



**Kadi Sarva Vishwavidyalaya**  
**Faculty of Engineering & Technology**  
**Second Year Bachelor of EC Engineering**

<b>Subject Code: EC404- N</b>	<b>Subject Title: ADVANCE ELECTRONICS</b>
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**Course Objective:**

- To understand the Power supply (AC/DC).
- To study the basics of amplifiers and Oscillators circuits.
- To understand the basics of operational amplifiers.

**Teaching Scheme (Credits and Hours)**

Teaching scheme				Total Credit	Evaluation Scheme					Total Marks
L	T	P	Total		Theory		IE	CIA	Pract.	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
03	00	02	05	04	03	70	30	20	30	150

**Outline of the Course:**

Sr. No	Title of the Unit	Hours
1.	Transistor at High Frequencies	7
2.	Power Amplifier & Power Supply	10
3.	Feedback Amplifiers	10
4.	Oscillators	7
5.	Operational Amplifiers	7
6.	Analog To Digital And Digital To Analog Converters	7
		<b>48</b>

**Total hours (Theory): 48**

**Total hours (Tutorial): 32**

**Total hours: 80**



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**Detailed Syllabus:**

Unit No	Topics	Lectures (Hours)	Weight age
1.	<b>Transistor at High Frequencies:</b> High frequency transistor models, frequency response of single stage and multistage amplifiers, cascode amplifier.	7	15
2.	<b>Power Amplifier &amp; Power Supply :</b> Class A, Second Harmonics Distortion, Higher Order Harmonics Generation Transformer-Coupled Audio Power Amplifiers, Efficiency, Push-Pull Amplifier, Class B, Class AB. Regulated Power Supply.	10	20
3.	<b>Feedback Amplifiers :</b> Feedback Concept, Transfer Gain With Feedback, General Characteristics of Negative-Feedback Amplifiers, Input Resistance, Output Resistances, Method of Analysis of A Feedback Amplifier. Current-Shunt Feedback, Voltage-Shunt Feedback, Current-Series Feedback, Voltage-Series Feedback.	10	20
4.	<b>Oscillators:</b> Sinusoidal Oscillator, Phase Shift Oscillators, Resonant-Circuit, Hartley Oscillators, Colpitt's Oscillators, Wien Bridge Oscillators, Crystals Oscillator	7	15
5.	<b>Operational Amplifiers:</b> Differential amplifier, DC and AC analysis of bipolar differential Amplifier, The ideal operational amplifier, Inverting and Non-inverting Amplifiers, Op-Amp Parameters, Measurement of Op-Amp Parameters, General description of various stages of Op-Amp, Open-loop and Closed-loop Frequency response, Op-Amp Stability, Frequency Compensation.	7	15
6.	<b>Analog To Digital And Digital To Analog Converters:</b> Digital To Analog Conversion, R-2r Ladder Type DAC, Weighted Resistor Type DAC ,Analog To Digital Conversion, Counter Type A/D Converter, Tracking Type A/D Converter, Flash-Type A/D Converter, Dual Slope Type A/D Converter, Successive Approximation Type ADC.	7	15
<b>Total</b>		48	100%



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**Instructional Method and Pedagogy (Continuous Internal Assessment (CIA) Scheme)**

- 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. & equal weight age should be given to all topics while teaching and conduction of all examinations.
- Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
- One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 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 an importance of ten 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.

**Learning Outcomes:**

- The student can learn about detailed aspects of Advance Electronics of all the areas in day to day life. Can also learn about power supply, Oscillators & A to D converters.

**TEXT BOOKS:**

1. Millman & Halkias -Integrated Electronics, McGraw Hill.

**REFERENCE BOOKS:**

1. Electronics devices and circuits by Boylsted, PHI
2. Electronics Device & circuits by Sanjeev Gupta by Dhanpat Rai Publishing



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**LIST OF EXPERIMENTS**

<b>Sr. No.</b>	<b>Experiment Title</b>
<b>1.</b>	To Perform Operation Of Hartley Oscillator and Colpitts Oscillator.
<b>2.</b>	To Perform Operation Of Wein Bridge Oscillator and Phase Shift Oscillator.
<b>3.</b>	Build & Test Voltage regulator circuit; parameter measurement- Load regulation
<b>4.</b>	To Perform Operation of feedback Amplifier (Any one configuration)
<b>5.</b>	To Perform Operational Amplifier As An Inverting Amplifier.
<b>6.</b>	To Perform Operational Amplifier As An Non Inverting Amplifier.
<b>7.</b>	To Perform The Operation Of Class A Amplifier.
<b>8.</b>	To Perform Operation Of Cascade Amplifier.
<b>9.</b>	To Perform The Operation Of Analog To Digital Converter.
<b>10.</b>	To Perform The Operation Of Digital To Analog Converter.
<b>11.</b>	To Perform Op-Amp As A Differential Amplifier
<b>12.</b>	Mini Project