**KAHM UNITY WOMEN’S COLLEGE, MANJERI**

**DEPARTMENT OF PHYSICS**

**CERTIFICATE COURSE -2022**

**SYLLABUS**

**PHYCC01 - CERTIFICATE COURSE ON “ANALOG & DIGITAL ELECTRONICS”**

**DEPARTMENT OF PHYSICS**

K.A.H.M. Unity Women’s College, Manjeri

**CERTIFICATE COURSE SYLLABUS**

**PHYCC02: ANALOG & DIGITAL ELECTRONICS**

Number of contact hours: 30

Target group: B.Sc Students

**Objectives:**

1. To Understand the basic principles of rectifiers and dc power supplies.

2. Understand the working and designing of transistor amplifiers and

Oscillators.

3.To Understand the basics of digital electronics.

**Module 1 18 Hours** Semiconductors,Intrinsic semiconductors,Extrinsic semiconductors(n-type and P-type),p-n junction diodes, Zener diode characteristics Voltage stabilization,Preliminaries of rectification, Half wave, Full wave and bridge rectifier circuits- Efficiency & ripple factor- Filter circuits(capacitor filter and π filters) Transistors- CB,CE, CC Configurations- CE (only) characteristics- Current amplification factors – relation connecting α , β and γ – CE Amplifier- frequency response- band width Basic principle of feedback, concept of an oscillator circuit, Field Effect Transistors(FET,MOSFET)

**Module 2 12 Hours**

Binary number system, conversions from one system to another (Binary, octal, Hexa decimal), Binary arithmetic, Compliments and its algebra. Fundamental gates, Universal gates, De Morgan’s theorem, Exclusive OR gate, Boolean relations, Half adder, Full adder, RS Flip Flop, Master-Slave Flip Flop JK Flip flop, Registers, Shift Registers.

**References:**

1. Principles of Electronics-VK Mehta**.**
2. Introduction to Micro Processors - Aditya P Mathur
3. Digital principles and applications - Leach and Malvino
4. Electronic Principles by Malvino
5. Physics of Semiconductor Devices- Second Edition – Dilip K Roy – Universities Press

**EVALUATION & GRADING**

**SCHEME OF EVALUATION**

|  |  |  |  |
| --- | --- | --- | --- |
| **METHOD OF EVALUATION** | | | |
| **Assessment Methods** | **Criteria** | **Marks** | **Weightage** |
| Formative Assessment (FA) | Attendance | 4 | 25% |
| Assignment/Project/Activities/Reports | 6 |
| Summative Assessment (SA)\* | Test Paper | 30 | 75% |
|  | Total | 40 | 100 |

**(\*Summative Assessment – Internal/External Evaluation)**

**ATTENDANCE**

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| **Attendance** | **Marks** |
| 90-100% | 4 |
| 85-89.9% | 3 |
| 80-84.9% | 2 |
| 75-79.9 | 1 |
| <75% | 0 |

**GRADING POLICY**

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| --- | --- |
| **Grade** | **Percentage of total marks (FA+SA)** |
| A | 80% & above |
| B | 60-79.9% |
| C | 50-59.9% |
| D | 40-49.9% |
| **Not qualified** | **<40%** |