



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 : Dasar Sistem Tenaga Listrik / <i>Introduction to Electric Power Systems</i>
2	Kode Mata Kuliah / Course Code : EE234404
3	Kredit / Credits : 3 SKS
4	Semester / Semester : 4

Deskripsi Mata Kuliah / Course Description

Mata kuliah dasar sistem tenaga listrik menjelaskan tentang prinsip konversi energi listrik, permasalahan energi yang terjadi saat ini dan yang akan datang, proses penyaluran daya listrik dan sistem pendistribusian, prinsip dasar perubahan energi melalui mesin listrik yang terdiri dari generator, transformator dan motor. / *The Basic Power Systems course explains the principles of electrical energy conversion, current and future energy issues, power transmission processes and distribution systems, and the fundamental principles of energy conversion through electrical machines, including generators, transformers, and motors.*

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 / <i>Able to evaluate and utilize mathematics, natural sciences, and technology, as well as identify, formulate, and solve problems in the field of electrical engineering.</i>
CPL 7	Mampu mengetahui dan mengaplikasi metode, keahlian sesuai perkembangan terkini di bidang ilmu pengetahuan dan teknologi untuk menyelesaikan permasalahan teknik elektro dengan mengedepankan nilai-nilai universal / <i>Able to understanding and applying the latest methods and skills in the field of science and technology to solve electrical engineering problems while emphasizing universal values.</i>
Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes	
<ol style="list-style-type: none"> 1. Memahami prinsip konversi energi listrik dan proses penyaluran dan pendistribusian daya listrik beserta indek keandalannya. / <i>Understanding the principles of electrical energy conversion and the processes of electrical power transmission and distribution, along with their reliability indices.</i> 2. Memahami permasalahan energi yang terjadi saat ini dan yang akan datang. / <i>Understanding the current and future energy issues.</i> 3. Memahami prinsip dasar perubahan energi melalui peralatan listrik yang disebut mesin listrik yaitu generator dan motor. / <i>Understanding the basic principles of energy conversion through electrical equipment, namely electric machines, which include generators and motors.</i> 4. Mampu menjelaskan prinsip konversi energi listrik dan proses penyaluran dan pendistribusian daya listrik beserta indek keandalannya. / <i>Able to explain the principles of electrical energy conversion and the processes of electrical power transmission and distribution, along with their reliability indices.</i> 	
Pokok Bahasan / Contents	
<ol style="list-style-type: none"> 1. Pengenalan sistem pembangkit tenaga listrik dan energi terbarukan / <i>Introduction to Power Generation and Renewable Energy</i> 2. Mekanisme konversi energi termasuk rangkaian elektromagnetik / <i>Energy Conversion Mechanisms, including Electromagnetic Circuits</i> 3. Sistem satu fasa dan 3 fasa (daya, tegangan, arus, konversi star delta) / <i>Single-phase and Three-phase Systems (Power, Voltage, Current, Star-Delta Conversion)</i> 4. Generator sinkron dan motor induksi / <i>Synchronous Generators and Induction Motors</i> 5. Mesin dc, jenis dan konstruksi / <i>DC Machines, Types, and Construction</i> 6. Karakteristik mesin dc / <i>Characteristics of DC Machines</i> 7. Dasar Transformator / <i>Transformer Basics</i> 8. Pengenalan sistem transmisi / <i>Introduction to Transmission Systems</i> 9. Dasar sitem distribusi termasuk indek keandalan sistem distribusi / <i>Basics of Distribution Systems, Including Distribution System Reliability Indices</i> 	
Prasyarat / Pre-requisite	

Pustaka / Reference

1. Electric power System basics for the nonelectrical Professional, The Institute of Electrical and Electronics Engineers, Inc., John Wiley & Sons, Inc., Hoboken, New Jersey
2. Gupta, Transmission and Distribution, 1997
3. Pabla, AS, Sistem Distribusi Daya Listrik, Penerbit Erlangga
4. Luces M. Faulkenberry, Electrical Distribution and Transmission, Prentice Hall ,1996
5. Electrical Transmision & Distribution Reference Book, CSE WestingHouse EC