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***	:	Analisis Jaringan / Network Analysis
2	**Kode Mata Kuliah / *Course Code***	:	EE234733
3	**Kredit / *Credits***	:	2 SKS
4	**Semester / *Semester***	:	0

Deskripsi Mata Kuliah / *Course Description*

Pengertian jaringan; teori graph; representasi graph dan jaringan; prosedur pemberian label; permasalahan lintasan terpendek; variasi dan aplikasi lintasan terpendek; algoritma lintasan terpendek; permasalahan spanning tree; variasi, aplikasi dan algoritma spanning tree; permasalahan aliran maksimum; variasi, aplikasi dan algoritma aliran maksimum; permasalahan transportasi dan transhipment; variasi, aplikasi dan algoritma transportasi dan transhipment; permasalahan biaya minimum; variasi, aplikasi dan algoritma biaya minimum; generalisasi aliran pada jaringan dan contoh-contoh aplikasinya; metode penyelesaian untuk salah satu contoh generalisasi aliran; / *Definition of networks; graph theory; representation of graphs and networks; labeling procedures; shortest path problems; variations and applications of shortest path problems; shortest path algorithms; spanning tree problems; variations, applications, and algorithms for spanning trees; maximum flow problems; variations, applications, and algorithms for maximum flows; transportation and transshipment problems; variations, applications, and algorithms for transportation and transshipment problems; minimum cost problems; variations, applications, and algorithms for minimum cost problems; generalization of flow in networks and examples of its applications; solution methods for one example of generalized flow.*

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 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 merepresentasikan jaringan / *Able to represent networks.*
2. Mampu menyelesaikan problema lintasan terpendek / *Able to solve the shortest path problem.*
3. Mampu menyelesaikan problema spanning tree / *Able to solve the spanning tree problem.*
4. Mampu menyelesaikan problema aliran maksimum / *Able to solve the maximum flow problem.*
5. Mampu menyelesaikan problema transportasi dan transhipment / *Able to solve transportation and transshipment problems.*
6. Mampu menyelesaikan problema biaya minimum / *Able to solve the minimum cost problem.*
7. Mampu memodelkan generalisasi aliran pada jaringan / Able to model the generalization of flow in networks.

Pokok Bahasan / *Contents*

1. Teori Graph / *Graph Theory*
2. Konsep & Representasi Jaringan / *Network Concepts and Representation*
3. Lintasan Terpendek / shortest path
4. Spanning Tree
5. Aliran Maksimum / maximum flow
6. Transportasi dan Transhipment / Transportation and Transshipment
7. Biaya Minimum / minimum cost
8. Generalisasi Aliran pada Jaringan / Generalization of Network Flow

Prasyarat / *Pre-requisite*

Aljabar Linier dan Struktur Diskrit / *Linear Algebra and Complex Variables*

Pustaka / *Reference*

1. Alkaff, Abdullah. Diktat Analisa Jaringan. Diktat Kuliah, TSP, JTE, 2000.
2. Bertsektas, Dimitri P. Network Optimization: Continuous and Discrete Models. Athena Scientific, Massachusetts, 1998.

3. Philips, D.T. Fundamentals of Network Analysis. Prentice-Hall, New Jersey, 1980.
4. Jensen, P.A. dan J.W.Barnes. Network Flow Programming. John Wiley & Sons Inc., New York 1980.
5. Ahuja, Ravindra K., Thomas L Magnanti, James B Orlin. Network Flow Analysis. Prentice-Hall, 1993