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

1	**Nama Mata Kuliah / Course Name**	:	Proses Stokastik / Stochastic Process
2	**Kode Mata Kuliah / Course Code**	:	EL234401
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 Process course discusses basic concepts and techniques for solving problems that arise in practice in the field of electrical engineering. The material starts with a review of probability and random variables which emphasizes the use of Matlab to determine the probability function model from the results of random experiments. Furthermore, the random vector material is the development of the concept of individual random variables, and is further developed with the concept of random variables as a function of time (stochastic process). As a complement to the concept of random or stochastic processing, analysis and processing of random signals is also included. Finally, the Markov chain concept is used when the stochastic process results from a random experiment are not statistically independent.

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

1. (CPL-04) Mampu menerapkan ilmu pengetahuan alam dan matematika serta teknologi dan rekayasa informasi untuk memperoleh pemahaman komprehensif pada bidang Teknik Telekomunikasi.
   (PLO-04) Able to apply knowledge of sciences, mathematics, and information technology to acquire comprehensive understanding of engineering principles in Telecommunication Engineering

2. (CPL-07) Mampu mengidentifikasi, memformulasikan, menganalisis, dan menyelesaikan permasalahan kompleks di bidang teknik telekomunikasi
(PLO-07) Able to identify, formulate, analyze, and solve the complex problems in the field of Telecommunication 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 / *Be able to identify and formulate random phenomena using the concept of probability and random variables with the help of Matlab software*
2. Mampu memodelkan dan menganalisis fenomena acak menggunakan konsep vektor acak dengan bantuan software Matlab / *Be able to model and analyze random phenomena using the concept of random vectors with the help of Matlab software*
3. Mampu menggunakan konsep proses stokastik dalam menyelesaikan permasalahan di bidang teknik elektro / *Able to use the stochastic process concept in solving problems in the field of electrical engineering*
4. Mampu menggunakan konsep Markov chain yang berhubungan dengan bidang teknik elektro / *Able to use the concept of Markov chain 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 & Statistics

Pustaka / Reference

Utama / Primary :

1. 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
2. Alberto Leon-Garcia, Probability, Statistics, and Random Processes For Electrical Engineering, 3rd Edition, Pearson Prentice Hall, 2007.

Pendukung / Support :

1. Peyton Peebles, Probability, Random Variables, and Random Signal Principles, 4th Ed., McGraw-Hill, 2000