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***	:	Teknik Optimisasi / *Optimization Engineering*
2	**Kode Mata Kuliah / *Course Code***	:	EE234534
3	**Kredit / *Credits***	:	2 SKS
4	**Semester / *Semester***	:	5

Deskripsi Mata Kuliah / *Course Description*

Teknik Optimisasi merupakan mata kuliah yang membahas tentang konsep optimisasi, dasar - dasar matematika optimisasi, beberapa bentuk persoalan optimisasi beserta metode penyelesaiannya, bagaimana memformulasikan model-model matematika persoalan optimisasi dan menyelesaikannya menggunakan pendekatan analitik, numerik, grafis, matriks, dan metaheuristik / *The Optimization Techniques course covers the concepts of optimization, the mathematical fundamentals of optimization, various forms of optimization problems, and their solution methods. It teaches how to formulate mathematical models for optimization problems and solve them using analytical, numerical, graphical, matrix, and metaheuristic approaches.*

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

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.*

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. Menguasai konsep optimisasi dan beberapa bentuk persoalan optimisasi beserta metode penyelesaiannya / *Proficient in the concept of optimization and various forms of optimization problems along with their solving methods.*
2. Mampu memformulasikan model-model matematika persoalan optimisasi dan menyelesaikannya menggunakan pendekatan analitik, numerik, matriks, dan metaheuristik / *Capable of formulating mathematical models for optimization problems and solving them using analytical, numerical, matrix-based, and metaheuristic approaches.*

Pokok Bahasan / *Contents*

1. Konsep Optimisasi / *Optimization concepts*
2. Dasar – Dasar Matematika Optimisasi / *Mathematical fundamentals of optimization*
3. Penyelesaian Analitis Persoalan Optimisasi / *Analytical solution to optimization problems*
4. Penyelesaian Numerik Persoalan Optimisasi / *Numerical solution to optimization problems*
5. Pemrograman Linier / *Linear programming*
6. Variasi Pemrograman Linier / *Variations of linear programming*
7. Pemrograman Dinamik Deterministik / *Deterministic dynamic programming*
8. Pemrograman Dinamaik Stokastik / *Stochastic dynamic programming*
9. Studi Kasus Persoalan Optimisasi / *Case studies in optimization problems*
10. Metode Metaheuristik / *Metaheuristic methods*

Prasyarat / *Pre-requisite*

Pustaka / *Reference*

1. Analisa Hillier and Lieberman., "Introduction to Operation Research", 10th Edition, Mc Graw Hill international Edition, 2015
2. Alkaff, A., Gamayanti, N., "Diktat Kuliah Teknik Optimisasi"
3. Hamdy A taha., "Operation Research : an Introduction", 8th Edition, Prentice Hall, 2006
4. WAGNER, H.M., "Principles of Operations Research", 2nd edition", Prentice-Hall, New Jersey 1980