Course Specification
(Bachelor)

Course Title:	digital circuits
Course Code:	252 CIS- 4
Program	**Technical support**
Department	**Computer Department**
College:	**Applied College**
Institution	:Najran University
Version	: 3
Last Revision Date:	1-10-2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (4 hours)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (year : Second – level :3)					
4. Course General Description:					
This course is concerned with training on digital electrical circuits and how to design and analyze them. Where. is trained Numerical systems and conversion between them, building equations using Boolean algebra, and simplifying these equations to facilitate their application. The trainee is also trained on the outputs of complex digital circuits, building complex circuits, and analyzing and designing digital circuits It can be used in specific applications					
5. Pre-requirements for this course (if any):					
NO					
6. Co-requisites for this course (if any):					
NO					
7. Course Main Objective(s):					
This course aims to introduce the student to digital circuits and how to build, analyze and use them in specific applications, in addition to introducing the student to voltage, current, resistance, Ohm's law, energy and power.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4 hours per week	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		

No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Knows number systems and how they are used.	K2	Lecture	Exams +H.W +C.W
1.2	Calculating transformations between numerical Systems	K3	interactive lectures + Tutorial	Exams +H.W +C.W
...				
2.0	**Skills**			
2.1	Describe all kinds of circles	S1	interactive lectures + Lab	Exams +H.W +C.W
2.2	Analyze and Implement Differentiate between the functions of the types of gates	S2	interactive lectures + Lab	Exams +H.W +C.W
...				
3.0	**Values, autonomy, and responsibility**			

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
3.1	Demonstrate projects and assignments in the work team to design and develop areas of technical support	V2	• Lecture • Brainstorming • Small Group Work • Lab Demonstration • Project	• Exam • Group Reports • Lab Reports
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	- VOLTAGE, CURRENT,AND RESISTANCE - OHM'S LAW, ENERGY, AND POWER Lab : Apply Ohm's Law	10
2.	Number systems and complements -Different counting systems and conversion from one system to another (Decimal, binary, octal, hexadecimal) - Perform simple arithmetic operations using different number systems. Lab : Explanation of exercises in conversions between systems.	10
3.	Design simple logic circuits -Logical Gates. -Boolean equations and how to represent them using logic gates and truth tables Lab : Design simple logic circuits	10
4.	Simplify simple logic circuits -Boolean algebra rules -De Morgen's theory -Karnaugh maps Lab : Simplify simple logic circuits	10
5.	combinational logic circuits - Binary Adder & Binary Subtract - Encoder & Decoder - Multiplexer & Demultiplexer - comparator Lab : combinational logic circuits	10
6.	Capable of displacement using different types of flip-Flops - R-S Flip-flop - Clocked R-S Flip-flop - D Flip-flop - J-K Flip-flop Clocked	10

	Lab : Capable of displacement using different types of flip-Flops	
7.	Synchronous Logic Circuits - Synchronous Counter - Register Lab : Synchronous Logic Circuits	15
8.		
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Middle-Term Exam	8	30%
2.	Assignments	10	10%
3.	Practical Exam	15	20%
4.	Final exam	17	50%
5.			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	M. Morris Mano, Michael D. Ciletti, Digital Design, 5th Edition
Supportive References	Thomas L. Floyd , Digital Fundamentals, Eleventh Edition, Prentice. 2000
Electronic Materials	Https://www.youtube.com/watch?v=YysQEuKQ5Hc&list=PLww54WQ2wa5obq6IbRbIiql8oHaTUp3T_
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture rooms should be large enough to accommodate the number of registered students
Technology equipment (projector, smart board, software)	Black Board/Data Show

Items	Resources
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	***Student***	***Questioners***
Effectiveness of Students assessment	Staff committee	Cross checking
Quality of learning resources	Faculty Administration	Review and check the results
The extent to which CLOs have been achieved	Quality management in the department	A review of the measurement of learning outcomes
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	