Mata Kuliah ***Course***	Nama MK *Name*	:	Mesin Listrik *Electric Machines*
	Kode MK *Code*	:	EE184512
	Kredit *Credits*	:	4 sks
	Semester *Semester*	:	V (Wajib) *V (Compulsory)*
	Beban Belajar *Workload*	:	Kuliah : 4 x 50 = 200 menit/minggu Latihan/tugas : 4 x 60 = 240 menit/minggu Belajar mandiri : 4 x 60 = 240 menit/minggu *Lectures : 4 x 50 = 200 min/week* *Exercises/Assignments : 4 x 60 = 240 min/week* *Self learning : 4 x 60 = 240 min/week*
	Tingkatan *Module Level*	:	Sarjana (S1) *Undergraduate*
	Penanggung Jawab *PIC*	:	Heri Suryoatmojo, ST, MT, PhD
	Pengajar *Lecturer*	:	Heri Suryoatmojo, ST, MT, PhD Dr. Ir. Soedibyo, MMT
	Bahasa *Language*	:	Bahasa Indonesia dan Bahasa Inggris *Bahasa Indonesia and English*
	Persyaratan dan Peraturan *Requirement and Regulation*	:	Setiap mahasiswa harus menghadiri setidaknya 75% dari jumlah perkuliahan untuk dapat mengikuti ujian *A student must have attended at least 75% of the lectures to sit in the exams*

Deskripsi Mata Kuliah
Description of Course

Mata kuliah mesin listrik secara umum membahas tentang prinsip mesin konversi energi listrik. Secara detil, mata kuliah ini menjelaskan tentang prinsip elektromagnetik, konstruksi dan operasional transformator, disain dan perhitungan tegangan yang dibangkitkan dalam mesin listrik berputar. Fitur dan karakteristik mesin sinkron, konstruksi dan analisis motor induksi, konstruksi dan analisis mesin DC.

Electric machine courses generally discuss the principle of electric energy conversion machines. In detail describes the principles of electromagnetic, construction and operational transformer, design and calculation of voltage generated in a rotating electric engine. Features and characteristics of synchronous machines, construction and analysis of induction motors, construction and analysis of DC machines.

CPL Prodi yang Dibebankan
Description of Course

(CPL-01) Mampu menerapkan ilmu pengetahuan alam dan matematika pada bidang teknik elektro

(PLO-1) Capable to apply knowledge of natural sciences and mathematics to solve electrical engineering problem

(CPL-05) Mampu mengidentifikasi, memformulasikan dan menyelesaikan permasalahan dibidang teknik elektro

(PLO-5)Capable to identify, formulate and solve problems in the field of electrical engineering

(CPL-11) Mampu menerapkan metode, ICT, dan perangkat modern dalam penyelesaian permasalahan dibidang teknik elektro

(PLO-11) Capable to apply methods, ICT, and modern devices in solving problems in the field of electrical engineering

Capaian Pembelajaran Mata Kuliah

Course Learning Outcomes

(CPMK-01) Menguasai konsep dasar mesin listrik dan karakteristik mesin listrik.
(CLO-01) Mastering the basic concepts of electrical machinery and electrical machine characteristics.

(CPMK-02) Mampu menganalisis parameter dalam mesin listrik dan mampu menghitung menghitung kebutuhan mesin listrik dalam sistem tenaga.
(CLO-02) Able to analyze the parameters in an electric machine and able to calculate the need of electric machines in the power system.

Topik/Pokok Bahasan

Main Subjects

1. Konsep elektromaknet, dasar mesin elektrik, memahami peranan magnet dalam mesin elektrik, dasar-dasar analisis, tanda-tanda dari variabel mesin.
   The concept of electromagnetism, the basis of electrical machinery, understands the role of magnets in electric machines, the basics of analysis, the signs of machine variables.
2. Konsep dasar, konstruksi dan macam-macam transformator dalam sistem tenaga listrik dan operasionalnya dalam sistem tenaga listrik.
   Basic concepts, constructions and various transformations in electric power systems and their operations in electrical systems.
3. Konsep medan magnet berputar dalam mesin listrik, konstruksi belitan dan proses terbangkitnya tegangan dalam mesin listrik berputar.
   The concept of a rotating magnetic field in an electric machine, winding construction and the process of voltage generation in rotating electrical machine.
4. Konstruksi dan fitur mesin sinkron beserta operasionalnya.
   Construction and synchronous machine features and their operations.
5. Penentuan rangkain ekivalen, parameter dan cara menganalisis mesin sinkron.
   Determination of equivalence circuit, analysis of parameters of synchronous machine.
6. Konstruksi dan operasional mesin induksi
   Construction and operation of induction machines
7. Analisis performansi motor induksi.
   Induction motor performance analysis.
8. Konstruksi mesin dc dan operasionalnya.
   Construction of dc machine and its operation.

9. Karakteristik mesin dc.
   Characteristics of dc machine.

Pembelajaran dan ujian
Study and examination

- Latihan di kelas
  In-class exercises
- Tugas 1, 2, 3
  Assignment 1, 2, 3
- Ujian tengah semester
  Mid-term examination
- Ujian akhir semester
  Final examination

Pustaka
Reference(s)

[1] J. Chapman, “Electric Machinery Fundamentals”, McGraw-Hill, Inc., New York,St. Louis, San Fransisco, Auckland, Bogotá, Caracas, Hamburg, Lisbon, London, Madrid, Mexico, Milan, Montreal, New Delhi, Paris, San Juan, São Paolo, Singapore, Sydney, Tokyo, Toronto, 1991.
[2] S.K. Sen, "Electrical Machinery” Khanna Publishers, New Delhi,1993.
[3] B.S. Guru & H.R. Hiziröglu, " Electric Machinery and Transformers” Harcourt Brace Javanovich, Publishers, Technology Publications, San Diego, New York, Chicago, Austin, Washington DC, London, Tokyo, Toronto, 1988.

Prasyarat
Prerequisite(s)

EE184402 Introduction to Power System