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| **Course – 53 Title: Digital Electronics and Pulse Techniques** |  |
| Course No.: EEE 321 Credit : 3 Contact Hours: 3 | Total Marks: 100 |

**11.1 Rationale:**

To be an engineer for advanced electronics application, one needs to design and apply logic gates, flip-flop, OP-AMPs and multivibrators in electronic circuits.

**11.2 Objectives:**

* To design and analyze logic gate circuits.
* To explain electronic circuit for memory, A/D and D/A converter, oscillator
* To apply operational amplifiers and multivibrator in electronic circuits.
* To implement diode in linear wave shaping.

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Strategy/ Learning Experience** | **11.6 Assessment Strategy** |
| * Design logic gate circuit | Diode logic gates, transistor switches, transistor gates, MOS gates, Logic Families: TTL, ECL, IIL and CMOS logic with operation details. | Lecture and Exercise | Exercise |
| * Characterize the features of gates | Propagation delay, product and noise immunity. Open collector and High impedance gates. | Lecture | Short answers |
| * Design register and memory * Integrate flip-flop in memory | Electronic circuits for flip-flop, counters and register, memory system, PLAs and PLDs. | Lecture and Exercise | Exercise |
| * Demonstrate A/D and D/A circuit * Explain oscillator principle | A/D., D/A converters with applications. S/H circuits, LED, LCD and optically coupled oscillators. | Lecture | Short answers |
| * Implement OP AMPs | Operational Amplifiers (OP AMPs): inverting and noninverting amplifiers, Comparators and controls, selected applications of OP AMs. | Lecture and Exercise | Assignments |
| * Apply diode in linear wave shaping * Analyze different circuit | Linear wave shaping : diode wave shaping techniques, clipping and clamping circuits. Comparator circuits, switching circuits. | Lecture and Exercise | Practical exam |
| * Illustrate pulse transmission * Characterize multivaibrator | Pulse transformers, pulse transmission. Pulse generator; monostable, bistable and astable multivibrators. | Lecture | Short answers |
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**RECOMMENDED BOOKS AND PERIODICALS**

**Text Books**:

1. R.P. Jain : Modern Digital Electronics
2. J. Millman :Pulse, Digital and Switching Waveforms
3. F. Coughlin and F. Driscoll : Operational Amplifiers and Linear Integrated Circuits