



INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)
FAKULTAS TEKNOLOGI ELEKTRO DAN INFORMATIKA CERDAS
DEPARTEMEN TEKNIK ELEKTRO
Program Studi Magister (S2) Teknik Elektro

1	Nama Mata Kuliah / <i>Course Name</i>	: Propagasi dan Radiasi / <i>Propagation and Radiation</i>
2	Course Code	: EE255132
3	Kredit / Credits	: 3 SKS
4	Semester / Semester	: 1

Deskripsi Mata Kuliah / Course Description

Mata kuliah Propagasi dan Radiasi mempelajari: konsep radiasi gelombang elektromagnetik dari antena, parameter-parameter antena dan antena array, mekanisme propagasi gelombang radio, model redaman dan model fading.

The Propagation and Radiation course studies: the concept of electromagnetic wave radiation from antennas, antenna and antenna array parameters, radio wave propagation mechanisms, attenuation models and fading models.

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

1. (CPL-03) 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 memperhatikan prinsip keberlanjutan.

(PLO-03) Able to manage self-learning, and develop oneself as a lifelong learner to compete at national and international levels, in order to make a real contribution to solving problems while paying attention to the principle of sustainability.

2. (CPL-08) Mampu mengambil keputusan dalam konteks menyelesaikan masalah pengembangan ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora berdasarkan kajian analisis atau eksperimental terhadap informasi dan data.

(PLO-08) Able to make decisions in the context of solving problems in the development of science and technology that pay attention to and apply humanities values based on analytical or experimental studies of information and data.

Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes

1. Mampu memecahkan permasalahan propagasi untuk lingkungan propagasi LOS, dan terdapatnya komponen gelombang pantul dan obstacle. / *Able to solve propagation problems for LOS propagation environments, and the presence of reflected wave components and obstacles.*

2. Mampu menerapkan model redaman, model shadowing dan model fading lintasan jamak pada sistem nirkabel bergerak yang mengalami fading. / *Able to apply attenuation models, shadowing models and multi-path fading models to mobile wireless systems experiencing fading.*
3. Mampu menerapkan integral radiasi untuk mendapatkan persamaan radiasi antena dan mampu menganalisa parameter-parameter antena. / *Able to apply radiation integrals to obtain antenna radiation equations and able to analyze antenna parameters.*
4. Mampu menganalisa, mendisain, dan mensintesa suatu antena array. / *Able to analyze, design, and synthesize an antenna array.*

Pokok Bahasan / Contents

1. Propagasi di ruang bebas. / *Propagation in free space.*
2. Interferensi gelombang pantul. / *Interference of reflected waves.*
3. Difaksi. / *Diffraction.*
4. Model redaman dan shadowing. / *Damping and shadowing models.*
5. Model fading skala kecil. / *Small scale fading models.*
6. Integral radiasi dan Parameter antena / *Radiation integrals and antenna parameters*
7. Antena array linier: uniform amplitude, non uniform amplitude. / *Linear array antennas: uniform amplitude, non-uniform amplitude.*
8. Antena array: amplitude tapering. / *Array antennas: amplitude tapering.*
9. Sintesa antena array. / *Antenna array synthesis.*

Prasyarat / Pre-requisite

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Pustaka / Reference

Utama / Primary:

1. W. L. Stutzman, G. A. Thiele, Antenna Theory and Design 3rd Ed., John Wiley & Sons, 2012.
2. C. A. Balanis, Antenna Theory, Analysis and Design 3rd Ed., John Wiley & Sons, 2005.
3. J. D. Parsons, Mobile radio propagation channel, John Wiley & Sons, 2000.
4. Simon R. Saunders , Alejandro Aragon-Zavala, Antennas and Propagation for Wireless Communication Systems, John Wiley & Sons 2007.

Pendukung / Supporting:

5. Jurnal terkait.