

COURSE	Name	: Electronic Circuit Analysis and Design
	Code	: EE185740
	Credit(s)	: 2
	Semester	: (Elective Course)

Description of Course

Electronic Circuit Analysis and Design course provides students with a basic understanding of the characteristics of Bipolar transistor amplifier circuit, FET and Op-Amp (Operational amplifier) both DC and AC small signal amplifier at low, medium and high frequency. It also discusses negative and positive feedback concepts, feedback amplifier circuit, comparator, voltage level detector, hysteresis, and analog computer, integrator, differentiator, as well as active filter Butterworth LPF, HPF, BPF, and BSF that are implemented in operational amplifier.

Learning Outcomes

Knowledge

(P02) Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in the areas of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

Specific Skill

(KK02) Being able to compose problem solving in engineering through depth and breadth of knowledge which adapts to changes in science and technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU07) Being able to improve the capacity of learning independently.

Attitude

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently.

Course Learning Outcomes

Knowledge

Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in BJT, FET, and Op-Amp amplifiers

Specific Skill

Able to analysis and design BJT, FET, and Op-Amp amplifier circuits as well as comparator, oscillator, analog computers, and Op-Amp active filters

General Skill

Able to analysis and design electronic circuits in the electrical system by using BJT, FET dan Op Amp.

Attitude

Able to demonstrate attitude of responsibility on work in his/her field of expertise in analysis and design of electronic circuits independently

Main Subjects

1. Basic Characteristics Of bipolar transistor
2. Bipolar transistor DC Biased Circuits
3. Small signal analysis of BJT amplifiers
4. Basic Characteristics Of FET (JFET dan MOSFET)
5. FET DC biased circuits
6. Small signal analysis of FET amplifiers
7. Basic Characteristics of Op-Amp and Op Amp negative feedback amplifier
8. Op-Amp positive feedback circuits, comparator and voltage level detector
9. Signal generator and Wien oscillator
10. Analog computer (Integrator, differentiator, adder)
11. Butterworth Op Amp active filter (LPF, HPF, BPF, BSF)

Reference(s)

- [1] Diktat Kuliah Analisis dan Disain Rangkaian Elektronika, Hendra Kusuma, 2018
- [2] Robert L. Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, 11th Ed., Pearson Education Inc., 2013
- [3] Robert F Coughlin, Frederick F Driscoll, Operational Amplifier and Linear Integrated Circuit, Prentice-Hall International, 2001.
- [4] Alexander Charles K., Sadiku Matthew O. N., Fundamentals of Electric Circuit, 5th Ed., McGraw-Hill, New York, 2013.

Prerequisite(s)

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