

DEPARTMENT OF E&C ENGINEERING, NITK SURATHKAL
COURSE PLAN
EC 205: ANALOG ELECTRONICS LAB

1. Course Code: EC 205
2. Course Title: Analog Electronics Lab
3. L-T-P: (0-0-3) 2
4. Pre-requisite: NIL
5. Course Instructor / Co-ordinator: U. Shripathi Acharya
6. Teaching Department: Electronics & Communication Engineering
7. Course Objectives:
 - a) To design and simulate analog and linear integrated circuits for various applications.
 - b) To prototype and test analog and linear integrated circuits for various applications.
 - c) To design, prototype and test simple systems built out of circuits designed on part a) and b) above.
8. Course Outcomes:
 - a) Ability to design and simulate various analog and linear integrated circuits for various applications. (Alignment with POs: a, b, c, e, i, k)
 - b) Ability to prototype and test various analog and linear integrated circuits for various applications. (Alignment with POs: a, b, c, e, i, k)
 - c) Ability to build simple systems using circuits designed and tested in parts a) and b) as sub-systems. (Alignment with POs: a, c, d, e, i, k)
9. Course Coverage (10-Week Laboratory Schedule):

Expt No.	Title
1	Design of Half wave (HWR), Full wave (FWR) and Bridge rectifier (BR) circuits- simulation, prototyping and testing
2	HWR, FWR and BR circuits with capacitor filters- design, prototyping and testing, Design of simple regulator circuits using Zener diodes, Design of single and dual power supplies using three terminal regulators (78XX family)- simulation, prototyping and testing
3	Design of simple clipping, clamping and voltage doubler circuits- simulation, prototyping and testing
4	Design of buffer, inverting, non-inverting and difference amplifier OP-AMP circuits- simulation, prototyping and testing
5	Design of first and second order Low Pass and High Pass circuits- simulation, prototyping and testing

6	Design of Band pass and Band reject circuits- simulation, prototyping and testing
7	Design of Voltage comparators, Schmitt triggers and precision rectifiers- simulation, prototyping and testing
8	Design of waveform generators- sine wave, square wave, triangular and sawtooth waveforms, F-V and V-F converters- simulation, prototyping and testing _
9	Design of phase locked loops and their applications- simulation, prototyping and testing
10	Design of a simple system making use of the above blocks as sub systems

10. Evaluation Plan: The components and the percentage weights are given below.

- Regular laboratory work (Performance and Accuracy of results, circuit debugging capacity, viva-voce, record): 30 marks
(Assessment of the attainment of POs: a, b, c, d, e, i, k)
- Mid-Sem examination: 20 marks
(Assessment of the attainment of POs: a, b, c, e, i, k)
- Quiz Test: 10 marks
(Assessment of the attainment of POs: a, c, e)
- End-Sem examination: 40 marks
(Assessment of the attainment of POs: a, c, e)

11. References:

1. Adel S. Sedra and Kenneth C. Smith, ``Microelectronic Circuits, Theory and Applications'', Sixth Edition 2011.
2. B. Rezhavi, ``Microelectronics'', Second Edition'', 2015.
3. S. Franco, ``Analog Circuit Design, Discrete and Integrated'', Indian Edition, 2014''

Prepared by: Course Instructor
(U. Shripathi Acharya)

Approved by
(Prof. N. S. V Shet, H.O.D)

Program Outcomes (POs):

- a. Ability to acquire and apply in-depth knowledge in the area of E & C Engineering and contribute to the state-of-art.
- b. Ability to Design and Conduct Experiments, as well as analyze & Interpret Data.
- c. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, manufacturability, and sustainability.
- d. An ability to function, manage and lead multidisciplinary teams.
- e. Ability to identify, formulate & solve problems, conduct research and critically examine the outcomes and take corrective actions.
- f. An understanding of professional and ethical responsibility.

- g. An ability to communicate effectively.
- h. To understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- i. Recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.