ELECTRONIC CIRCUIT DESIGN II(THEORY) EE-203

Pre-requisite: ECD-I
Credit Hours 03
Contact Hours 48

RECOMMENDED BOOKS

- Robert L. Bolylestad, Louis Nashelsky " Electronic Devices and Circuit Theory" Eleventh edition, Prentice Hall

REFERENCE BOOKS

- Thomas L. Floyd, " Electronics Fundamentals: Circuits Devices and Applications" ninth edition, Prentice Hall.
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OBJECTIVE OF COURSE

The objective of this course is to provide the students an insight into analysis and design of the electronic circuits that find extensive application in such fields as computers, control systems, digital instrumentation, communications, radar etc. This course is devoted to the study of analog circuits emphasizing amplifiers. The course begins with small signal model for both bipolar and FET trasisitors. Frequency response of amplifiers, feedback analysis with focus on practical circuit applications of negative feedback and stability problems in feedback amplifiers are also presented. This course also introduces operational amplifiers and its practical application with negative feedback.

S.NO	CLO/PLOs MAPPING	DOMAIN	PLO
01	**Construct** and **analyze** small signal BJT and FET amplifiers networks	C4, C5	01
02	**Analyze** single and multistage amplifiers at low and high frequencies	C4	02
03	**Design** and **analyze** various small-scale electronic circuits using operational amplifiers	C4, C5	02, 03

COURSE CONTENTS

BJT Amplifiers

- Application in AC Domain

- BJT Transistor Modeling
- BJT amplifiers Configurations
- Cascade Systems
- Darlington Connection
- Feedback Pair

FET Amplifiers

- Small Signal Model
- JFET amplifier Configurations
- Depletion Type MOSFET Configuration
- EMOSFET Configuration
- Designing of FET Amplifiers

Frequency Response of Amplifiers

- Bode Plots Logarithms, Decibels
- Frequency Considerations
- Low Frequency Response of BJT Amplifiers
- Low Frequency Response of FET Amplifiers
- Multi Stage Frequency Effects
- High Frequency Response of FET amplifiers
- High Frequency Response of BJT amplifiers

Operational amplifiers

- Operational Amplifiers
- Differential Amplifier Circuits
- Op Amp Basics
- Practical OpAmp Circuits
- Differential and Common Mode Operation

Feedback Amplifiers

- Feedback concepts
- Properties of negative feedback
- Impedance of negative feedback amplifiers
- Voltage series feedback amplifiers

- Current series feedback amplifiers
- Voltage and current shunt feedback
- Phase and frequency considerations

Application of Operational amplifiers

- Binary weighted resistor DAC
- R-2R ladder DAC
- Parallel/Flash ADC

Single slope and dual slope ADC