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***	:	Persamaan Diferensial / *Differential Equations*
2	**Kode Mata Kuliah / *Course Code***	:	EE234201
3	**Kredit / *Credits***	:	3 SKS
4	**Semester / *Semester***	:	2

Deskripsi Mata Kuliah / *Course Description*

Mata kuliah ini mengajarkan konsep dasar perhitungan matematika yang banyak digunakan dalam bidang ilmu teknik elektro. Pokok bahasan meliputi penyelesaian persamaan diferensial biasa, sistem persamaan diferensial dan persamaan diferensial parsial. dan deret Fourier. / *This course teaches the fundamental concepts of mathematical calculations commonly used in the field of electrical engineering. Topics include solving ordinary differential equations, systems of differential equations, partial differential equations, and Fourier series.*

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

CPL 2 Mampu mengkaji dan memanfaatkan ilmu pengetahuan dan teknologi dalam rangka mengaplikasikannya pada bidang teknik elektro, serta mampu mengambil keputusan secara tepat dari hasil kerja sendiri maupun kerja kelompok dalam bentuk laporan tugas akhir atau bentuk kegiatan pembelajaran lain yang luarannya setara dengan tugas akhir melalui pemikiran logis, kritis, sistematis dan inovatif */ Able to examine and utilize knowledge and technology for the purpose of applying them in the field of electrical engineering, and making informed decisions based on individual work as well as group work in the form of final reports or other learning activities whose outcomes are equivalent to final projects, through logical, critical, systematic, and innovative thinking.*

CPL 3 Mampu mengelola pembelajaran diri sendiri, dan mengembangkan diri sebagai pribadi pembelajar sepanjang hayat untuk bersaing di tingkat nasional, maupun

internasional, dalam rangka berkontribusi nyata untuk menyelesaikan masalah dengan mengimplementasikan teknologi informasi dan komunikasi dan memperhatikan prinsip keberlanjutan serta memahami kewirausahaan berbasis teknologi / *Able to manage one's own learning and continually self-develop as a lifelong learner to compete at the national and international levels, with the goal of making a tangible contribution to problem-solving by implementing information and communication technology and considering sustainability principles, as well as understanding technology-based entrepreneurship.*

Capaian Pembelajaran Mata Kuliah / *Course Learning Outcomes*

1. Mampu menyelesaikan persamaan diferensial biasa / *Able to solve ordinary differential equations.*
2. Mampu menyelesaikan sistem persamaan diferensial / *Able to solve systems of differential equations.*
3. Mampu menjelaskan deret Fourier sebagai penyelesaian persamaan diferensial parsial / *Able to explain Fourier series as a solution to partial differential equations.*
4. Mampu menunjukkan kinerja mandiri, bermutu, dan terukur dalam menganalisis permasalahan teknik seperti rangkaian listrik sederhana orde 1 dan orde 2 / *Able to demonstrate independent, high-quality, and measurable performance in analyzing engineering problems, such as simple first-order and second-order electrical circuits*.

Pokok Bahasan / *Contents*

1. Persamaan Diferensial Biasa (PD Orde 1, PD Orde 2, PD Orde Tinggi) / *Ordinary Differential Equations (ODEs): First-order ODEs, Second-order ODEs, Higher-order ODEs.*
2. Sistem Persamaan Diferensial / *Systems of Differential Equations.*
3. Deret Fourier / *Fourier Series.*
4. PD Parsial / *Partial Differential Equations (PDEs).*

Prasyarat / *Pre-requisite*

Pustaka / *Reference*

1. Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Ed., Wiley, 2011
2. Dennis G. Zill, "Advanced Engineering Mathematics", 6th Ed., Jones & Bartlett, 2018
3. Merle C. Potter, "Advanced Engineering Mathematics", 4th Ed., Springer, 2019