

Mata Kuliah Course	Nama MK <i>Name</i>	: Rangkaian Listrik <i>Electric Circuits</i>
	Kode MK <i>Code</i>	: EW184003
	Kredit <i>Credits</i>	: 2 sks
	Semester <i>Semester</i>	: II (Wajib) <i>II (Compulsory)</i>
	Beban Belajar <i>Workload</i>	: Kuliah : 2 x 50 = 100 menit/minggu Latihan/tugas : 2 x 60 = 120 menit/minggu Belajar mandiri : 2 x 60 = 120 menit/minggu <i>Lectures : 2 x 50 = 100 min/week</i> <i>Exercises/Assignments : 2 x 60 = 120min/week</i> <i>Self learning : 2 x 60 = 120 min/week</i>
	Tingkatan Module Level	: Sarjana (S1) <i>Undergraduate</i>
	Penanggung Jawab <i>PIC</i>	: Dr. Ir. Hendra Kusuma, M.Eng.
	Pengajar <i>Lecturer</i>	: Dr. Ir. Hendra Kusuma, M.Eng.
	Bahasa <i>Language</i>	: Bahasa Indonesia dan Bahasa Inggris <i>Bahasa Indonesia and English</i>
	Persyaratan dan Peraturan <i>Requirement and Regulation</i>	: Setiap mahasiswa harus menghadiri setidaknya 75% dari jumlah perkuliahan untuk dapat mengikuti ujian <i>A student must have attended at least 75% of the lectures to sit in the exams</i>

Deskripsi Mata Kuliah

Description of Course

Mata kuliah Rangkaian Listrik membahas tentang Konsep dasar rangkaian dan analisisnya, Hukum dasar rangkaian yang meliputi Hukum Ohm dan Kirchhoff, Metoda analisis node dan mesh, Teori rangkaian yang meliputi teorema superposisi, rangkaian ekuivalen thevenin dan Norton, serta transfer daya maksimum. Topik pembahasan berikutnya adalah prinsip kerja Kapasitor dan induktor, Rangkaian dengan resistor atau induktor (orde satu), serta Rangkaian dengan resistor, kapasitor dan induktor (orde dua) baik seri maupun paralel.

Electric Circuit course discusses the basic concepts of the electric circuit and its analysis. The course includes two basic laws of the circuit (Ohm's Law and Kirchhoff's Law), two methods of analysis (nodes and mesh), some useful circuit methods (superposition theorem, thevenin equivalent circuit, Norton equivalent circuits, and maximum power transfer). The next topic of discussion is the principle of capacitors and inductors, responses of circuits with capacitor or inductor (first order circuit), and responses of circuit with resistor, capacitor and inductor (second order circuit) in both series and parallel circuits.

CPL Prodi yang Dibebankan

Learning Outcomes

(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-09) Mampu belajar mandiri untuk menumbuhkan kemampuan belajar sepanjang hayat
(PLO-9) Capable to learn independently to foster lifelong learning abilities

Capaian Pembelajaran Mata Kuliah

Course Learning Outcomes

(CPMK-01) Menguasai konsep dalam rangkaian listrik dan analisisnya untuk analisis dan perancangan sistem bidang teknologi elektro.

(CLO-01) Mastering the concept of electric circuits and its analysis for the purpose of analysis and system design in the field of electrical technology.

(CPMK-02) Mampu mendeskripsikan prosedur penyelesaian rangkaian listrik dan analisisnya dalam bidang teknologi elektro.

(CLO-02) Able to describe the procedure of electric circuit analysis in the field of electrical technology.

(CPMK-03) Mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam materi rangkaian listrik dan analisisnya untuk konteks pengembangan atau implementasi ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora yang sesuai dengan bidang keahliannya.

(CLO-03) Able to apply logical, critical, systematic, and innovative thinking in electric circuits and its analysis to the context of the development or implementation of science and technology considering the humanities value appropriate to his/her area of expertise.

(CPMK-04) Menunjukkan sikap bertanggungjawab atas pekerjaan di bidang keahliannya secara mandiri dalam materi rangkaian listrik dan analisisnya.

(CLO-04) Demonstrate responsible attitude toward works in their field of expertise related to electrical circuitry.

Topik/Pokok Bahasan

Main Subjects

1. Konsep dasar rangkaian
Basics concept of electric circuits
 2. Hukum dasar angkaian
Circuit laws
 3. Analisis rangkaian
Circuit analysis technique, basic Nodal and Mesh analysis
 4. Teori rangkaian
Circuit theory
 5. Kapasitor dan inductor
Capacitor and inductor
 6. Rangkaian orde satu
First order circuits
 7. Rangkaian orde dua
RLC circuits
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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] Tim pengajar rangkaian listrik, Handout Mata Kuliah Rangkaian Listrik.
Electric Circuits, Lecture Notes.
- [2] Pujiono, Rangkaian Listrik, Graha Ilmu,
- [3] CK Alexander and MNO Sadiku, Fundamental of Electric Circuit, McGraw Hill, 8th Edition, 2013.
- [4] WH Hayt, JE Kemmerly, and SM Durbin, Engineering Circuit Analysis, McGraw Hill, 8th Edition, 2007.

Prasyarat

Prerequisite(s)

- KM184101 Matematika I
- *KM184101 Mathematics I*