# ANALOG AND PULSE CIRCUITS LABORATORY

**IV Semester: ECE**

| Course Code | Category | Hours /Week | | | Credits | Maximum Marks | | |
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| | | L | T | P | C | CIA | SEE | Total |
| AECB15 | Core | - | - | 3 | 1.5 | 30 | 70 | 100 |
| Contact Classes: Nil | Tutorial Classes: Nil | Practical Classes: 36 | | | | Total Classes: 36 | | |

**OBJECTIVES:**

**The course should enable the students to:**

I. Simulate and analyze single stage and multistage amplifiers and oscillators.
II. Demonstrate the principles of feedback amplifiers and oscillators through simulation.
III. Implementation of circuits for linear and non-linear wave shaping.
IV. Analyze the characteristics of different multivibrators.

## LIST OF EXPERIMENTS

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| **WEEK-1** | **BASIC AMPLIFIERS** |
| Simulate frequency response of common emitter amplifier and common base amplifier. | |
| **WEEK-2** | **TWO STAGE RC COUPLED AMPLIFIER** |
| Simulate frequency response of two stage RC coupled amplifier. | |
| **WEEK-3** | **SINGLE TUNED AMPLIFIERS** |
| Simulate a single tuned amplifier. | |
| **WEEK-4** | **FEEDBACK AMPLIFIERS** |
| Simulate voltage series feedback amplifier and current shunt feedback amplifier. | |
| **WEEK-5** | **RC PHASE SHIFT OSCILLATOR USING TRANSISTOR** |
| Simulate sine wave generated for a particular frequency by an RC phase shift oscillator. | |
| **WEEK-6** | **OSCILLATORS** |
| Simulate sine wave generated for a particular frequency by Colpitts and Hartley oscillator. | |
| **WEEK-7** | **POWER AMPLIFIERS** |
| Simulate class A power amplifier (transformer less) and class B power amplifier. | |
| **WEEK -8** | **LINEAR WAVESHAPING** |
| Design RC low pass and high pass circuit for different time constants. | |
| **WEEK - 9** | **NON-LINEAR WAVESHAPING** |
| Design transfer characteristics of clippers and clampers. | |
| **WEEK-10** | **MULTIVIBRATORS ASTABLE** |
| Design Astable multivibrator and plot its waveforms. | |
| **WEEK-11** | **MULTIVIBRATORS BISTABLE** |
| Design Bistable multivibrator and plot its waveforms. | |
| **WEEK-12** | **SCHMIT TRIGGER** |
| Design a Schmitt trigger circuit. | |

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| **WEEK-13** | **COMPARATOR** |
| Design a Comparator and plot its waveforms. | |
| **WEEK-14** | **Transistor as a switch** |
| Design a Switch and plot its waveforms. | |

**Reference Books:**


1. Jacob Millman, Herbert Taub , Mothiki S. PrakashRao, "Pulse Digital and Switching Waveforms", Tata McGraw-Hill, 3rd Edition, 2008.
2. David A. Bell, "Solid State Pulse Circuits", PHI, 4th Edition, 2002.
3. J. Millman, C. C. Halkias, "Integrated Electronics", Tata McGraw-Hill. 1st Edition, 2008.
4. B. P. Singh, Rekha Singh, "Electronic Devices and Circuits", Pearson, 1st Edition, 2006.
5. Behzad Razavi, "Design of Analog CMOS Integrated Circuits", Tata McGraw-Hill, 1st Edition, 2002.


**Web References:**


1. http://www.tedpavlic.com/teaching/osu/ece327/
2. http://www.ee.iitkgp.ac.in
3. http://www.citchennai.edu.in