



INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)
FAKULTAS TEKNOLOGI ELEKTRO DAN INFORMATIKA CERDAS
DEPARTEMEN TEKNIK ELEKTRO
Program Studi Sarjana (S1) Teknik Elektro

INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)
FACULTY OF INTELLIGENT ELECTRICAL & INFORMATICS TECHNOLOGY
DEPARTMENT OF ELECTRICAL ENGINEERING
Bachelor Degree Program in Electrical Engineering

1	Nama Mata Kuliah / Course Name : Perancangan Sistem Elektronika Analog / <i>Design of Analog Electronic Systems</i>
2	Kode Mata Kuliah / Course Code : EE234554
3	Kredit / Credits : 3 SKS
4	Semester / Semester : 5

Deskripsi Mata Kuliah / Course Description

Mata kuliah ini membahas tentang proses analisis, simulasi, dan perancangan aplikasi rangkaian Precision Rectifier, Oscillator dan Timer, Logarithmic dan Antilog Amplifier, Switching Voltage Regulator, Analog Proportional-Integral-Derivative Control, Switched Capacitor dan Field Programmable Analog Array, Power Amplifier, Phase-locked loop, dan Lock-In Amplifier. / *This course covers the process of analyzing, simulating, and designing applications of Precision Rectifier circuits, Oscillators and Timers, Logarithmic and Antilog Amplifiers, Switching Voltage Regulators, Analog Proportional-Integral-Derivative Control, Switched Capacitor and Field Programmable Analog Array circuits, Power Amplifiers, Phase-Locked Loops, and Lock-In Amplifiers.*

Capaian Pembelajaran Lulusan (CPL) Yang Dibebankan Mata Kuliah / Program Learning Outcomes Charged to The Course

- CPL 5 Mampu mendesain komponen, sistem, dan proses yang logis dan realistis sesuai dengan spesifikasi yang ditentukan dengan mempertimbangkan aspek keselamatan, sosial, budaya, lingkungan, dan ekonomi / *Able to design components, systems, and processes that are logical and realistic in accordance with specified specifications, while considering safety, social, cultural, environmental, and economic aspects.*
- CPL 6 Mampu mengkaji dan memanfaatkan matematika, ilmu pengetahuan alam dan teknologi serta mengidentifikasi, memformulasikan dan menyelesaikan permasalahan di bidang teknik elektro / *Able to evaluate and utilize*

mathematics, natural sciences, and technology, as well as identify, formulate, and solve problems in the field of electrical engineering.

Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes

1. Mampu menganalisa dan mendesain rangkaian Precision Rectifier, Osilator-Timer, dan Logarithmic-Antilog Amplifier / *Capable of analyzing and designing Precision Rectifier, Oscillator-Timer, and Logarithmic-Antilog Amplifier circuits.*
2. Mampu menganalisa dan mendesain rangkaian Switching Voltage Regulator, dan Analog Proportional-Integral-Derivative Control / *Capable of analyzing and designing Switching Voltage Regulator and Analog Proportional-Integral-Derivative Control circuits.*
3. Mampu menganalisa dan mendesain rangkaian Switched Capacitor dan Field Programmable Analog Array, Power Amplifier, Phase-Locked Loop, dan Lock-In Amplifier / *Capable of analyzing and designing Switched Capacitor and Field Programmable Analog Array circuits, Power Amplifier, Phase-Locked Loop, and Lock-In Amplifier.*
4. Mampu melakukan praktikum, mendesain, dan merealisasikan penerapan rangkaian analog / *Able to conduct experiments, design, and implement analog circuit applications.*

Pokok Bahasan / Contents

1. Operational Amplifier Parameters
2. Precision Rectifier
3. Oscillator dan Timer
4. Logarithmic dan Antilog Amplifier
5. Switching Voltage Regulator
6. Analog Proportional-Integral-Derivative Control
7. Switched Capacitor dan Field Programmable Analog Array
8. Power Amplifier
9. Phase-Locked Loop
10. Lock-In Amplifier

Prasyarat / Pre-requisite

Rangkaian Analog / *Analog Circuits*

Pustaka / Reference

1. Thomas L Floyd and David Buchla, "Fundamentals of Analog Circuits", Pearson Custom Publishing, 2012
2. Muhammad Rivai, "Diktat: Perancangan Sistem Elektronika Analog", 2023