

**Kadi Sarva Vishvavidyalaya, Gandhinagar**  
**Bachelor of Engineering (Electrical Engineering Syllabus)**  
**Analog Electronics**  
**B.E. SEM-IV SUBJECT CODE: EE-404**

**A. Course Objective:**

The educational objectives of this course are

- To present a problem oriented introductory knowledge of Analog circuits and its applications.
- To focus on the study of electronic circuits.

**B. Teaching / Examination Scheme**

SUBJECT		Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
		L	T	P	Total		THEORY		IE	CIA	PR. / VIVO	
CODE	NAME	Hrs	Hrs	Hrs	Hrs	Hrs	Marks	Marks	Marks	Marks	Marks	
EE-404	Analog Electronics	3	0	0	3	3	70	30	20	00	120	

**C. Detailed Syllabus**

1. Operational Amplifier: Differential amplifier, open and closed loop gain of OPAMP, differential input impedance of OPAMP, Op amp Parameters, slew rate, offset voltage, offset balancing technique, inverting amplifier, non-inverting amplifier, frequency response, frequency compensation techniques.
2. OPAMP Applications: OPAMP as adder, subtractor, integrator, differentiator, voltage follower, constant voltage source, constant current source, differential input amplifier, log and antilog amplifier, active peak detector, half wave rectifier, full wave rectifier, comparator, window detector, zero crossing detector, Schmittz' trigger, active filters etc.
3. Special Function ICs Multivibrators Based on 555 and OPAMP, VFC, FVC, PLL, VCO, ADC, DAC, Three terminal regulator ICs, basic block schematic - 78 x x & 79xx series - Adjustable output voltage regulator LM 317, LM 340 and LM 337 series power supply ICs, their use and basic design considerations for designing regulated power supplies.

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**D. Lesson Planning**

SR No.	No. of Hours	% Weightage in Exam	Topic
1	05	<b>35</b>	Operational Amplifier: Differential amplifier, open and closed loop gain of OPAMP, differential input impedance of OPAMP.
2	05		Op amp Parameters, slew rate, offset voltage, offset balancing technique, inverting amplifier, non-inverting amplifier.
3	05		frequency response, frequency compensation techniques.
4	10	<b>35</b>	OPAMP Applications: OPAMP as adder, subtractor, integrator, differentiator, voltage follower, constant voltage source, constant current source.
5	10		differential input amplifier, log and antilog amplifier, active peak detector, half wave rectifier, full wave rectifier, comparator, window detector, zero crossing detector, Schmittz' trigger, active filters etc.
6	05	<b>30</b>	Special Function ICs Multivibrators Based on 555 and OPAMP, VFC, FVC, PLL, VCO, ADC, DAC, Three terminal regulator ICs, basic block schematic - 78 x x & 79xx series.
7	05		Adjustable output voltage regulator LM 317, LM 340 and LM 337 series power supply ICs, their use and basic design considerations for designing regulated power supplies.
<b>TOTAL</b>	<b>45</b>	<b>100</b>	

**E. Instructional Method & Pedagogy**

- At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures, which may carries five marks in overall evaluation.
- Two internal exams may be conducted and average of the same may be converted to equivalent of 15 marks as a part of internal theory evaluation.
- Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry a weight age of five marks in the overall internal evaluation.
- Surprise tests/Quizzes/Seminar /Tutorial may be conducted and having share of five marks in the overall internal evaluation.

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**F. Students Learning Outcomes**

On successful completion of the course

- The student can acquire the basic knowledge of measurement principles and their application in electrical engineering.
- The students will be able to effectively employ electrical and electronics instruments for measurements of various electrical quantities.

**G. Recommended Study Materials**

**Text & Reference Books:**

1. Op-Amp and Linear integrated Circuit technology- Ramakant A Gayakwad, PHI Publication
2. Micro Electronics Circuits by SEDAR/SMITH.Oxford Pub.
3. Operational Amplifier and Linear integrated Circuits By ROBERT F.COUGHLIN, FREDERICK F. DRISCOLL
4. Operational Amplifier and Linear integrated Circuits By K.LAL kishore. Pearsons