**University of Asia Pacific**

**Department of Electrical and Electronic Engineering**

**Lesson Plan**

**Course Code & Title:** Digital Electronics & Pulse techniques

**Teacher: Dr. MD. Shahrukh Adnan Khan**

**Course Outline:**

* **Logic gate structure:**

Basic terminology, RTL, TTL, DTL, NMOS and CMOS logic .

* **Digital to Analog/ Analog to digital converter**:

DAC: Specifications, weighted and R-2R ladder

ADC: Specifications, flash, successive approximation, dual slope converters, etc

* **Memory elements:**

ROM, Static RAM and dynamic RAM, flash memory, memory expansion

* **Pulse technique:**

Square, triangular and saw tooth wave generation techniques, 555 timers and their applications, application of Schmitt triggers in wave shaping application of diodes in clipping and clamping, application of inverter, chopper, rectifier, and switch mode power supply.

**Prerequisites:** Basic Electrical Engineering(ECE 101).

**Course Schedule/Class Schedule**

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| --- | --- | --- | --- |
| **Lecture No.** | **Topic** | **Reading Assignment** | **Work Assignment** |
| Lecture 01 | Introduction to the course and course contents, Digital Fundamental | Lecture Plan,  Floyd | - |
| Lecture 02 | TTL logic family |  |  |
| Lecture 03-06 | TTL logic family RTL & DTL,TTL circuits |  |  |
| Lecture 07-09 | DAC: Specifications,  ADC: Specifications, |  |  |
| Lecture 10-13 | weighted and R-2R ladder, flash ADC, successive approximation ACD ,dual slope converters, |  |  |
| Lecture 14-17 | Memory specification, SRAM, DRAM, ROM, structure, Flash Memory, Optical and hard drive (Q1) |  |  |
| **Mid Term** | | |  |
| Lecture 18-20 | Square, triangular and saw tooth wave generation techniques |  |  |
| Lecture 21-24 | 555 timers and their applications, |  |  |
| Lecture25 | application of Schmitt triggers in wave shaping |  |  |
| Lecture 26-28 | Application of diodes in clipping and clamping, application of inverter, chopper, rectifier, and switch mode power supply. |  |  |
| **Semester Final** | | |  |

**Basic Texts:** 1. Digital Electronics

**-** William Kleitz

2. Digital Fundamentals 8th Edition

-Thomas Floyd

3. Operational Amplifier and linear integrated circuit

-Robert F. Coughlin.

4. Electronics device and Circuit theory 9th Edition

- Robert Boylstead

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| Component | Weight/percentage |
| Quizzes | 20% |
| Class participation | 5% |
| Assignments | 5% |
| Term Paper | 0% |
| Presentation | 0% |
| Midterm | 20% |
| Final | 50% |
| Total | 100% |

**Assessment Methods:**

**Grading Scale:** **Above 80% -- A+**

**75% - 79% -- A**

**70% - 74% -- A-**

**65% - 69% -- B+**

**60% - 64% -- B**

**55% - 59% -- B-**

**50% - 54% -- C+**

**45% - 49% -- C**

**40% - 44% -- D**

**Below 40% -- F**