



**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**

<b>1</b>	<b>Nama Mata Kuliah / Course Name</b> : Pengemudian Motor Listrik / <i>Electric Drive</i>
<b>2</b>	<b>Kode Mata Kuliah / Course Code</b> : EE234724
<b>3</b>	<b>Kredit / Credits</b> : 3 SKS
<b>4</b>	<b>Semester / Semester</b> : 0

#### **Deskripsi Mata Kuliah / Course Description**

Memahami dan mampu memilih dan mengoperasikan motor listrik dengan beban-beban mekanik tertentu. / *To understand and be able to select and operate electric motors with specific mechanical loads.*

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

- CPL 1 Mampu menunjukkan sikap dan karakter yang mencerminkan: ketakwaan kepada Tuhan Yang Maha Esa, etika dan integritas, berbudi pekerti luhur, peka dan peduli terhadap masalah sosial dan lingkungan, menghargai perbedaan budaya dan kemajemukan, menjunjung tinggi penegakan hukum mendahulukan kepentingan bangsa dan masyarakat luas, melalui kreatifitas dan inovasi, eksekusi, kepemimpinan yang kuat, sinergi, dan potensi lain yang dimiliki untuk mencapai hasil yang maksimal / *Being able to demonstrate attitudes and characteristics that reflect: devotion to the One Almighty God, ethics and integrity, noble virtues, sensitivity and care towards social and environmental issues, appreciation of cultural diversity and inclusivity, upholding the rule of law with a priority on the interests of the nation and the wider community, through creativity and innovation, excellence, strong leadership, synergy, and other potentials possessed to achieve maximum results.*
- CPL 5 Mampu mendesain komponen, sistem, dan proses yang logis dan realistis sesuai dengan spesifikasi yang ditentukan dengan mempertimbangkan aspek keselamatan, sosial, budaya, lingkungan, dan ekonomi / *Able to design*

*components, systems, and processes that are logical and realistic in accordance with specified specifications, while considering safety, social, cultural, environmental, and economic aspects.*

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.*

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 / *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.*

#### **Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes**

1. Mampu memahami Materi Mata Kuliah, Karakteristik Beban Mekanik, Persamaan Motor Drive / *Able to understand the course material, Mechanical Load Characteristics, and Motor Drive Equations.*
2. Mampu memahami Jenis Motor dan Karakteristik Motor Listrik, serta Jenis Electric Drive / *Able to understand the Types of Motors and Electric Motor Characteristics, as well as Types of Electric Drives.*
3. Mampu memahami Aplikasi Penggunaan Motor Listrik, dengan beban; (Crane, Conveyor, Mixer, Pompa, Lift, dsb.) / *Able to understand the Applications of Electric Motors with various loads such as Cranes, Conveyors, Mixers, Pumps, Elevators, etc.*
4. Mampu memahami Aplikasi Pengemudian Motor Listrik, dengan beban; (Crane, Conveyor, Mixer, Pompa, Lift, dsb.) / *Able to understand the Motor Control Applications with various loads such as Cranes, Conveyors, Mixers, Pumps, Elevators, etc.*

#### **Pokok Bahasan / Contents**

1. Memahami penggunaan dari jenis motor listrik berdasar beban-beban mekanik yang digerakan / *Understanding the Use of Electric Motor Types Based on the Mechanical Loads They Drive*
2. Memahami metode starting dari motor listrik dalam keadaan beban nol maupun berbeban / *Understanding Electric Motor Starting Methods with No Load and Under Load*
3. Memahami metode kendali torque (T) dan kecepatan (n) dari motor listrik saat beban berubah / *Understanding Methods for Controlling Torque (T) and Speed (n) of Electric Motors When the Load Changes*
4. Memahami metode pengereman dari motor listrik / *Understanding Electric Motor Braking Methods*

#### **Prasyarat / Pre-requisite**

Dasar Sistem Tenaga Listrik / *Introduction to Electric Power Systems*

### **Pustaka / Reference**

1. Advanced Electric Drives: Analysis, Control, and Modeling Using MATLAB / Simulink, by Ned Mohan | Aug 25, 2014
2. Electric Powertrain: Energy Systems, Power Electronics and Drives for Hybrid, Electric and Fuel Cell Vehicles, by John G. Hayes and G. Abas Goodarzi | Feb 5, 2018
3. Electrical Drives: Principles, Planning, Applications, Solutions, by Jens Weidauer and Richard Messer | Aug 11, 2014