total		100%

Lecture Contact Details:

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