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***	:	Proses Stokastik / *Stochastic Processes*
2	**Kode Mata Kuliah / *Course Code***	:	EE234403
3	**Kredit / *Credits***	:	2 SKS
4	**Semester / *Semester***	:	4

Deskripsi Mata Kuliah / *Course Description*

Mata kuliah Proses Stokastik membahas tentang konsep dasar dan teknik untuk pemecahan masalah yang muncul dalam praktek di bidang teknik elektro. Materi dimulai dari review probabilitas dan variabel acak yang ditekankan pada penggunaan Matlab untuk mengetahui model fungsi probabilitas dari hasil eksperimen acak. Selanjutnya, materi vektor acak yang merupakam pengembangan konsep dari variabel acak individu, dan dikembangkan lagi dengan konsep variabel acak sebagai fungsi dari waktu (proses stokastik). Sebagai pelengkap dari konsep proses acak atau proses stokastik disertakan juga analisis dan pemrosesan dari sinyal acak. Terakhir, konsep Markov chain yang digunakan bila proses stokastik hasil dari ekperimen acak tidak independent secara statistik. / *The Stochastic Processes course covers the fundamental concepts and techniques for problem-solving that arise in the practice of electrical engineering. The material begins with a review of probability and random variables, emphasizing the use of Matlab to understand the probability density function models from random experiment results. Subsequently, the course covers random vectors, which extend the concept from individual random variables and further develop it to consider random variables as functions of time (stochastic processes). As a complement to the concept of random processes, the course includes the analysis and processing of random signals. Finally, the concept of Markov chains is introduced for cases when the stochastic process resulting from random experiments is not statistically independent.*

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. Mampu mengidentifikasi dan memformulasikan fenomena acak menggunakan konsep probabilitas dan variabel acak dengan bantuan software Matlab */ Able to identify and formulate random phenomena using probability concepts and random variables with the assistance of Matlab software.*
2. Mampu memodelkan dan menganalisis fenomena acak menggunakan konsep vektor acak dengan bantuan software Matlab / *Able to model and analyze random phenomena using the concept of random vectors with the assistance of Matlab software.*
3. Mampu menggunakan konsep proses stokastik dalam menyelesaikan permasalahan di bidang teknik elektro / *Able to use stochastic process concepts to solve problems in the field of electrical engineering.*
4. Mampu menggunakan konsep Markov chain yang berhubungan dengan bidang teknik elektro / *Able to use Markov chain concepts related to the field of electrical engineering.*

Pokok Bahasan / *Contents*

1. Review Probabilitas / *Review of Probability*
2. Vektor Acak / *Random Vector*
3. Proses Stokastik / *Stochastic Processes*
4. Analisis and Processing of Random Signal
5. Markov Chain

Prasyarat / *Pre-requisite*

Probabilitas dan Statistik / Probability and Statistics

Pustaka / *Reference*

7. Roy D. Yates and David J. Goodman, Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers, 3rd Edition, John Wiley & Sons Inc., 2014
8. Alberto Leon-Garcia, Probability, Statistics, and Random Processes For Electrical Engineering, 3rd Edition, Pearson Prentice Hall, 2007.
9. Peyton Peebles, Probability, Random Variables, and Random Signal Principles, 4th Ed., McGraw-Hill, 2000