Write here Name of Your Institute/College/Department/School
Write Name of Your Faculty
University of the Punjab, Lahore

Course Outline

Programme		Course Code	4312	Credit Hours	3
Course Title	Advanced Digital Electronics				

Course Introduction

In this course, a wide range of topics that expand upon the fundamental principle of digital logic have been explore. It aims to equip with the skill and understanding to design, analyze and optimize the complex digital systems.

Learning Outcomes

On the completion of the course, the students will:

1. Understanding advanced digital logic including combinational and sequential logic design.
2. Conceptualization of programmable logic devices like FPGAs, SPLDs and CPLDs.
3. Knowledge of memory and storage systems used in digital electronics including RAM and ROM.
4. Introduction to advanced topics i.e. digital signal processing and computer interfacing etc.

Course Content

Week 1	Basic Adders
	Basic Subtractors
Week 2	Comparators
	Decoders and Encoders
Week 3	Multiplexer and De Multiplexer
	Parity and Parity generator
Week 4	Parity Checker
	Sequential Circuits and Latches
Week 5	Edge Triggered Flip Flop
	Counters and Asynchronous counters
Week 6	Synchronous Counters
	Up/Down Synchronous Counters
Week 7	Cascaded Counters
	Basic shift register operation
Week 8	SISO, SIPO
	PISO, PIPO Shift Registers
Week 9	Shift register Counters

	Memory, RAM Family
Week 10	ROM Family, Programmable ROMs
	Flash Memory, Programmable Logics
Week 11	SPLDs (Simple programmable Logic Devices)
	CPLDs (Complex programmable Logic Devices)
Week 12	Introduction to FPGAs (Field programmable gate array logic)
	Converters
Week 13	Analog to digital converters
	Digital to analog converters
Week 14	Digital signal processing
	Basic Architecture of Computer system
Week 15	Microprocessor, Basic microprocessor operation
	Computer Interfacing, Direct Memory Access
Week 16	Bus standards, Integrated circuit technology, CMOS Circuits
	TTL Circuits, ECL Circuits, PMOS, NMOS and E^2MOS

Textbooks and Reading Material

1. Digital Fundamentals by Thomas L. Floyd 11th Edition.
2. Digital Systems: Principles and Applications by Ronald J. Tocci.
3. Digital Electronics by Nigel P. Cook.

Teaching Learning Strategies

Classroom teaching/lecturing

Assignments: Types and Number with Calendar

1. Number of Assignments2-3
2. Types of Assignments
   i) Discussion Topics
   ii) Summary on Research Articles

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.

Chairman
Department
University
Quaid-e-Azam
Lahore-54600

3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

Chairman
Department of Linguistics
University of the Punjab
Quaid-e-Azam Campus
Lahore-54590 Pakistan